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THE

California Horticulturist

AND FLORAL MAGAZINE.

Vol. III. JANUARY, 1873. No. 1.

OUR FAVORITE FLOWERING BULBS.

BY F. A. MILLER.

Year by year our people show a growing appreciation of flowering bulbs; and although the simple treatment needed by many of these favorites is as yet a mystery to some, it is gratifying to see that others have met with marked success. I have seen in some collections (particularly in those of our lady amateur-gardeners), magnificent spikes of Hyacinths, beautiful clusters of Narcissus, Cyclamens covered with their nodding gems of white or purple, and Lilies, Amaryllis, Tulips, Ranunculus, Anemones, Gladiolus, Diclytras, Gloxinias, Tigridias, etc., all grown with remarkable success, and worthy objects for the admiration of their lady friends, who doubtless determine to follow the example by adding some of these gems to their own collections of plants, which without some of the varieties above named, are certainly very incomplete.

But a few years since, our florists and seedsmen imported flowering bulbs in large quantities, but could not find a ready sale for them, and the business of importing bulbs proved very unprofitable. This could not be expected to be otherwise, when it is taken into consideration that in a new and really undeveloped country, floriculture, as with all industries and pursuits, must go through the various stages of development. Flowers, although dearly loved by both old and young, as our surroundings will now testify, are yet considered by many of our wealthy men as very unnecessary luxuries, and are planted and paid for in many instances merely for appearance sake. It is not surprising that to such men a pine, a sunflower or a poppy seems more valuable than a hyacinth, a snowdrop or a lily of the valley. It is the size of the thing, the show that it makes, the quantity for the small amount of money invested, that has hitherto been the principal consideration with our moneyed men. Thanks, however, to the ladies, who have gradually inaugurated a new order of things, and who have themselves begun to realize the pleasures and delights to be derived from the care of plants, which offer new and varied delights through the different seasons of the year — in the garden, the conservatory or in the window.

Bulbous-rooted plants vary as much as all other plants in their time of flowering; while some may be had in bloom during the winter months in the

conservatory or in the window, others will not flower until late in the autumn.

The bulbs which may be planted now, in order to have them in bloom during the early part of the coming year, are:

Hyacinths, very full instructions for treatment of which were published in the Horticulturist in the January number of 1871. Hyacinths may now be planted in the open ground, and may be expected to flower in March and April. Before planting, the soil should be manured and well worked over; plant one and a half to two inches below the surface, and keep clean from weeds. Hyacinths are perfectly hardy. If planted in pots, for the purpose of having them flower early, the bulbs should be planted so as to be just covered by the soil. After planting, the pots should be set in a dark but moderately warm place, where roots will be formed before the leaves develop themselves. Under ordinary circumstances, from three to four weeks in a dark room will be sufficient. When bringing them into the light, place them in a warm situation, and give a liberal supply of water, and in thirty days after removing them into the light, they may be expected to flower. I prefer covering the pots, containing the bulbs, to the depth of at least six inches in sand or leaf-mould, for about thirty days, in order to bring foliage and the flowerstocks to perfection at the same time.

If Hyacinths are grown in glasses, good strong bulbs should be selected, the water should be changed at least once a week, and it will prove advantageous to keep them in a dark and moderately warm room for at least two weeks.

I prefer single Hyacinths to the double varieties; their flowers will generally come out more perfect, and the spikes fuller and more compact; the single varieties are also more fragrant.

Tulips come into flower later than Hyacinths, and require more warmth and less moisture. They are not so well adapted for pot culture, although I have seen very fine specimens grown in pots, under ordinary treatment; the pots for Tulips should be of greater depth, and the bulb should be planted deeper, say, from three to four inches below the surface. They should be planted in a warm situation. Tulips do not require much manure, but the soil should be worked to greater depth even than for Hyacinths.

The Cyclamen is one of my favorite bulbs, but it is only adapted for the conservatory or the window, where it will always be found blooming from November until May, and even later, after which time it should be allowed to rest, receiving only sufficient moisture to keep it from shrinking. During the time of flowering a liberal supply of water should be given, and partial shade is beneficial. One-third of the bulb should be within the soil, and two-thirds of it above. I have a good number of varieties in bloom now, the best of which I have raised from seed, which was planted a year ago. The young bulbs are now producing an abundance of charming blossoms of various colors, highly valuable for fine bouquets and baskets of flowers.

The Narcissus family is grown here without any difficulty, to great perfection, both in the house and in the open ground; some of them are highly perfumed and are particularly attractive. If planted now, we may have them in bloom in February in the house, and in March in the open ground. Some of the varieties are popularly known as Jonquils; others as Daffodils; double and single, white and yel-

low, some having white flowers with a red cup-like centre; they present a great diversity, and are both effective and pleasing in groups and as single plants, wherever they grow.

Anemones are not as frequently met with as could be desired, yet they are a most interesting and valuable class of plants, and as easily cultivated in pots as in the ground. We may have them in flower here from March until July. The flowers are showy, and among the various colors we find blue, white, red, violet, rose, yellow and striped, both double and single. The bulbs should now be planted two inches deep in well prepared soil.

The Ranunculus, also, is another valuable bulbous-rooted plant, which should be planted now, in order to have it bloom early. The treatment is the same as that required for the Anemone.

There are many other bulbs which should not be withheld from our gardens and conservatories as early and charming flowerers, but I shall postpone their description to some future time.

NATIVE HEDGES.

BY DR. A. KELLOGG.

During the twenty-four hours last past, two gentlemen of the press—no wise in communication—have inquired, "What native shrub would be most suitable for a hedge?" Taking this timely query as perhaps indicative of a public desire for information, we pen our answer, given on the spur of the moment. The most feasible for general purposes appears to be the White Thorn, (*Ceanothus incanus*), for the following reasons: It is a stout, robust and rapid grower, very tough and of rigid resistance, somewhat thorny, as the popular name indicates; bears cutting back to thicken, half hacking and weaving, and trims well; is not apt to die out, singly or in patches, its vitality being most remarkable—cut even with the ground, it springs up speedily, and repairs itself in two or three years, having such firm hold of roots upon the ground, as to require bonfires to exterminate them. Managed with ordinary care, it can be relied upon to turn both large and small cattle. In its native state, it grows from five to ten feet, and in some localities fifteen. This shrub has a wide range, from the coast, in this vicinity, south, to 7,000 or 8,000 feet on the Sierra Nevada Mountains; hence, well suited for very general use.

For many years we have collected the seed for culture, as an ornamental shrub. A word or so of detailed description may be allowed in addition: The stem or trunk is pale white, with greenish tinge; smooth bark; twigs numerous, almost as white as snow; leaves crowded, egg-shaped, blunt, and slightly heart-shaped at the base, light green above, with a soft velvety bloom most pleasing to the eye; whiter beneath, thick and leathery; flowers white, in clustered bolls or heads, from thick spurs, lateral or terminal, but not remarkable for fragrance. The seed is somewhat triangular, minutely worty and sub-three-horned; ripens from first to last of September. It has also a desirable disposition to spread its branches, and naturally arches off and interlaces. This species, unlike many *Ceanothi*, is never browsed on by cattle, and, therefore, needs no protection in its incipient growth. Found on dry mountain knolls and in alluvial lands of creeks, etc. It would seem to suit well the river and valley lands. Should any choose a trim, erect grower, this evergreen might give place to others equally ornamental, but less useful.

SELECT PLANTS

(Exclusive of Timber Trees) readily eligible for Victorian Industrial Culture, with Indications of their Native Countries and some of their Uses—an Enumeration offered

BY BARON FRED. VON MUELLER.

[Continued from page 354 of November number.]

Boehmeria nivea, *Gaudichaud.**—The Ramee or Rhea. Southern Asia, as far east as Japan. This bush furnishes the strong and beautiful fibre woven into the fabric which inappropriately is called grass-cloth. The bark is softened by hot water or steam, and then separated into its tender fibres. The best is obtained from the young shoots; it is glossy, tough and lasting, combining to some extent the appearance of silk with the strength of flax. The ordinary market value of the fibre is about £40 per ton; but Dr. Royle mentions that it has realized, at times, £120. The seeds are sown on manured or otherwise rich and friable soil. In the third year, or under very favorable circumstances even earlier, it yields its crops, as many as three annually. The produce of an acre has been estimated at two tons of fibre. This latter, since Kaempfer's time, has been known to be extensively used for ropes and cordage in Japan. Our rich and warmest forest valleys seem best adapted for the Ramee, as occasional irrigation can be also there applied. In the open grounds of Victoria it suffers from the night frosts, although this does not materially injure the plant, which sends up fresh shoots, fit for fibre, during the hot season. The plant has been cultivated and distributed since 1854, in the Botanic Garden of Melbourne, where it is readily propagated from cuttings, the seeds ripening rarely there. Cordage of this Boehmeria is three times as strong as that of hemp. Other species require to be tested, among them the one which was recently discovered in Lord Home's Island, namely, Bochmeria calophleba.

Boronia megastigma, *Nees.*—In West Australia on margins of swamps. This remarkable bush is recorded here as an emblem of mourning, its external blackish flowers rendering it especially eligible for graves. Industrially it interests us on account of its powerfully fragrant blossoms, for the sake of which this bush will deserve to be cultivated. The scent might be extracted by Mr. Bosisto's process.

Borrago officinalis, *L.*—South Europe, Orient. An annual herb, occasionally used for medicinal purposes or as an admixture to salad.

Brabejum stellatifolium, *L.*—South Africa. The nuts of this shrub are edible, resembling those of our Macadamia ternifolia, to which also in foliage and flowers Brabejum is closely allied. The nuts are also similar to those of the Chilian Guevina Avellana.

Brassica alba, *Visiani.*—(Sinapis alba, *L.*)—White Mustard. Europe, North Africa, North and Middle Asia. An annual. The seeds are less pungent than those of the Black Mustard, but used in a similar manner. The young leaves of both are useful as a culinary and antiscorbutic salad. Dr. Masters enumerates Brassica Chinensis, B. dichotoma, B. Pekinensis, B. ramosa and B. glauca among the Mustards, which undergo cultivation in various parts of Asia, either for the fixed oil of their seeds or for their herbage. From 15 lbs. to 20 lbs. of seeds of the White Mustard are required for an acre. In the climate of California, similar to ours, 1,400 lbs. of seeds have been gathered from an acre.

Brassica nigra, *Koch.* (Sinapis nigra, *L.*)—The Black Mustard. Europe, North Africa, Middle Asia. An annual.

The seeds, simply crushed and then sifted, constitute the Mustard of commerce. For medicinal purposes seeds of this species are preferable for sinapisms and other purposes. In rich soil this plant is very prolific; and in our forest-valleys it is likely to remain free from the attack of aphis. Chemical constituents: A peculiar fixed oil, crystalline sinapin, the fatty sinapisin, myron-acid and myrosin.

Brassica oleracea, *L.*—An annual or biennial coast plant, indigenous to various parts of Europe. It is mentioned here, with a view of showing that it might be naturalized on our rocky and sandy sea-shores. From the wild plant of the coast originated various kinds of Cabbages, Broccoli, Cauliflower, Brussels Sprouts, Kail, Kohlrabi, etc. Other races of this species are collectively represented by Brassica Rapa, *L.* (B. campestris, *L.*), the Wild Navew, yielding most of the varieties of Turnips, same with other cultivated forms transferred to us from ancient times. Again, other varieties are comprehended within Brassica Napus, *L.*, such as the Swedish and Teltower Turnips; while the Rape seed, so important for its oil (Colza), is also derived from a form of B. Napus. The Rape should be produced here as an agrarian produce, giving a rapid return, whenever it should remain free of aphis. The hardier turnips could be produced on our highest Alps, as they are grown still within the Arctic circle, and, according to Dr. J. Hooker, at a height of 15,000 feet in the Himalaya Mountains.

Butomus umbellatus, *L.*—The Flowering Rush. Europe, North and Middle Asia. This elegant perennial water-plant is mentioned here more for its value in embellishing our lakes and watercourses than for the sake of its roots. The latter, when roasted, are edible. The plant would live in our subalpine rivulets.

Bromus unioloides, *Humboldt.** (B. Schraderi, *Kunth.*) — Here called the Prairie Grass. From Central America it has spread over many parts of the globe. The writer saw it disseminated in the mountains of St. Vincent's Gulf as early as 1847. It is one of the richest of all grasses, grows continuously and spreads readily from seeds, particularly on fertile and somewhat humid soil, and has proved as a lasting and nutritious fodder-grass or pasture-grass one of our best acquisitions.

Broussonetia papyrifera, *Ventenat.* — The Paper Mulbery. Islands of the Pacific Ocean, China, Japan, perhaps only truly indigenous in the last-named country. The bast of this tree or shrub can be converted into very strong paper. It can also be used as a textile fabric; furthermore, the fabrics made from it can be dressed with linseed oil for waterproof coverings. In cultivation the plant is kept like an osier. The leaves can not be used for silkworms. European fabrics have largely superseded the clothing made of this plant in the South Sea Islands.

Caesalpinia Gilliesii, *Wallich.* (Poinciana Gilliesii, *Hooker.*) — La Plata States. This beautiful hardy bush can be utilized for hedges.

Cajanus Indicus, *Candolle.*—The Catjang; in Assam, called Gelooa-mah. A shrubby plant of India, probably available for profitable culture and naturalization in the warmer parts of our Colony. It sustains itself on dry ground, and yields the pulse known as Dhal, Urhur and Congo-pea. The plant lasts for about three years. Several species of Cajanus of the Atylosia section, indigenous to the warmer parts of Australia, might be tested here for the sake of the economic value of their seeds. The in-

sect, active in the formation of lac, lives extensively on the Cajanus, according to Mr. T. D. Brewster, of Assam. Silkworms live also on it.

PRUNING DECIDUOUS FLOWERING SHRUBS.

BY E. L. REIMER.

From time to time we are assailed with grievous complaints from persons possessing residences and private gardens in San Francisco and the vicinity, that deciduous shrubs will not flower; and they are now very generally looked upon as so much rubbish by those of our community who are in the habit of purchasing ornamental trees, shrubs and plants.

If a nurseryman offers for sale to his customers such shrubs as Lilacs, Snowballs, Philadelphus, Deutzias, etc., they will tell him that they are of no earthly use, as they will never produce any flowers in this country; and nothing will induce them to purchase one of these shrubs, unless they see it in bloom in the nursery, and even then, in a year or so after, they will return, grumbling to the seller that they have been deceived, because they have not again seen it in bloom.

Years since I used to sell a quantity of deciduous flowering shrubs, but the sale of them has gradually diminished from year to year; and I believe that every nurseryman will say the same.

I must here remark that this family of very interesting plants or shrubs will bloom in this country just as profusely as in any other. It is not the fault of the climate that our friends are disappointed, but of the jobbing gardeners who pretend to attend to private places. I will not say that all are equally ignorant and pretentious; on the contrary, we have some really well experienced and reliable men amongst them; but the great majority know but very little about gardening, and previously to their intruding themselves on the public in this part of the world as horticultural experts, have occupied no higher grade in the profession than experience in the use of the broom, the manure-fork and the wheelbarrow would entitle them to; indeed, to this work would they be rigidly restricted in the East and in Europe, if we except that in very busy times they might be permitted to dig a few potatoes, etc.

Some time since, I made it an especial point to make tours of observation around the city and suburbs, for the purpose of ascertaining for myself the cause of the before-mentioned complaints. To my great astonishment, I found that in every garden wherever there were Lilacs, Snowballs, and similar deciduous shrubs, they had all been *trimmed down to a uniform shape*, and that too in *the months of January and February!* Here, then, was the reason why the Lilacs and Snowballs did not bloom, and a most substantial one, too.

One of these men gets a job to clean up and bring the garden into good trim. He sets to work, hacking away at every tree and shrub which he sees in the place, little thinking and never caring that he is doing a vast deal more damage than good; his aim is to reduce every tree, plant and shrub to his idea of beauty of form. He shows no mercy to the Lilac-bush, profusely loaded on *the ends* of its last year's shoots, with its purple buds of promise, each pregnant with a glorious thyrsus of flowers, and which, if only let alone for a few more months, would have presented a magnificent appearance, with its profusion of bloom, and have equally delighted with its exquisite fragrance.

Alas! this tree, with others of like character, which would have been the pride for a time of the neatly-kept garden, until other beauties could follow, is rudely trimmed into sugar-loaf form, and when May arrives is freshly clothed in new green foliage; but the lady of the house looks in vain for the flowers, although the gardener has confidently assured her that her shrubs would certainly bear flowers in the spring; he really not knowing that he had mercilessly shorn the shrubs of *all* their flowering buds, and cast them on the rubbish-heap, and that renewal was entirely out of the question until the next season. Thus, the proprietor becomes disgusted with the shrubbery, and it is cast out of the premises, discarded as worse than useless.

However, this state of affairs is rapidly passing away. We have some very good jobbing gardeners around San Francisco, and any one needing the services of one, can hear of such of any of our reliable nurserymen, who certainly will not recommend one of the incompetents, although I will admit that there are very many of them about the city who are unfit even to do farm work.

Snowballs, Lilacs, Spireas, etc., should neither be pruned in the spring nor in the winter season. They make their new wood in June, and after that growth they set their flower-buds on the *ends* of nearly every young shoot. In the fall, they shed their foliage, and the buds then commence gradually to swell in our mild climate; they remain longer dormant in a country where there is snow and frost. An experienced eye will always discern the difference between a leaf and a flower-bud. Whatever trimming is needed should be done immediately after the flowering, and they should only be *thinned out* during the winter months. If this rule is followed out, the reward to the cultivator will be a rich crop of beautiful flowers.

HYACINTHS IN SPONGE.

Charles Reese, of Enderby, Maryland, gives the *Country Gentleman* the results of an experiment which he made last December, in growing Hyacinths in *sponge*. Remembering the slow growth of the bulbs in glasses, often not coming into bloom until near spring, he pondered whether there is not some substance in the great laboratory of nature more closely resembling the soft, warm bosom of the earth, than the hard, cold glass. The sponge suggested itself to his mind as possessing just the qualities required—"Soft, warm, and yielding; power of capillary attraction perfect; porous, admitting freely the fruitful atmosphere through a thousand tiny apertures; a powerful absorbent and evaporator of moisture; and besides all this, an animal substance, and doubtless filled with nitrogenous matters, which, after dissolving in water, will act as fertilizers to plants, or if they be not there in sufficient quantities, they may be placed in the water with the same result as liquid manure."

He took a large sponge, made incisions about an inch deep, and two long, inserted bulbs in them, put the sponge filled with bulbs in the top of a large vase, and filled the vase by pouring water through the sponge until about one-half the sponge is below the water. The water was slightly warmed, and being kept in a warm room, was not allowed to become cold.

"In two or three days the bulbs began to shoot their bright green spires upward, giving promises of success, and in two or three weeks they were five or six inches high. About this

time, in order to hide the unsightly appearance of the sponge, I scattered a few thimblesful of rape seed over the surface, between the bulbs, which sprang up almost immediately, and covered it entirely with a fine moss-like mantle, adding greatly to the beauty of the experiment.

"Desiring to give the knowledge and usefulness of the discovery and the enjoyment of its beauty, I now had it taken to my store in town, where it soon became an object of interest to great numbers of ladies, who watched its progress almost daily, until the bright flowers, more radiant than 'Solomon in all his glory,' unfolded their shining petals, filling the air with fragrance, and astonishing every one with their unusually large size and perfect form.

"The experiment was pronounced a complete success."

Mr. Reese does not say just how long after planting they first began to bloom, but probably within a few weeks. We would advise every lady reader to try this cheap and simple experiment.

Value of Straw for Feed.—It has been calculated by actual analysis that twenty pounds of straw and four pounds of wheat bran contain as much nutriment as twenty pounds of good hay. The only difference, if there is any, is in the digestion of the food, which is about equal when the straw is chopped and wetted for a short time and the bran mixed with it. When hay is very cheap, straw can be saved by carefully stacking through a series of years. It is most valuable, of course, when hay is high and grain is cheap; then, by feeding grain, which is richer than hay, with straw, which is poorer, we can supply a food which combines all the requisites to animal heat and growth.

ON THE PHOSPHORESCENT LIGHT OBSERVED ON SEVERAL PLANTS.

BY DR. H. BEHR.

For several years past, on various occasions, some friends and myself have observed a sheen of white phosphorescent light on the cymoid-inflorescence of *Ozothamnus sp.*, an Australian everlasting of arborescent growth. In daytime, the cymoid-inflorescence is of a rather dull milky-white; on dark still nights, not on every night, the same inflorescence emits a peculiar pale light, that makes it distinctly visible when everything else is enveloped in darkness. This light very much resembles that emitted by decaying wood, but is of a different origin; evidently being produced by some vital or physiological, not by a chemical process of decomposition.

Only once I have witnessed a similar phosphorescence in a living plant. It was on a patch of the *Schistostega osmundacea*, a little moss well known by this peculiarity to the guides in the Hartz Mountain. It was in a wild recess of the Bodethal, that even in daytime looks more like a Mexican barranca than a tame German valley, where it was shown to me on a dark night, shedding its pale spectral light in isolated patches on the rocky wall which towered to our right.

If the light exhibited by some Mucedines and Boleti is of the same origin, or if it is a product of a peculiar decomposition, I am not able to discuss. It may be that all these processes are of the same nature as the light of Scolopendia electrica, and many marine animals.

The phenomena which I am about to mention, I have not witnessed myself. I enumerate them as they are reported, but think that one part of them is of a

different origin; another merely based on optical illusion.

1. *Dictamnus albus.*—Several observers coincide in the description of this light, comparing it to electric sparks, under favorable circumstances enveloping the whole inflorescence of the plant. The Himalaya species of Dictamnus is said to possess this peculiarity in a considerably higher degree, so that on dark nights the bases of forest trees are lighted up by the shining sparks of an apparently burning bush.

In these cases it is evidently the ætheric oil contained in the glands that cover the whole spike of the inflorescence. The exhalation of this inflammable substance surrounds the plant, gets lighted by unknown causes, and burns away without in the least injuring the flowering stem whence it was produced. The authors who describe the phenomena state, at the same time, that by approaching a light to the flowers, the phenomena may be sometimes produced on nights when nature herself did not light up the flowers.

Professor Schlechbendal, at Halle, described to me the sparks as resembling those produced by approaching a piece of orange peel, bent between the fingers so that the ætheric oil squirts out, to the flame of a burning candle.

2. *Calendula officinalis* (Transactions of the British Association, etc., 1843), which, however, has not been observed again. The light produced by the radial flowers of this syngenesist seems to be analogous to that of the Prothamnus and Schistostega.

3. *Tropœolum major*, the light being first observed by Linne's daughter.

4. *Papaver orientale*, observed by Gœthe. Gœthe describes the phenomenon as a bluish reflection irradiating from the flower, and reproducing the form of the same. He considers it an optical illusion—the nerve of the eye, irritated by the intense scarlet of the flower, producing the same form in the supplementary color, a greenish blue. He mentions the analogous optical illusion produced by looking at the sun, when a number of circles of the supplementary color will immediately appear, even when the eye is shut.

I have here enumerated all the cases of light produced by living plants. I have also stated my own observations, and have collected as much as I can those of others. It is evident the material is very scarce, and a collection of facts in regard to such an interesting subject is most desirable. So I invite everybody who has the good fortune to witness a phenomenon of this kind to study it carefully; and, most of all, to communicate to other horticulturists, so that no observation that may tend to throw light on the subject may be lost to science.

Restoring Faded Flowers.—Place the flower in a small empty tea-cup or scent-bottle. Half fill a saucer with water, in the centre of which place the cup or bottle containing the flower, over which invert a tumbler the top of which rests in the water, covering the flower in the cup and excluding the air. The effect is surprising; in a short time the faded flower will revive, the color return into the petals, which quickly expand, and the scent returns as powerfully as when the flower is first plucked. Care should be taken that the flower does not come in contact with the sides or bottom of the inverted tumbler. I have supplied a method, the surprising efficacy of which any one can prove. A wiser head than mine can perhaps supply me with the cause of this effect.—*Flora, in London Field.*

PLAIN DIRECTIONS FOR COLLECTING ALGÆ.

BY DANIEL C. EATON,
Professor of Botany in Yale College.

The following notes are printed for the use of those persons in any part of the American continent who are willing to help the cause of natural history by making collections of sea-weeds and sea-mosses, but are as yet uninformed as to the modes of collecting and preparing their specimens.

Of Where, When, and How to Collect.—After a heavy gale blowing on the coast, almost any beach of sea, gulf or bay, will be covered with algæ, often in great quantities, coarse and fine, black, red and green, in entangled masses. Such heaps should be carefully examined as soon as possible after their formation, or else the more delicate kinds will be quickly destroyed by decay.

At extreme low water, the sea will leave tide-pools among rocks, or sometimes in the sand, and by wading in these pools many sorts may be obtained. The rock-pools with clear water and some shade from the rocks will generally yield the finest specimens. Old buoys, piles, wrecks, etc., afford good resting-places for sea-weeds. In quiet weather, a small dredge worked from a boat, in water from one to fifteen fathoms deep, will often bring up varieties not to be obtained in any other way. A strong fishing-line with coarse hooks will bring them up from the bottom also. A seine left a day or two in the sea, as a pound-net, for instance, will catch many algæ which were floating in the water.

The collector ought always to have a light hand-net—a bag of mosquito-netting stretched on a brass-hoop of 8 or 10 inches diameter, and secured to a good six-foot staff, is very convenient—a light basket containing several quart or pint preserve-jars, a few smaller wide-mouth jars, and perhaps a pair of brass forceps and a pocket magnifier.

The coarser sorts may be put in the basket, and the finer ones in the jars, keeping the latter filled with clear sea-water. It is well to wash each specimen clean when first obtained, so that the collection taken home may be in good order. Very rare or delicate specimens should be put separately into the smaller bottles. Care should be taken to get the *whole* plant, if not too large; and if it be very large, to cut out for preservation the root or "holdfast," and portions of the stem and other parts of the plant.

The most careful collectors will note also the kind of place where the plant was obtained, whether on rocks, piles, floating, or growing on coarser varieties.

Of Preserving the Coarser Sorts.—These should be shaken a little, loosened or spread out a little, but never washed in fresh water, and then dried in the air. The best way is to stretch a cord in some windy, and if convenient *shady*, place, and to hang the specimens on the cord. The flat-leaved forms, however, dry to best advantage if spread out on coarse papers and laid on a board. They should be protected from the dew at night, or brought under cover. In this way, a day or two will dry almost any sea-weeds, and, as the salt remains in them, they will keep for years, and may be easily soaked out and mounted on paper at any time. This rough-dried collection should be packed in boxes, and if the specimens pack too closely, twigs may be placed among them; if not closely enough, a slight sprinkling will make them so pliable as to pack nicely. Such sea-weeds, however unsightly they may be in this condition, may eventually be made into

excellent specimens. Corallines and other stony algæ may be wrapped up in paper, and will keep so indefinitely.

Of Mounting the More Delicate Sorts on Paper.—Dr. Harvey has so well described this process, that the following description of it is taken from one of his works on algæ. "The collector should have at hand a couple of large flat white dishes, filled with [fresh] water, in one of which the specimens may be washed, pruned and freed from parasites, and singly introduced into the other when sufficiently cleaned. When the specimen is floated in the second dish, a piece of white paper of proportionate size is to be introduced under it, the branches finely displayed with a pointed instrument, a porcupine's quill or a small forceps, and the superfluous parts removed. The paper, with the specimen so displayed upon it, is then to be carefully withdrawn from the water, placed between two sheets of soft paper, and subjected to pressure, like other plants. Thin calico [white muslin] rags are useful to lay immediately over the specimens, between them and the soaking paper, as the cloth is less likely to adhere to their surface than paper, and if it does adhere, is more readily removed without injury. After the first six hours, and again once every day till the specimens are fully dry, the wet paper must be changed, and then it will be found, in most cases, that the specimen has adhered to the white paper on which it was displayed. The smaller kinds will be sufficiently dry in forty-eight hours. A very little practice will make the process easy, and the trouble will be repaid by the beauty and interest of the collections which will soon be formed." To the above it may be added, that the firmer red varieties will improve in color for several hours steeping in fresh water, but many of the most delicate must be mounted from salt water only, else the color, and sometimes even the structure of the plant will be destroyed. The best as well as the cheapest kind of press is two good pine boards, about twelve by eighteen inches, and half a dozen bricks separately tied up in wrapping paper. Too great a pressure leaves a print of the cloth on the specimen, and renders it also more difficult to revive a fragment for microscopic examination.

For ladies' albums, algæ are often mounted on fine Bristol board or large wedding cards, and some beautiful specimens are pressed between layers of white flannel—half cotton is best—without the use of either muslin rags or soaking paper.

A solution of one part crystalized carbolic acid, ten parts pure glycerine, and forty parts water, will preserve algæ a long time, and such specimens are even better for study with the microscope than specimens on paper.

It remains only to add that the writer of these notes will receive with thanks any collections, large or small, from all parts of the world, and will endeavor to name all American specimens sent to him, if so desired.

New Haven, Conn., Nov., 1872.

A report comes from Cuba that a sugar-planter there has doubled the value of his estate by the use of a steam-plow introduced in 1868. What was formerly almost an impervious tract, the effect partly of nature and partly of inefficient cultivation, has been reduced to a porous soil. Two thousand acres of strong clay intermixed with stones of all sizes, and resting for the most part on a stone bottom, are now in fine tilth to an average depth of eighteen inches.—*Exchange.*

CULTURE OF HOUSE-PLANTS.

BY F. A. MILLER.

"What plants can I cultivate in the house," is a question which I have had to answer very frequently, and scarcely have I completed my suggestions, when I am told that this or that plant has been treated with a great deal of care, but has failed to thrive.

There are only a certain class of plants which can be expected to thrive well in the house, and there are certain rules which necessarily must be observed in cultivating them, or disappointment must follow. In many cases I have found, also, that too much is expected of a plant, in the way of growing and flowering.

From my own observations and experience, I can strongly recommend the following flowering plants, as the best adapted for the house, or to use a more fashionable term, window gardening:

Primula sinensis (Chinese Primrose), of which very excellent varieties can now be obtained in our floral establishments, is one of the most charming flowering plants under cultivation. It will flower spontaneously from six to nine months in the year, and, if transplanted in good time, will flower well all the year round. Its foliage is always very ornamental. The colors are pure white, delicate pink, red, violet and striped; single and double. During the winter months, when they flower most profusely, they should be placed in a warm and sunny position; and watered, perhaps, once a week moderately. The soil should be porous and always moist, but never wet. When the flowers begin to fade, they should be removed, in order to throw all the strength of the plant into the new flowers, which will make their appearance every day or two. After the plant has produced flowers in profusion for two or three months, a little nourishment may be given, in the form of liquid guano once a week, or by liquid horse-manure at intervals, or, indeed, any other fertilizing material. However, I have seen Primroses doing well for one year without any of these stimulants. Under very ordinary treatment, they will do exceedingly well. I would recommend for a small collection one red, one white and one fern-leaved variety. The double Primrose is of the most pleasing character, the flowers lasting a long time, and they are produced well above the foliage; the habit of the plant leaves nothing to wish for. The double variety, however, is as yet exceedingly rare with us, in California, and is not offered for sale by our florists; another year or two, however, will make plants of it more plentiful.

The *Cyclamen* is another of the charming house-plants, which hardly ever fails to produce graceful little nodding flowers upon each stalk, which it sends forth in profusion. The Cyclamen is one of my favorites. From seed sown in the spring of 1872, I had fine flowering plants in the month of December. The flowers are of various shades, from pure white to a rich purple, some being white with purple centre, others white-blotched and dotted with purple. Under ordinary treatment, Cyclamens will flower here very profusely from December to May. The Cyclamen is a bulbous plant, and, like other bulbs, should have a season of rest, when its leaves should be allowed to drop off for want of water, which should be given only just enough to keep the bulb from shriveling. This resting-time may be extended from June to November, when, by a more liberal supply of water, it will again begin to assume its activity. During the

time of rest its place may be supplied by some other plant. The Cyclamen should be kept moderately moist, a little less so than the Primrose; it prefers partial shade, and may be overshadowed, to some extent, by other plants. For a small collection I would recommend one white and one purple flowering Cyclamen. Our florists have a limited supply of them on hand.

Before enumerating any more plants for the house, I would like to say a few words in regard to the room in which it is intended to cultivate these plants. There are three conditions necessary for the successful growing of plants: warmth, air and moisture; of these, some plants require more, others less, but to some degree they must have a liberal supply of all these agents. There seems to be less difficulty in supplying warmth and air, than in affording the requisite amount of moisture; which, in some cases, is supplied insufficiently, but in most cases too abundantly, and particularly so during our winter months. While some plants are satisfied with moisture applied to their roots, we find that others can not exist without a certain amount of moisture in the atmosphere. In the rooms of our cottages or residences, we can not supply a moist atmosphere, and, therefore, we can not cultivate plants there which are in need of this peculiar agent. Yet we may take plants once a week out of the room, and give them a good showering with the watering-pot, which washes off the dust, and supplies to a small degree that moisture, which the atmosphere of the room lacks.

[To be continued.]

Loreto oranges have made their appearance in our market, and are sold at one dollar per dozen.

FERNS, AND FERN CULTURE.

A correspondent writes us for some information concerning ferns, and says, "Mention a few of the best from Fiji." We must inform our respected correspondent that to mention anything like a list of the best varieties found in the Fijis would take not only some time, but considerable space. When we state that the collectors for the Royal Society investigated and collected over 500 species in those numerous islands, he will at once see that it is a somewhat formidable task. However, amongst others that struck ourselves as particularly charming were Todea Wilkesiana; this was named by Mr. Brackenbridge in compliment to Commodore Wilkes. It usually grows not more than three feet or four feet high, and hence has been described as the "little-tree fern;" at the same time specimens of it have been known to attain seven feet, and exhibit a number of crowns. The stem is slender, and the fronds bipinnate, some two ft. in length, having the ultimate pinnules thin; it is not, however, so finely cut as Todea Hymenophylloides. Another very distinct and handsome Fijian fern of singular appearance is Diclidopteris augustissima; this usually grows upon the Tahitian chesnut epiphytically. It has narrow thin, grass-like fronds, varying from one ft. to six inches in length, very handsome. Davallia Fejensis is a species with highly decompound fronds, one ft. in height, and having extremely narrow segments. A species of Hemonites, H. lanceolata, and Syngramme pinnata are very handsome, particularly when seen as old plants. Three fine species of Cibotium, one of which has the stipes densely clothed with beautiful golden silken moniliform hairs; in fact, these hairs are so abundant that they have been collected as an article

of commerce, and used for stuffing cushions, etc. A handsome creeping species is Polypodium pellucidum.

Amongst New Zealand ferns worthy of particular notice is the beautiful Loxsoma Cunninghamii, which was discovered on the Keri-Keri River, Bay of Islands. This fern has broad, triangular decompound fronds, two ft. to three ft. high, glaucous, with sori intermediate, in character between Trichomanes and Davallia; also the very beautiful and distinct Todea superba.

To cultivate ferns successfully a knowledge of the conditions under which they grow in their native haunts is really necessary, and by imitating those conditions as far as practicable, the greater will be the success eventually attained. Irregular surfaces are, as a rule, the best adapted, whether natural or artificially formed, many ferns being truly rock plants, and therefore highly suitable for rockery cultivation. By judicious arrangements from ordinary level positions, their delicate hue and elegant form of outline can be seen to much greater advantage, the upper surface of their fronds being generally presented to the eye more fully. In planting ferns great consideration should be given to secure a site having a sufficient amount of shade and moisture. A south aspect, if possible, should be secured. In this climate we have found a sunk and shady tea-tree house highly suitable, erected sufficiently high for tree ferns; in such situations the plants are less exposed to the action of climatic vicissitude. Considerable taste may be displayed in arranging such rustic houses for fern culture, such as miniature valleys, with undulating surfaces gradually rising on either side. The soil best suited to the whole group is good fibrous peat, rough and full of vegetable matter, which should not, on any account, be sifted; abundance of sand can, however, be well mixed with it.

The style of arrangement having been decided upon, the next question is to place the plants in their permanent positions satisfactorily, for it is very essential to provide positions for each individual plant so that there is no injurious interference with its neighbor either by root or foliage. Different species of Lycopodium should be freely used for filling up, being, as they are, terrestrial and epiphytal, hanging from boughs like various cords. The magnificent Selaginella lævigata quickly climbs and becomes a lovely object; numbers of others are also very charming, having extremely delicate tissues, and delighting in deep shade.

In forming rock-work, or similar material for a rustic mass, over which ferns are intended to grow, it is always advisable to select, if possible, rock or stone of a porous consistence, and with rough and ragged surfaces. It is quite unnecessary to be particular in the selection of stone of handsome appearance or fine color, because if the ferns are intended to flourish and properly thrive, the material, of what nature soever, will become speedily obscured by luxuriant growth; therefore, even old brick work, or conglomerated burnt glass bottles, answer well, the glass for the bottom, and the old brick work for the upper part, which is valuable in affording a moist surface for their tender rhizomes to cling to. After the plants have once become established, as few changes should take place as possible, every encouragement being given to their growth, so that a decorative effect may be secured as quickly as possible.

It is advisable, and at the same time adds considerably to the effect, to plant

along the edges and on the stone projections such plants as sedums, saxifragas, sempervivums, iberis, Alysum saxatile, Arabis alpina, and others of similar nature and habit. It is always beneficial to choose the vicinity of water if any exists, and if not, an artificial piece of some kind should be improvised if possible; this being secured, a number of subaquatic and bog plants, also water lilies, etc., may be grown to perfection. If the space at command is extensive, interesting clumps, or a glen, may be formed by the judicious introduction of plants conspicuous for their large and beautifully-marked foliage.

The adaptability and suitability of ferns as hanging basket plants must not be overlooked. Nothing imparts more grace and elegance to rooms and fernerie than well-managed hanging-baskets of ferns. During hot weather they impart a delightfully cool appearance, the greatest drawback being that they require frequent changes; the species having arching feathery fronds, make the best effect, and among suitable kinds, we name Aspidium exaltatum, Polypodium aureum, and Woodwardia radicans. The lower part of the basket should be covered with Lycopodiums. We do not recommend many of the handsome wire baskets in vogue, for this simple reason, that if the plants are well done, that is, successfully grown, the whole of the wire-work is covered, and hence of necessity hid, so that handsome wire-work is lost, and the expense quite unnecessary. Then again elaborate wire baskets are generally much more difficult to fill than plain ones. The bottom of the baskets should be lined with green moss, and two or three ferns planted therein according to size, Lycopodiums or some creeping or trailing plants round the edges to hang down carelessly, is all that is required for forming elegant and tasteful hanging baskets. A supply of these should be kept in the fernery, so that there are always some ready to change when required. With regard to watering: it is somewhat difficult to lay down any distinct rule regarding this operation; neither too dry nor too wet must be the standard. If kept too wet, the roots soon sodden, and if too dry, the plants quickly speak out by becoming rapidly a bad color. Their successful culture simply depends on proper soil, careful watering, placing in a quiet, moist atmosphere, keeping down the temperature in summer by shading, and avoiding as much as possible currents of dry, hot winds. Ferns are at times attacked with insect pests, the soft membraneous kinds being the most subject. As a rule, fumigation with tobacco is the best preventative and curative, for an occasional fumigation destroys the winged male insect of all the Coccos family. Syringing must be resorted to for mealy bug, and scale must be loosened by the use of a soft brush, and afterwards receive a syringing. With care and attention ferns may be grown very successfully in Victoria, and without any very great expense they will ever be a source of enjoyment, and the more attention and care are devoted to them, the greater will be the success and enjoyment derived therefrom.—*Melbourne Times.*

Eastern quail, which were turned loose on a farm near Cloverdale, have so multiplied that their notes are heard over the adjacent foothills. It is supposed there are 200 or 300 of them.

The corn crop this year is the largest ever gathered—a billion and a half of bushels.

PREPARING SKELETON LEAVES.

A correspondent of *Science Gossip*, referring to the tediousness of the ordinary way of preparing skeleton leaves, which taxes patience, and which most experimenters give up in despair before getting through with it, describes a new method, which is easy, cleanly, and takes but little time. It is as follows:

"First dissolve four ounces of common washing-soda in a quart of boiling water, then add two ounces of slacked quicklime, and boil for about fifteen minutes. Allow this solution to cool; afterward pour off all the liquor into a clean saucepan. When the solution is at boiling point, place the leaves carefully in the pan, and boil the whole together for an hour. Boiling water ought to be added occasionally, but sufficient only to replace that lost by evaporation. The epidermis and parenchyma of some leaves will more readily separate than others. A good test is to try the leaves after they have been gently boiling for about an hour, and if the cellular matter does not easily rub off betwixt the finger and thumb beneath cold water, boil them again for a short time. When the fleshy matter is found to be sufficiently softened, rub them separately but very gently beneath cold water, until the perfect skeleton is exposed. The skeletons at first are of a dirty white color; to make them of a pure white, and, therefore, more beautiful, all that is necessary is to bleach them in a weak solution of chloride of lime. I have found the best is a large teaspoonful of chloride of lime to a quart of water; if a few drops of vinegar are added to the bleaching solution, it is all the better, for then the free chloride is liberated. Do not allow them to remain too long in the bleaching liquor, or they will become too brittle, and can not afterward be handled without injury. About fifteen minutes is sufficient to make them white and clean-looking. Dry the specimens in white blotting paper, beneath a gentle pressure, after they are bleached.

"Simple leaves are the best for young beginners to experiment upon; the vine, poplar, beech, and ivy leaves make excellent skeletons. Care must be exercised in the selection of leaves, as well as the period of the year and the state of the atmosphere when the specimens are collected, otherwise failure will be the result. The best months to gather the specimens are July and August. Never collect specimens in damp weather; and none but perfectly matured leaves ought to be selected."

ARRANGING FLOWERS IN BEDS.—In arranging flowers in beds, the principal things to be avoided are: The placing of rose-colored or red flowers next to scarlet or orange, or orange next to yellow, blue next to violet, or rose next to violet. On the contrary, the following colors harmonize: white will relieve any color (but should not be placed next to yellow), orange with light blue, yellow with violet, dark blue with orange yellow, white with pink or rose, and lilac with yellow. By observing these rules the amateur may have his flower borders vie in beauty and arrangement with those of greater pretensions, and even surpass many of them. Nothing adds more to beautify home than a well arranged flower-bed of rare flowers.—*Southern Agriculturist.*

THE man who produces the largest area, cultivated with the least expense, and increases the fertility of his soil, is the most scientific farmer, however ignorant he may be of the fact.

Editorial Portfolio.

THE HORTICULTURIST.

In commencing a new volume, it appears consistent that we should address a few lines to our subscribers, intimating to them the course we shall endeavor to pursue, in providing material for our Magazine.

From our observations during several years of previous intercourse with many of the florists of the Pacific Coast, we have felt the necessity for collecting and condensing the experience of those who have made the occupations of Horticulture and Floriculture their specialties, and the more fully has this necessity been impressed upon us by the assurances of these experts, that so different are the habits of familiar plants to them, in the climates and soils of California, from their experience with them in other parts of the world, that only by careful observation have they recovered their control in the management of them.

To new arrivals, whether amateur or professional, these peculiarities are very embarrassing, and, if our labors shall result in the dissemination of useful information in the above delightful pursuits, we shall attain all we seek. Some of the most experienced and successful among our florists are cheerful contributors to this section.

Kindred to Floriculture is the science of Botany, and we have the cordial assurance of aid, in this department, from several of the most eminent botanists in the Pacific States—while in the departments of Arboriculture and Pomology, other able pens are associated with us.

Much interest is at the present time felt, both in the East and in Europe, regarding the Marine Botany of this coast, and we may here remark that our Marine Flora are so widely different from those of other coasts, that they add peculiar interest to the subject. And here, again, we are assured of efficient aid—and we anticipate making our Magazine the medium of exchange of observation on this very interesting study. We have also received the most cordial co-operation from several eminent Entomologists, whose observations, in connection with Horticulture, are esteemed of very great importance among practical men.

We have made arrangements for a series of descriptive chapters on the "Rural Homes of California," from the very able pen of Mrs. Professor Carr, illustrated by photographic pictures by Mr. C. E. Watkins; and had intended that the first essay, having for its subject the princely mansion, farm and ornamental grounds of the Hon. Thomas H. Selby, in San Mateo County, should have made its appearance in this, our first number of the third volume of our Magazine; but the unpropitious state of the weather, at the time when the artist should have operated, has necessitated us to withhold it until next month.

In the *Popular Science Monthly*, for the present month, we find a highly interesting article on "The Spontaneous Movements of Plants" by Alfred W. Bennett, M. A., well worthy of careful perusal, very scientific, curious and instructive. And also a more practical article on "the Cultivation of Wild Flowers," by Professor Samuel Lockwood, containing many useful suggestions. This is indeed a subject demanding especial attention from our California botanists, who are too frequently content with depositing dried specimens in their *hortus siccus*, instead of seeking to civilize their acquisitions, many of which are entirely new to the rest of the

world, and are eagerly sought after by European florists. We earnestly call the attention of our California friends to this study—and to all we say, help us with your observations; write to us to our P. O. box 2275, San Francisco, and, if any letter calls for an answer, we will do our best to give a satisfactory one.

REPEAL OF THE LATE OBNOXIOUS POSTAL LAW.

We are glad to announce that the late obnoxious ruling, relating to seed-packages, etc., has been abrogated, to take effect immediately, so that farmers and others, living remote from cities, can now once more obtain direct, by mail, such seeds as they may need, cuttings and small plants from nurserymen; and also seedlings, of those who make a specialty of growing deciduous and evergreen trees.

GUNPOWDER FOR TENT CATERPILLARS.—A correspondent at New Hamburgh, Duchess County, writes us that he keeps his apple-orchard clear of tent caterpillars by shooting into their nests with loose powder. The gun—any sort of smooth-bore will do—is to be held within a foot of the nest, and the charge of powder to be used without a wad or any ramming down. He claims that it is better than burning with a swab and kerosene, because it does not injure the tree, and is most expeditious, and more effectual. In most cases not a trace of worms or nest is left. He goes over his trees each spring and fall, and a couple of hours are sufficient for several hundred trees. Boys enjoy work of this kind, but to catch worms by hand, or to burn, or twist them out, and then stamp them, is disagreeable labor.—*Country Gentleman.*

AN ADDRESS BY THE UNITED STATES CENTENNIAL COMMISSION.

TO THE PEOPLE OF THE UNITED STATES:

The Congress of the United States has enacted that the completion of the One Hundredth Year of American Independence shall be celebrated by an International Exhibition of the Arts, Manufactures, and Products of the Soil and Mine, to be held at Philadelphia, in 1876, and has appointed a Commission, consisting of representatives from each State and Territory, to conduct the celebration.

Originating under the auspices of the National Legislature, controlled by a National Commission, and designed as it is to "Commemorate the first century of our existence, by an Exhibition of the Natural Resources of the Country and their development, and of our progress in those Arts which benefit mankind, in comparison with those of older nations," it is to the people at large that the Commission look for the aid which is necessary to make the Centennial Celebration the grandest anniversary the world has ever seen.

That the completion of the first century of our existence should be marked by some imposing demonstration is, we believe, the patriotic wish of the people of the whole country. The Congress of the United States has wisely decided that the Birth-day of the Great Republic can be most fittingly celebrated by the universal collection and display of all the trophies of its progress. It is designed to bring together, within a building covering fifty acres, not only the varied productions of our mines and soil, but types of all the intellectual triumphs of our citizens, specimens of everything that America can furnish, whether from the brains or the hands of her children, and thus make evident

to the world the advancement of which a self-governed people is capable.

In this "Celebration" all nations will be invited to participate; its character being International. Europe will display her arts and manufactures, India her curious fabrics, while the newly opened China and Japan will lay bare the treasures which for centuries their ingenious people have been perfecting. Each land will compete in generous rivalry for the palm of superior excellence.

To this grand gathering every zone will contribute its fruits and cereals. No mineral shall be wanting; for what the East lacks the West will supply. Under one roof will the South display in rich luxuriance her growing cotton, and the North in miniature the ceaseless machinery of her mills converting that cotton into cloth. Each section of the globe will send its best offerings to this exhibition, and each State of the Union, as a member of one united body politic, will show to her sister States and to the world how much she can add to the greatness of the nation of which she is a harmonious part.

To make the Centennial Celebration such a success as the patriotism and the pride of every American demands, will require the co-operation of the people of the whole country. The United States Centennial Commission has received no Government aid, such as England extended to her World's Fair, and France to her Universal Exposition, yet the labor and responsibility imposed upon the Commission is as great as in either of those undertakings. It is estimated that ten millions of dollars will be required, and this sum Congress has provided shall be raised by stock subscription, and that the people shall have the opportunity of subscribing in proportion to the population of their respective States and Territories.

The Commission looks to the unfailing patriotism of the people of every section, to see that each contributes its share to the expenses, and receives its share of the benefits of an enterprise in which all are so deeply interested. It would further earnestly urge the formation in each State and Territory of a centennial organization, which shall in time see that county associations are formed, so that when the nations are gathered together in 1876, each Commonwealth can view with pride the contributions she has made to the national glory.

Confidently relying on the zeal and patriotism ever displayed by our people in every national undertaking, we pledge and prophesy, that the Centennial Celebration will worthily show how greatness, wealth and intelligence, can be fostered by such institutions as those which have for one hundred years blessed the people of the United States.

JOSEPH R. HAWLEY,
President.

LEWIS WALN SMITH,
Temporary Secretary.

COLLETIA BICTONENSIS.—This plant is highly commended in England as a hedge plant. It is said to have originated in the arboretum of the Baroness Rolle. Sir Wm. Hooker named it, and considered it a distinct species of a very useful and interesting order of plant. It is easily propagated by cuttings. It is proper to say, however, that the editor of the *Cottage Gardener* doubts if it can be used for hedge-making, if the statement of Sir William Hooker that it is not a hardy plant, be a true one. It is asserted that its leaves are very fleeting, and only to be seen on the very young branches and spires. The branch-

es are of pea-green color, arranged in a peculiar decussate manner, with sharp, hard, brownish-red spines at their ends; the petaloid floral covering is waxy-white, with a greenish, substantial looking base formed by the fleshy ring found at the bottom of the tube, and which is peculiar to the Colletias.—*Moore's Rural New Yorker.*

WOODWARD'S GARDENS.

We are pleased to notice that the Conservatories are receiving considerable accessions of valuable plants, and that a thorough renovation is in progress. The Marine Aquarium requires time and much skillful attention to get it into working order, but its ultimate success is undoubted, notwithstanding some delay. It will very shortly be thrown open for public inspection. Many curious specimens have already been obtained.

REPORTS OF SOCIETIES.

State Agricultural Society.—The Directors of the State Agricultural Society held a meeting at the office of the Secretary on Saturday evening, December 14th. It was resolved that the annual election for officers of the society should take place January 22d. Five proposals for the renting of Agricultural Park for three years were received, as follows: Dana Perkins offered $5,100 per year; D. D. Whitbeck, $4,200; Robert Allen, $4,800; H. Eldred, $3,300; A. A. Wood, $5,500. The lease was awarded to Wood. Sundry bills were audited, and the meeting adjourned.

It is said that a spoonful of sulphur to a ton of hay will prevent it from becoming musty in the stack or bale.

OUR EXCHANGE TABLE.

We have many excellent periodicals from time to time laid on our table, full of valuable information, and of far more general service than the majority of the trashy literature of the day. We will notice them as they present themselves, and will recommend them to the perusal of our readers. We have only space at the present time for the few following:

The *Gardener's Monthly*, edited by Thomas Meehan, published by Brinkloe & Marot, Philadelphia, Pa., $2 per annum; specially Horticultural and Floricultural.

The *Horticulturist*, a Journal of Rural Life, etc.—a monthly magazine—published by Henry S. Williams, New York. $2,50 per annum.

The *Overland Monthly*, published on the first of each month, by John H. Carmany & Co., 409 Washington Street, San Francisco, Cal. This is *the* California magazine.

The *Ladies' Floral Cabinet*, monthly, published by Henry S. Williams, of New York. 75 cents per annum—as good as it is cheap.

The *Gardener's Chronicle*, an excellent weekly journal, published by William Richards, 41 Wellington Street, W. C., London, England. $6 per annum.

The *California Farmer*, published by Warren & Co., San Francisco, Cal. $4 per annum.

Pacific Rural Press, by Dewey & Co., San Francisco. $4 per annum—an excellent publication.

Orange culture is extending in Louisiana, and it may and should be extended over all the low valleys and hills of California.

NOTICE OF BOOKS, ETC.

The *Overland Monthly*, for January, 1873. Thanks to the publishers, the first monthly part of the Tenth Volume of this ever-welcome periodical now lies before us. We have been tempted to devote more time than we at first intended, to look through it, and we have been well entertained. This number fully keeps up the prestige already established. The "Journey in a Junk," and the "Colorado Desert," are interesting. The "Etc." are piquant, and the items on "Current Literature" are liberal and enlightened. This is a magazine well worthy of support. Published by John H. Carmany & Co., 409 Washington Street, San Francisco.

The *Rural Alabamian*, a Southern magazine of Progressive Agriculture and Improved Industry; published by C. C. Langdon & Co., Mobile, Alabama, at $2 per annum. This appears to be an excellent agricultural work, and should be well patronized. It is not only replete with valuable information for the farmer and horticulturist, but also contains abundant useful instruction of a general character.

Colt's Illustrated and Family Magazine: Published by the Colt Publishing Company, New York and Albany. $2.50 per annum—a very readable magazine.

CATALOGUES, ETC.

It will give us great pleasure to notice the Catalogues of our friends, the nursery and seedsmen, if they will favor us by forwarding them to our P. O. box, 2275, San Francisco.

We were much pleased with the set of Catalogues from the nurseries of Messrs. E. G. Henderson & Sons, Wellington Road, St. John's Wood, London, N. W., England. They are very full and exhaustive, and contain many varieties which we should like to see particularized in the catalogues of our own nurserymen.

Also, from O. Barras, North Fairfield, Ohio, a useful general Catalogue.

FAVORS RECEIVED.

We have received the monthly report of the Commissioners of Agriculture, for November and December; it contains many valuable statistics and much other instructive and interesting matter.

From C. H. Green, Esq., Secretary National Agricultural Congress. The very able address of M. F. Maury, LL. D., on the Objects of, and the Benefits to be derived from, an International Conference to be held among the leading agriculturists and meteorologists of different countries.

NEW AND RARE PLANTS.

Callicarpa purpurea.—A shrub as yet but little known. It grows into a thick bush, about two or three feet high; the flowers are borne in the axils of the leaves; they are small and of a delicate pink color, numerous enough to be quite attractive; small berries about the size of small red currents appear after flowering, then change in September to a pearly violet color, and continue to attract attention *through the winter.*—*Gardeners' Monthly.*

Salvia Taraxacifolia is a native of the lower slopes of the Greater Atlas, and was discovered there by Mr. Balans in 1867.

It has been seen by Dr. Hooker growing in broad patches, along the base of the Great Atlas, Africa, presenting a

very beautiful appearance. The flower is of a pale pink.—*Botanical Magazine.*

Lachenalia tricolor.—*L. tricolor*, according to Mr. Baker's determination, is a very variable plant, including the following forms, *L. quadricolor*, *L. luteola*, Jacq.; and *L. aurea*, Lindl., of which the last is by far the most elegant, and is further remarkable for its bright color and the waxy texture of its flower.

It flowered in the Royal Gardens, Kew, England, in March of 1872, from bulbs.—*Botanical Magazine.*

New Ornamental Cherry.—A remarkable sport of the May Duke Cherry, has been produced in the grounds of M. Ferdinand Messunge, of Baillonville. The leaves become narrow at the end, so as to resemble those of the peach, or even the willow. Some are eight inches in length and one inch in width; others are four inches in length, and about the third of an inch in breadth.—*Belgique Horticole.*

Roman Hyacinths are among the newly imported plants, displayed in greenhouses. They are natives of France, are both white and blue, and very fragrant.

Homorphophallus papillosus.—The French gardeners are noticing a new bulbous plant thus named, which serves as an ornament in the greenhouses from April to September. The peculiarity of this plant is, that, after its brown spathe-like flower is blown, a leaf rises up and bends over it like a helmet, and seems to protect and cover it like an umbrella, which divides into bunches with numerous pinnated leaflets of a fine green color.—*Ladies' Floral Cabinet.*

Crocus Cilicius is a native of Asia Minor, and is called one of the prettiest of autumnal crocuses. In color it resembles *Speciosus*, with smaller flowers and narrower petals.

Walking Fern (*Camptosorus ryzophyllus.*)—This singular and interesting little Fern is found in rocky woods. It grows in the almost soilless niches of rocks, or gets a sufficient foothold on their naked inequalities. It is quite rare, and during several years my searches in the woods were unrewarded with a sight of its odd little leaves, till one day, ascending a low mountain in this town, in a quiet, mossy slope of gray rock, far above my head, a company of these little "Walkers" was discovered, though it was not till sometime after any leaves were found.

The frond is simple, reticulate veined in the midst, and forked only at the margin. It is undivided, lance-shaped, with heart-shaped lobes at the base, and the apex attenuated into a long, slender acumination, that often bends over backward and takes root, giving rise to a new plant. Thus, the fern takes one step a year. I never have seen one that had stepped twice.

The faint dots are variously shaped, and scattered without order on the transverse veins, slanting, and at various angles, often in pairs and facing each other, looking something "like writing;" hence its Greek name—*Antigramma rhysophylea* of Presl. It can be cultivated in the same manner as other wild ferns, always taking care to give it a soil and atmosphere as near like its native own as possible, remembering it needs little light, much water, and to be let alone.—*Vermont Cor., in Moore's Rural New Yorker.*

Curious Orchids.—Alfred Smee, in his interesting work, entitled "My Garden," describes and figures some curious species of orchis, among which is the Orchis mascula, or man orchis, so called, because the flower has a resemblance to a little man dangling from the plant, and is cultivated more as a

curiosity than for its beauty. The Bee Orchids are very beautiful, and grow with great luxuriance under proper management. A third less showy is the Fly Orchis. The best soil for these plants is a light turfy loam.

New Calycanthus.—A writer in the *Farmer and Gardener* states that he has a white flowering variety of the *Calycanthus florida*, or common Sweet Scented Shrub. He says: "I have had these plants under cultivation several years. They are decidedly more vigorous growers than the dark variety. The flowers, which are straw-colored, are also larger and more fragrant, and bloomed through the past dry summer until frost. I do not know that they will produce the same flowers from the seed, but why should they not do so when they have preserved their original characteristies, through surrounded by the dark flowering varieties, ever since they were first known here, more than thirty years ago." If the above is true, and we have no reason to doubt it, this new variety of an old and very popular shrub will certainly be a valuable acquisition to our gardens.

New Bedding Plant.—We have received from Henry E. Chitty, Superintendent of the Bellevue Nurseries, Patterson, N. J., a specimen of a new bedding plant known as *Salvia splendens alba compacta*—or, in plainer language, a white variety of the common Scarlet Sage. The plant is similar in habit to this species, the principal difference being in the color of the flowers. We think the lovers of choice bedding plants will hail this novelty as a great acquisition. —*Moore's Rural New Yorker.*

Carbolic soap and water is recommended to destroy mildew on roses, to be applied by sprinkling.

NEW FRUITS AND VEGETABLES.

White Apple Tomato.—In the "Rural Southland" we find a tomato mentioned as new, with this name. This is its first year of fruiting, and it is declared promising. Dr. Swasey says of it: "The plant is a hardy, vigorous, drought-defying grower, and a prolific and continuous bearer—equaling in all these respects the common red and yellow plum-tomato. The fruit is of a beautiful cream-white color, medium in size, of a regular, slightly oblate, apple-shape, with a smooth, tender skin, and a flesh at once so almost melting in texture, so deliciously fruity in flavor, so devoid of that rank tomato twang that most people are not particularly partial to, so solid and so rich, that one will have to look long and wide before finding another variety that will so completely come up to the highest standard of a first-class table tomato. As a Southerner we are proud of it, because it is said to be a Southern variety—and were it not, we should esteem it as we do now, the best salad tomato in cultivation."—*California Farmer.*

WORK FOR THE MONTH.

BY F. A. MILLER.

Rain has been plentiful all over the State, and the work of sowing, planting, and preparing the fields and gardens, should not now be delayed.

Our nurserymen and florists are prepared to furnish a fine assortment of trees and shrubs, both useful and ornamental; prices are moderate, and there is abundance of room for every tree and plant, which is offered for sale. The rains having commenced rather late this season, the best time for planting is rapidly passing away, and I would urge all who wish to make improve-

ments in their grounds, to do so promptly. The California climate requires early planting.

To those who have gardens, I would suggest a general overhauling. In the first place, have all your trees and shrubs properly trimmed and pruned. Your evergreen-trees and shrubs need it, to give them a good form; your roses need it, to produce new wood and an abundance of fine flowers; after trimming, secure them well to their stakes, to protect them against our heavy winds; when all this is done, I would further suggest the application of some good old horse-manure, by spreading it over the ground, and then your gardener may go to work and trench the ground well with a spade, taking care that all weeds and the manure is well worked in below the surface.

For lawns, I would recommend a top-dressing of fresh or old manure, which should be allowed to remain upon the surface for a few weeks, in order that the rain may carry the nutritive particles into the sod, after which the remainder may be raked off. Most of our city lawns consists of made ground, which is soon exhausted, and, unless a fertilizing process is adopted, the grass can not be expected to grow uniform and thrifty.

The planting of Hyacinths, Tulips, Pæonies, Lilies, Crown Imperials, Lilies of the Valley, Amaryllis, Anemoues, Ranunculus, etc., should now be commenced. Plant, (after thoroughly preparing the soil,) in a warm and moderately dry situation; a well manured sandy loam suits them best. Pæonies may be planted in heavier soil, and they require less sun, and will bear more moisture.

The planting of seeds in the open ground should be delayed, although in this mild climate Mignonette, Pansies, Candytuft and the like, will germinate readily; but I have found that the planting of such seeds in February and March, is quite as good, and frequently much better. The ground at this time is cold and wet, and the seed is apt to lie dormant for many days, which often result in decay.

During the month of December, we had some unusually cold weather, which, in many localities, seriously injured Heliotropes, Fuchsias, Geraniums, and other soft-wooded plants. These, however, will come up again from the ground. Notwithstanding the cold weather, we notice in the northern part of the city Heliotropes, Fuchsias and Geraniums, and even Cinerarias, in full bloom in the open air.

In my garden, the following plants are now in bloom in the open ground: Verbenas, Ageratums, Stevia, Fuchsias, Heliotropes, Cinerarias, Ericas, Pansies, Pinks, Pentstemon, Cestrum, Geraniums, Polygala, Laurustinus, Myrtle, Canterbury Bell, Sollya, Roses (of which I would mention, Safrano, Daily White, Lyoniase, Hermosa, Model of Perfection, Pauline Lancezeur, Eliza Sauvage, La Sylphide, Mad. Bosanquet, etc.), Calceolaria (the shrubby variety), Solanum jasminoides, Veronica, Brugmansia, Diosma, and many others.

Greenhouses and conservatories, which are not artificially heated, have been affected by the cold and the following rainy weather. I do not provide for artificial heat, yet I have the following plants in bloom: Cyclamen, Camellia, Azalea, Primula sinensis, Torrenga, Daphne, Salvia, Jasmine, Cactus, Cineraria, Begonia, Hyacinths, Tuberoses, Hoyacarnosa, etc.

Plants in greenhouses should now be watered very moderately, and no shifting into larger pots should take place at this time. I find, that plants in com-

paratively small pots do best in winter. Give fresh air plentifully; during clear weather it may be given from nine o'clock in the morning until three o'clock in the afternoon, unless heavy winds prevail.

If your Coleus or Bigonias show rotten leaves, remove them at once.

Seeds of greenhouse plants should not be sown yet, unless bottom-heat can be given. All that should be done now is, to preserve the plants which are on hand; the propagating of any kind should be delayed until a more favorable time.

If it should be desirable to have early vegetables, Lettuce, Cabbage and Cauliflower seeds, may be sown in a frame. Peas may be planted now.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

That most excellent, healthy, and useful fruit—the Apple—is usually found in great abundance in our markets throughout the year. We obtain the early or summer apples from such warm situations as Pleasant Valley, Yolo County, sometimes as early as the months of April and May; one month later we have them from less warm localities around us, within twenty miles of the city; and, still later they are brought to us from further north, Oregon, etc. The same remarks will apply to our supplies of apples of the fall and winter varieties—though of the latter our warm, pushing climate allows but few compared with those of the eastern parts of the United States. The varieties which last with us the longest in winter are the Newtown Pippins, Spitzenbergs, Putnams, Golden Russets, Lady Apples, etc. The Newtown Pippin, no doubt, ranks highest for all general purposes on this coast, as it does in New York. When apples are required for preserves, they should be used before growing mealy—the most common fault of apples, if not of most other fruits, in this rapidly forcing clime. Among the largest apples is the kind called Gloria Mundi, but it is rather coarse, and insipid in flavor; they have been known to weigh three and a half pounds.

Of Pears: there are many varieties of this excellent fruit all the year, except in early spring and late in the winter. Among the choicest of winter pears are the Winter Nelis, Glout Morceau, Easter Beurré, Vicar of Winkfield (not Wakefield), Lawrence, and Beurré Clairgeau. They are now becoming pretty scarce in the markets, but are at the present time more abundant than usual at this season.

Oranges are fast becoming more plentiful, and lemons also. That delicious, wholesome, and nourishing Southern fruit—the Banana—refreshes the sight (it is rather too dear for the ordinary palate), in large, beautiful bunches, half yellow, and perhaps most frequently half green. They grow separately on a very stout twig or branch, in a spiral form, to the number of from twenty to sixty in a bunch. The red varieties are considered the best, though they seem to be much scarcer here. The Plantain is used for cooking only.

Grapes have nearly, if not altogether, disappeared. In the East, they seem to preserve the Catawba longer than we do ours; owing, probably, to their season being later. We have a great advantage over the East, in being able to grow all the luscious foreign grapes in perfection in the open air. There they have to use hot and cold graperies for these.

It seems to be of little or no avail to

suggest to our fruit-sellers to label every variety of fruit they have for sale. We have done so several times to no purpose. If they would take our hint, it would speedily educate the public as to the best kinds of all the fruits. It is worthy of remark that, notwithstanding the lavish liberality of many of our housekeepers, and their willingness to pay the largest prices for the best productions of our market, we find more fruits than ought to be offered for sale of an inferior quality. Surely, the 50 to 100 per cent. higher prices paid for the few superior cultivated and perfect fruits which are found and sold in our markets, should be an all-sufficient premium to induce the fruit-grower to devote his attention to procure the choicest varieties of the different sorts of fruit. We would instance among summer fruits that most delicious plum, "The genuine Green-gage," which is so little cultivated. And so with many other of the choicest and first-rate fruits.

The numerous varieties, both cultivated and wild, foreign and domestic, which are received here and sold in the markets, demonstrate the necessity, as well as the importance, of their being perfectly cultivated. We observe that the farmers of this State have lately formed a union for the better and fairer attention to their interests, as between buyers and sellers. Certainly, the fruit culturists should do the same thing, for they are too much in the power of the middle-men, or salesmen, in the cities and towns.

Fruit, in perfection, should be full sized, sound, ripe, fresh, and of the best kind; and when most plentiful, possess the best and highest flavor. They should be kept in cooler places than those in which they are usually stored, as this best preserves their highly valued juiciness.

Correspondence.

To the Editor of the California Horticulturist.

Sir:—I have just received from my friend, the Professor of Botany in the Sheffield Scientific School, Mr. D. C. Eaton, a copy of some notes which he has prepared for the guidance of those who wish to collect sea-weeds or algæ. Before leaving New Haven, Professor Eaton gave me a very beautiful series of the sea-weeds, which he has collected within the past few years, on the seaboard of New England. The collection includes fifty-five specimens, all of which are determined and marked with printed labels, indicating the localities. He will be glad to exchange specimens with collectors, if any there be, in this vicinity, and with the hope of promoting such exchanges, I intend to exhibit his collection in the Academy of Sciences, and deposit it in the University. It will give me pleasure to be the medium of exchange between any California collector and Professor Eaton.

Yours, respectfully,

D. C. Gilman.

University of California,
Oakland, Cal., Dec. 26, 1872.

This collection has been inspected with much interest by an experienced collector of marine algæ, residing in this city. He will be pleased, at an early date, to exchange with Professor Eaton.

The notes, alluded to by Professor Gilman, will be found in another column of the present number of the Magazine.

We append a letter from our friend, Dr. C. A. Stivers, relating to the collection of algæ sent by Mr. Eaton.—Ed.

To the Editor of the California Horticulturist.

Dear Sir:—As a student of algæology, I have derived great pleasure from the examination of a small col-

lection of marine algæ, from the New England coast, prepared by Professor Eaton, of New Haven, and by him presented to Prof. D. C. Gilman, President of the University of California. It was through the kindness of the above-named gentleman, and of Mr. Carmany, that I was enabled to examine the collection, and compare it with my own of the Pacific Coast. Although not strictly in the line of your articles, I have still thought that a few words, respecting them, would not be out of place.

The collection embraces specimens from the three great classes of marine vegetation, and comprises some, which have not, as yet, been found on this coast. It is particularly rich in the *Rhodospermæ* (red weeds), such as the *Callithamnions*, whose tracery is more delicate than the finest lace, and with a color extremely brilliant. One specimen in particular, the *Daysa elegans*, is remarkable for its rich coloring. This weed has, I believe, never been found on this coast, though I have every reason to think that it has a habitat here.

The series is too small to make a comparison with those found here; but as a general thing, I think their colors are more brilliant, while their growth is less robust.

This collection is, I understand, to be deposited in the State University, and it is to be hoped that it will form the nucleus of a collection which shall embrace both the east and west coasts of North America.

The study of algæology may seem, to practical minds, of little value, and as having but little bearing upon the economic matters of life. Such is not the case. They play a most important part in the machinery of Nature; and, aside from their great beauty and interesting formation, are worthy objects for our consideration. Yours truly,

C. A. Stivers, M. D.

We hope to hear more of this interesting subject.—Ed.

Editorial Gleanings.

California Shad.—Those interested in the subject of fish culture will be pleased to know that the effort to stock our rivers with shad has attained the gratifying beginning of success. In June, 1871, the State Commissioner placed in the Upper Sacramento a large number of shad procured of Seth Green, of New York. It was well known that these fish would migrate to the sea in the autumn, and also known that when old enough to spawn they would return to fresh water, but it was not known as to whether they would return prior to that time, or whether the migratory instinct was founded solely on the necessities of spawning. The fish were placed in the river with but slight expectation of seeing any result of the effort for three years at least, at which age they first spawn. Australia planted her waters seven consecutive years before a single shad was caught therein, but the effort in California was destined to bear early fruit. Seth Green, who under the direction of the Commission imported the fish, offered a reward of $50 for the first shad caught in the river. It now appears that the reward has been earned, though not yet claimed. Last summer two Indians caught in their traps two fish of a species wholly new to them. They were caught in the upper Sacramento, about four miles from its confluence with Pit River. The Indians, not a little surprised at the capture of the finny strangers, and having never met their kind before, took them to

Mr. Elmore, who resides on the river at that point. Mr. Elmore, suspecting the truth, took them to his neighbor Hovey, who, having resided on shad streams at the East, was competent to expert the case, and who at once pronounced them genuine shad. The Commissioners regard the story of this capture as wholly reliable, and feel safe in declaring the effort to stock the river with this valuable species of the finny tribe as successful. Apropos of this, it may be stated that the Commissioners have recently placed ten thousand trout in the South Yuba, near the head-waters of that stream; also, a number of speckled trout in the north fork of the American. Somebody claiming to be authority in the matter, has declared that an acre of water is equal to an acre of land in producing food to sustain human life. If this be true, fish-culture is worthy the attention it is receiving.—*Sacramento Record.*

Ramie and Jute.—In the Report of the Commissioner of Agriculture for 1872, just received, we find an interesting allusion to the value and growth of two of the more recently introduced textile plants, Ramie and Jute, and speaking of them as likely to prove of importance, particularly to the southern States; and as we have the climate of those States and some advantages they have not, for the growing of the plants alluded to, we extract from the report as follows:

"Ramie and jute, fibrous plants which promise great value, have recently been introduced into the United States, and to some extent have been distributed by the Department in the southern States, the climate of which is alone adapted to their successful production. Of the former, little progress has been made in its use, because machinery has not been invented by which its fibre may be separated; but its value, in view of its fineness, strength, and beauty, will yet command an exercise of ingenuity which will make its culture a profitable industry.

"The latter has already taken its place in the manufacture of carpets and other fabrics as a substitute for cotton, wool, flax, and hair. Each of these, I may safely predict, is destined to occupy an important place in the products and manufactures of this country; and it is not the least important consideration that they may serve largely to diversify the crops of our southern States, a subject which has commanded much of my attention, because of my conviction of the many benefits which will result therefrom."—*Pacific Rural Press.*

Warm Water for Plants.—The temperature of the water used in watering house plants, or even those in the open border, is a matter that should receive more attention than is given it. It is too often the case that the temperature is wholly unknown, and great injury is often the consequence. There is no mistaking the effect of warm spring rains upon young grass and plants, and its influence upon the germination of seeds; whilst autumn rains—unless they too are warm—produce no such sudden and vivifying effects.

Water should be tempered, should be made temperate, and never applied to plants when below 60 deg., and had better be ten degrees higher than one lower. Experiments have shown that cucumbers in a hot bed will stand water at 90 degrees without injury; but, as a standing rule for all plants and shrubs, from 60 to 75 degrees is the right temperature.

Water used in watering plants should

be free from sediment. It is not essential that it be pure water; but for showering the leaves and branches should be as near pure as ordinary spring or river water. In watering the earth of pot or border plants, even liquid manure, or water containing fertilized salts can be used: but it should not be turbid or muddy. Such water soon fills up all the pores of the soil, preventing the ingress of air to the roots of the plant.

Extended Irrigation.—The foregoing, which refers more particularly to the application of water to pot plants, may very reasonably suggest the propriety of understanding well the properties and condition of water used for purposes of more extended irrigation. We not unfrequently hear of injury done to plants and trees by watering; and the charge is laid to irrigation; and at once a sweeping denunciation goes forth, condemning the practice as "worse than useless."

But find out the real truth, and the fault would lie, not so much in the application or use of water, as its nature, condition, or temperature. It is not spring water that injures vegetation when applied, but it is cold spring water; nor is it the excess of water, half as much as it is the mode or time of application. The subject of irrigation is one of growing importance to the interests of our agriculture, and our columns are always open to its reasonable discussion.—*Pacific Rural Press.*

Horticultural Meeting.—The annual meeting of the Wisconsin State Horticultural Society will be held at Madison, commencing February 3, 1873. These sessions are usually well attended by prominent horticulturists of Illinois, Michigan, and Iowa, who are always welcomed.

Plants for Parlor or Conservatory.—Of the many plants used to beautify the house, few equal the palms. There is a great variety of form, most of them having rather long, pendent, or curved plumose fronds. Many are delicate, and must be kept at an even genial temperature, protected from drafts, to insure any degree of success in their culture; but there are some quite hardy, that will do very well and give an attraction to any group of plants, and in any room kept a little above freezing. Among the most hardy we will name a few:

Chamaerops, fortunei, and tomentosa, very hardy; cabbage palms, chamædorea elegans, corypha australis, (fan palm), thrinax parviflora, are extremely beautiful; Latania borbonica; livistonia subglobosus is one of the prettiest fan palms we ever saw. All of the above are cheap, and can be had of most large floral establishments.—*Southern Agriculturist.*

The Medical Botany of California.—Dr. W. P. Gibbons, of Alameda, has been devoting considerable time and labor to the investigation of the medical properties of the plants peculiar to this Coast, and solicits the aid of his professional brethren in different quarters. In a paper, lately read before the State Medical Association, he describes a number of cases showing marked benefit from the *Grindelia* in Asthma, and thinks it will prove a valuable remedy, if employed with proper discrimination. There are two species which appear equally active, the *robusta* growing in low places, and the *hirsutula* on dry fields and hills. The infusion he regards as the best preparation.

Peru proposes to pay off her public debt in guano.

Hardness of Wood.—It is a great convenience to know the comparative value of different kinds of wood for fuel. Taking shellbark hickory as the highest standard of our forest trees, and calling that one hundred, other trees will compare with it for value as follows:

Shellbark hickory	100
Pignut hickory	95
White oak	84
White ash	77
Dogwood	75
Scrub oak	73
White hazel	72
Apple tree	70
Red oak	69
White beach	65
Black walnut	65
Black birch	62
Yellow oak	60
Hard maple	59
White elm	58
Red cedar	56
Wild cherry	55
Yellow pine	54
Chestnuts	52
Yellow poplar	51
Butternut	43
White birch	43
White pine	30

But it is worth bearing in mind that there is a very considerable difference in woods of the same species, according to the manner and soil on which they grow. A maple that grows slowly on an upland pasture, standing alone or apart from other trees, will last much longer and give out a greater degree of heat than one that grows in a swamp or in the midst of a dense forest. On wet, rich ground, it will be less solid and less durable for fuel, and consequently less valuable than a tree of the same kind that grows on a dryer and poorer soil. For sale, to be sure, one would be just as good as the other. To the purchaser oak is oak, and pine is pine, but for home, the tree grown on dry upland and standing apart from others, is worth a great deal more.—*Exchange.*

Rules for Preserving Fruit.—The London *Garden* gives the following as the rules of the Royal Horticultural Society, for the preservation of choice fruit:

1. As the flavor of fruit is so easily affected by heterogeneous odors, it is highly desirable that apple and pear rooms should be distinct.
2. The walls and the floor should be annually washed with a solution of quicklime.
3. The room should be perfectly dry, with as uniform a temperature as practicable, and be well ventilated; but there should not be a through draft.
4. Use the utmost care in gathering fruit, handling as little as possible.
5. For present use, fruit should be well ripened, but for long keeping it is better, especially with pears, that it should not have arrived at complete maturity. This point, however, requires considerable judgment.
6. No imperfect fruit should be stored with that which is sound, and all more or less decayed specimens should be removed.
7. If placed on shelves the fruit should not be more than two days gathered, and no straw should be used.
8. Where specially clear and beautiful specimens are wanted, they may be packed carefully in dry bran, or in layers of perfectly dry cotton-wool, either in closed boxes or in large garden pots. Scentless sawdust will answer the same purpose, but pine sawdust is apt to communicate an unpleasant taste.
9. With care, early apples may be kept until Christmas; while many kinds may be preserved in perfection to a second year.

The rules given by American fruit-growers agree very well with the above, but make especial mention that fruit rooms for slow ripening should be nearly dark, and the temperature low. Light and heat hasten maturity, and next, of course, decomposition.

Thinning Fruit.—This is a lesson which we have learned, and the necessity of which we have often endeavored to impress upon cultivators, and which every successive season teaches with stronger emphasis: It is absolutely necessary for all who send fruit to market, to send large fruit—and the markets are constantly and progressively requiring large and fine fruit. Even the Seckel-pear, which once commanded in the Boston market the highest price, will not now, unless of extra size, sell for any more, if as much, as common varieties of larger size. A medium-sized fruit, or even one of smaller size, may be more economical for use, but unless some decided change in the preferences of the majority of purchasers shall take place, large fruit will sell better than small. To produce this, the fruit must not only have good cultivation, but must be thinned. One-half the trees which bear fruit every year, would be benefited by having one-half of the fruit taken off as soon as it is well set. The over-bearing of a tree will, in a few years, destroy it. We may lay it down as a certain rule, that excessive production is always at the expense of both quality and quantity; if not in the same season, then in the succeeding one: for when branch is contending with branch, leaf with leaf, and fruit with fruit, for its supply of light and food, it would, indeed, be an anomaly in Nature, if this should not result in permanent injury to the trees as well as to the annual crop.—*Marshal P. Wilder.*

The corn crop the last season in the United States is thought to be the largest ever produced. Oats, barley and rye are about average. Potatoes less than average.

Changes in Russian River.—A correspondent of the Cloverdale *Bee* notes several remarkable changes that have taken place in Russian River in the past few years. Its banks were heavily wooded, and when it overflowed it deposited a sediment, raised its banks, and returned to its channel without doing any injury. But now, since the land has been cleared and cultivated, when the river overflows its banks, the swollen waters having full sweep carry off the deposits of light soil of former years; and as it returns to its bed, the banks are cut down at a destructive rate, changing the course of the stream and swallowing hundreds of acres of land worth from $50 to $150 an acre, and at the same time increasing the width of the river from an eighth to a quarter of a mile. The Russian river bottom will produce 100 bushels of corn and 125 sacks of potatoes to an acre.

Funeral Flowers, in New York.—In all our larger cities flowers form a large source of revenue to florists who make bouquets, etc., a specialty. In New York, the aggregate sum spent yearly on flowers is immense. Upon funeral flowers, especially, large sums are expended. The following will show the prices paid for leading sorts in Winter: The price of a handsome basket is from five to fifty dollars. Bouquets can be made at from three to twenty-five dollars. Single rosebuds costs twenty-five cents, and carnations twenty cents. Smilax is sold at one dollar a yard, and violets by the dozen at twelve cents. One spray of lilies of the valley costs twenty-five cents.

Autumn leaves—when winter comes in.

Poison Oak.—Experiments with animals go to prove that Poison Oak (*rhus toxicodendron*) may be eaten with impunity. Indeed, we have frequently heard it asserted by persons in California that they have seen it eaten by men, with a view of its acting as an antidote to its poison externally, or from mere braggadocio. All Californians are aware of the violence with which its juice acts when applied to the skin of most persons, many being severely poisoned by its slightest touch. It is also claimed that some people are so sensitive to its action as to be seriously poisoned by its exhalations, without any contact whatever with either its juice or foliage.—*Pacific Rural Press.*

Charcoal as a Purifier.—The *Country Gentleman* says: All kinds of utensils can be purified from disagreeable odors by rinsing them out with charcoal wet into a soft paste. Putrid water is immediately deprived of its bad smell by its use. When meat, fish, etc., are liable to become spoiled from long keeping, charcoal dust will keep them sweet; and if there is a single taint to meat, it can be taken out by putting three or four pieces of coal as large as an egg into the water in which it is boiled. This will effectually purify what seems too far gone for use.

Irish Bogs.—They have been celebrated for ages as simply immense basins of liquid mud of no value, and the land they occupy has always been considered as lost, till within a few years.

Out of bog mud there are manufactured splendid candles, quite equal to wax. In fact, they are formed of a material held in solution in the mass of matter, which is a rosin that is believed to be the product of trees or vegetable products of a vastly remote epoch in the world's history.

Bogwood is simply trunks of ancient trees that have been saturated in bogs for undefined periods till they are charged with various elements that not only give them a very hard texture, but an exceedingly black color susceptible of a beautiful polish. Ornaments for ladies, hubs for wheels, and various articles for the toilette, are formed from the ancient productions of primitive forests.—*Alta.*

The Banana.—This plant is an article of primary importance for the subsistence of man wherever the temperature reaches a sufficient degree of heat for its growth. An acre planted with it will support more than fifty persons, whereas the same amount of land sown with wheat will at best only support two persons. As to the exuberance of its growth, it is calculated that, other circumstances remaining the same, its produce is forty-four times greater than that of the potato, and one hundred and thirty-three times greater than that of wheat. The banana, however, does not thrive outside the tropics.—*Western Rural.*

The California *Farmer* thinks the fact that this State has only four per cent. of woodland—the lowest average in the Union—and that the forests she has are being very rapidly consumed, and that her coal-beds are at best not extensive, ought to incite immediate action on the part of her public men.

The camphor-tree grows extensively in Florida.

FAIR OAKS.

Watkins, Photo. Residence of HON. THOMAS H. SELBY, San Mateo County, Cal. *For Cal. Horticulturist.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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CHOICE FLOWERING SHRUBS FOR THE GARDEN.

BY F. A. MILLER.

Our mild climate admits of the cultivation of so many desirable flowering shrubs in the open air, that it is difficult to make a selection of the very best. I could name fifty species at least, which might be recommended with safety, and which would give general satisfaction to our cultivators; but my purpose at this time is to confine myself to a very few, which appear to me the most exquisite. I will omit the Laurustinus, the Lilac, the Snowball, and many others, more popularly known among us, and name first:

The *Polygala* (I believe its specific name is Dalmaisin). This, I believe, has no superior as a hardy evergreen flowering shrub. It has many excellent qualities: it is evergreen; grows almost in any kind of soil; it stands close pruning; may be grown into any desirable form; flowers throughout nine months of the year; and is literally covered with flowers in midwinter, when other flowers are scarce. It is a strong grower, and yet it may be kept in a neat and compact form; its flowers are of a beautiful purple color, pleasing and effective. This shrub should be in every garden, and it will give general satisfaction. The Polygala may be obtained of any florist at a very reasonable price. Although its cultivation is attended with no difficulty, it is not easily propagated, which must be done under glass; it is also difficult to transplant, and is therefore always cultivated in pots, from which it may be planted out in the open ground, without disturbing the roots. The closer it is trimmed, the compacter and neater it will grow. I think, also, it would make a beautiful ornamental hedge. I am glad to say that the Polygala, so far, has been received with popular favor as an evergreen flowering shrub. To the best of my knowledge, it has not yet been introduced in the East.

I will next name the *Erica* family, of which there are many excellent varieties, which have been cultivated successfully by some of our florists. The Ericas are not so well known here as the Polygala, but I am quite certain that they will prove even more popular than that shrub, when once generally known. The Ericas are a class of plants which have been cultivated very extensively in Europe for years past, and the florists there offer hundreds of varieties; large

greenhouses are entirely filled with them. I do not say that all of these would do well in California; but, from experience, I can say that some of the best are doing remarkably well in the open air. When first introduced here, our florists were in the habit of treating them as greenhouse plants; this was all wrong, and since they have been cultivated in the open air, they are fast becoming the favorites of every florist, and, at the same time, of our amateur gardeners. They find their way slowly into our gardens, because most of our so-called job-gardeners do not even know the plant, much less its fine qualities. The Ericas are evergreen; the foliage is graceful and dense, and mostly of a dark green color; the flowers are small and bell-shaped, extremely delicate and pleasing, and of red, white, pink, purple, rose and other shades, and they almost cover the plant in time of flowering, which commences in December with some varieties, and continues throughout winter and spring. From a plant two or three years old, hundreds of little branches, full of flowers, may be cut for bouquets and vases, for which purpose they are well adapted. I hope, before long, to see as many Ericas in our gardens, as we now see of Fuchsias. The propagation of Ericas must be left to our professional gardeners, unless there are ample preparations made. The ends of the young shoots are used for the purpose; they are planted in sand, closely covered with glass, and must be carefully watched until well rooted. There is no flowering shrub which I could more strongly recommend for general cultivation.

To those already described, I will now add the *Bouvardia*, a splendid flowering shrub, which has heretofore been treated exclusively as a greenhouse plant, and which, in my opinion, is incorrect. Although this shrub has given satisfaction to florists as a greenhouse plant, it will more generally please if cultivated in the open air; our climate is well adapted for it. However, I would advise to set out strong plants of at least one year old. Under glass, the Bouvardias are much infested by insects, which is not the case if cultivated out of doors. It is also an evergreen shrub, producing waxy, tubular flowers, in bunches, of rich pink, red, and white colors. I believe it will flower continuously, the whole year around, in the open air. All the varieties may not be equally well adapted for out of doors, but *B. elegans*, *Hogarth*, *splendens*, and *Vrelandii*, will do well. For bouquets and vases, the flowers are exceedingly well adapted, and will last for a long time. A more general cultivation of this shrub ought to be encouraged. Plants may be obtained cheaply of all responsible florists. The proper time to plant them out is from this time until May.

Our amateur gardeners are constantly asking for choice plants for the garden. If they will make diligent inquiries, our florists of good standing will supply their wants, and if they are encouraged, they will continue to introduce desirable plants; but so long as people are satisfied with Cypress, Pine, and Gum trees to fill up their gardens, nurserymen and florists will suffer loss by cultivating those which they know to be far superior and more ornamental.

Crops.—The California wheat crop of 1872 is 75 per cent. greater than that of 1871, and will approximate 30,000,000 bushels. The quality is excellent. In Oregon the crop is very good, and also large.

THE RURAL HOMES OF CALIFORNIA.

BY MRS. E. S. CARR.

Of all the external signs of progress shown in any country, none are so significant as the homes which represent the standards of comfort and culture to which the masses of the people aspire.

California has so often been described as the Land of Gold, of Natural Wonders, of Corn, and of Wine, that this phase of its development seems almost the only one with which the public are not familiar. Tourists who flit hurriedly over the highways of travel rarely get more than a glimpse of the rural residences, for which Nature seems to have been preparing when she rounded the hills and fringed the cañons with living tapestries of varied green; and few of our own citizens are aware how fast these are multiplying at all the points within easy access of the business centres of our population.

Until very recently the eastern idea of country life among us has corresponded to the character which the Californian Pindar recently gave to the "Argonauts of '49," and not even the princely hospitalities at Belmont and other places have removed the impression that our homes are the creations of sudden wealth, rather than the growths of a deliberate purpose and love of rural life.

While we believe the great want of California is more of the sentiment which attaches to the hearth-stone, it is true that from the earliest days there have been home-makers among us capable of a high enjoyment of natural beauty in its development as well as its results—planters rather than purchasers of homes. In making the work better known which would do credit to the rural taste of the oldest portion of the country, and in showing the unexampled facilities for it afforded here, in the diversity of surface, climates, and productions, we hope to do a needed service.

FAIR OAKS, *the Home of Hon. T. H. Selby.* (See frontispiece.)

The name of this lovely region indicates its chief characteristic.

The missionary fathers, who always found the right places to build in, pitched upon the Santa Clara Valley as one of their centres, planting there the Olive, Vine, and Palm. On the right, as you enter it from San Francisco, the Coast Range rises in picturesque ridges, clothed at the top with the giant Redwood; and on the left, above the blue waters of the Bay, and above many lesser peaks, the cone of Mt. Diablo stands clear cut against the horizon.

One regrets not to have seen this valley when deer and antelope browsed its herbage, and the procession of the seasons was over a flower-carpet more gorgeously colored than even Mr. Ruskin's word-painting could describe. Not to see it now in the tender green of spring, or later in the golden prime of harvest, is a sin for which there can be no excuse.

If we can imagine Mr. James' "solitary horseman" set down at any point on the county road between Millbrae and Menlo Park, he would fancy himself in the oldest and best cultivated portions of the United States. The excellent roads, high tillage and ample conveniences of the farms, the sleek cattle in the pastures, and, above all, the frequent glimpses of stately residences peeping from among the trees, give an expression of finish and repose to this district not exceeded by that of the Connecticut River Valley. It would be difficult for him to believe all this the work of less than twenty years.

The Pulgas Rancho,—which, beginning at San Mateo Creek, included Menlo Park on its southern boundary—twelve miles long by three in width, was the first land for which a United States patent was issued. Upon it we find Belmont, the country homes of Messrs. Hayward, Parrott, Atherton, Latham, and other citizens of San Francisco, with many of more moderate cost and pretensions, which are occupied throughout the year.

The Selby homestead, four hundred and fifty acres in extent, is one of the oldest improvements upon the natural park which once occupied the level floor of the valley. Two species of Oak—*Quercus agrifolia*, and *Q. Sonomensis*—show here some of the most admirable forms and groupings of this family of trees, and are the frame-work of the ornamental plantations. A magnificent specimen guards the entrance from the county road. Thence by grandly sweeping curves we approach the house through close avenues of *Pinus insignis*, Monterey Cypress and Gum trees; but so many of the native Oaks remain as to give these avenues a dignity far beyond their years. At Christmas they were bright with the scarlet berries of the Holly, a native also, and of unusual size and luxuriance. Bordering the avenues are many fine young conifers, Pines, Spruces, Sequoias. etc., which have received no water since the first year after planting.

The crowning beauty of the place is *The Lawn*, whereon the fairest of fair Oaks, draped with Ivy, cast their soft shadows upon the velvet turf. Art could not heighten the effect of their grouping—close enough for shelter, open enough for cheer. A single jet of water, which falls into a wide circular basin—a mirror framed in flowers, reflecting the spiny tops of the Pines and the feathery plumes of tropical grasses—is almost the only atttempt at ornament. The suggestions of Nature have been respected here, and the views from the windows are all characterized by simplicity and breadth. Choice trees and shrubs are found, but not obtruding upon the lawn, and there has been no attempt to change the natural surface. No ugly cairn, misnamed a "rockery," suggests an Irishman and a cart. You get a glimpse here and there of an orchard, just where an orchard should be placed to be daily enjoyed by a family.

With these surroundings, the house and outbuildings are all in keeping. A roomy and commodious gothic cottage, with a wide veranda over which Roses and flowering Vines are trained, expresses comfort, ease, and refinement without ostentation. Large estates and establishments are sure to make slaves of their owners, and unless one be wise the cost and care of living is greatly increased in the country.

Of Mr. Selby's four hundred and fifty acres, less than ten are in the home grounds, and eight in the orchard. Apples, Pears, Cherries, Plums of the best varieties, Apricots and Nectarines, Figs and Almonds, produce not less than fifteen hundred bushels annually. The small fruits have a place also.

All the rest of the land is either under the plow, or used for pasturage of thirty horses and twenty cows with which the farm is stocked. The sales of wheat have amounted to $20,000, not counting the present crop of some $3,000 worth on hand. The stock, though not fancy, is of the best.

The whole is surrounded with a squirrel-tight fence, and an excellent road leads from the house entirely around the property. There is a driving-course

for the training of horses raised upon the farm. The barn, poultry-house, etc., are models of convenience, and no expense has been spared to secure the best results by the best methods.

There is a Eucalyptus-tree near the house, which has been planted nine years, fifty feet high and two feet in diameter. Pine trees send up leaders three and four feet in a single season. The Fig trees have borne almost since their first planting, and were the admiration of the horticultural experts, Messrs. Wilder and Downing, who visited the State three years ago. The Almond orchard is one of the sights to be remembered when covered with its blooming promise of fruit. All this proves thoroughness of cultivation.

The experiments of the rich are often costly failures, which discourage similar attempts even upon a small scale. Here is a home kept for pleasure, and not profit, which would be an ample fortune to one less favored than its owner, and upon which he might depend for an ample support were all other resources to fail. Taking it for all-in-all, it is a representative home, and its Argonaut, who found the Golden Fleece, has proved over again "that it is the solitude and freedom of the family home in the country which constantly preserves the purity of the nation and invigorates its intellectual powers."

NEGLECTED FLOWERS.

There are several beautiful garden-flowers, though easy of culture, that receive but little attention at the hands of our chief colonial cultivators. Among these may be mentioned the Balsam, which is one of the gayest and most charming flowering-plants, either for border or pot culture. We rarely see it in our gardens, and more rarely still at our horticultural exhibitions. When well grown, the Balsam is graceful in outline, perfectly pyramidal in shape, clothed with delicate and elegant foliage, and bearing a profusion of richly-tinted blossoms. They can, moreover, be grown as small window-plants, or as good-sized, handsome bushes for the borders; they also look remarkably well when grown in six-inch pots, and bloomed for decorative dinner-table plants, being particularly beautiful by gas-light. The mode of culture we have ourselves pursued, with success, is as follows: First of all, choosing a good, rich, leaf-mold soil, to which sand should be added, and the whole well mixed together; it is then advisable to sow in pots, which must be plunged in a cucumber-frame with slight bottom-heat, being careful not to cover the seed too deeply—not more than a quarter of an inch at most. Care must be used not to over-water; and when the plants have made their second leaves, they should be potted off into rich compost, using five-inch pots, which are sufficiently large. They will need care in potting-off, the Balsam being very susceptible of injury; and they should never receive a check, for if they do, they will not attain to large size. After potting-off, plunge them again into the frame or pit, and allow them plenty of light. The bottom-heat necessary is from seventy to eighty degrees. Judicious shading will, of course, be required, and constant attention as regards watering. The young plants will then grow very rapidly, and commence to branch out freely. Directly the pots become filled with roots, they must be shifted at once into eight or ten-inch pots, using good rich loam. Some of them will, by this time, need training, the lower branches being brought down to cover the top of the

pots; this will require to be carefully performed. When very large specimens are wished for, a still further potting will have to be resorted to, two sizes larger pots being chosen; or they can be planted out in rich and somewhat protected beds. The first blossoms should be picked off, to allow the plants to make size; for the Balsam is a rapid grower, and well-furnished plants can be obtained in a short space of time, if due care and attention be given. To secure a successional display, it is absolutely necessary to sow three times, at intervals of six weeks or so, when a continuous bloom may be secured for six months of the year. Plants cultivated in pots are much the best, plunged while growing, and until they are wanted for decorating windows, rooms, greenhouses, &c. Almost everyone can grow the Balsam, if he should be so minded; and they will repay any cultivator for the care and attention he may devote to them. One well grown and bloomed plant set between two ferns, in the drawing-room window, has a delightfully cool and elegant effect.—*Melbourne Times.*

ON WATERING.

BY E. J. HOOPER.

People are apt to think that when the garden looks dry it wants water, and they are doing good in administering that element; but, self-evident as this may seem to be, the benefit is not quite so positive as it may appear. On the other hand, there is a very great risk of doing serious injury.

How can this be? will be the ready inquiry. Plants require that the soil should be moist; when it is dry, the use of water moistens it; therefore, watering *must* be beneficial, and the oftener we water, the more benefit we confer. This seems plausible enough; but is just these so often *repeated* waterings that do so much mischief.

The climate of California is a very uncertain one as to rains, even in the rainy season, and particularly in either its commencement or ending. Therefore watering is necessary, not only during the hot, dry weather in our spring, summer and fall months, but sometimes even when verging upon winter, or tapering off into summer. But we are now speaking of the hottest weather in summer. We will suppose that a garden gets a tolerable sprinkling every evening—enough, in fact, to saturate the surface, which then looks cool and comfortable. Next day, the sun causes the evaporation of this moisture, and the ground at the surface, being as it were made into a pudding by the drip-drip of the water, becomes baked into pie when the sun has drawn off the fluid. In fact, the surface becomes what is familiarly called caked. Now, this is repeated night after night, by these dribbling waterings; and the consequence is, that the whole mass of earth gets caked or baked hard; it becomes thoroughly dry just below the surface, and, if drought continues (which it does of course in our summer), as far down as the roots grow—a very natural result—the plants languish if they do not die, their decadence in or exit from this "changing scene" being certainly chiefly caused by the heat of the sun, acting on their languid, drooping frames.

What should be done in such a case? Why, first, and above all, give up the practice of watering every evening. Break up the surface with a short digging-fork; give a thorough soaking, which, of course, must be done toward night—a cloudy sky (which, however,

occurs but seldom and only in some part of our year) favors the operation during the day; next morning hoe the surface lightly with a small, or Dutch hoe; do this as often as you can afterward for some time, instead of watering. Repeat the soaking after a week, or more, but continue, if possible, by all means, the hoeing. Thus will the whole garden be invigorated, and what was before tending toward a desert will "blossom as the Rose."

Besides caking and eventually drying the soil, slight surface waterings, if continued, encourage surface roots. This is encouraging them to place themselves in the worst possible condition under the circumstances. They may drink in a little of the water applied at night, it is true, but the midday sun scorches and paralyzes them, and the efforts of the plant to produce them is thrown away.

It is of some importance what kind of water is applied. Soft water is to be preferred to hard—and by common consent it is adjudged to be the best. It will always be better, too, if the chill, supposing it to be very cold from the hydrant, should be taken off, by allowing it to stand some time in tubs in the air. In some cases, in very small lots or gardens, the benefit will be increased greatly, by watering with diluted liquid manure. *Real* guano is good, also, for the purpose here referred to.

Plants for Vases.—When cottage grounds are of sufficient size, a handsome vase of fair proportions, mounted on an appropriate pedestal, is always a pleasing object, especially when filled with healthy, suitable plants; and I have seen rustic vases formed of twigs and branches, with the base surrounded by Ivy, when the idea of fitness to the place was unquestioned. The handsomest vase I ever saw was of medium size, with a vigorous specimen of *Russellia juncea* in the centre, and trailing over the edge was *Gnaphalium lanatum*, intermingled with the delicate stems of *Ampelopris Veitchi*. The slender, thread-like stems of the main plant were covered with a profusion of scarlet tubular flowers, hanging over, partly covering a few *Alternantheras* with richly colored leaves. I recollect a pair of broad, yet very shallow, vases situated on either side of one of our finest residences near Philadelphia, and, although many months have passed since I last saw it, yet the picture is as fresh in my mental vision as if but yesterday. The ornaments were not two feet high, and were placed upon the ground without pedestals. The surface of one was completely covered with the metallic leaves of an *Echeveria*—the other with a very dwarf *Alternanthera*. Around the base of each was a bed of some large-leaved Ivy, encircled with a ring of the choice variegated variety.—*Josiah Hoopes.*

PROGRESSIVE AGRICULTURE.

BY WILLIAM H. YEOMANS.

There is a great necessity for a *reconstructed* agriculture in many sections of our country. It makes but little difference what the latitude is, there are certain general conditions that are always the same, and the result of particular farming operations will always be the same. Thus continued cropping, with but little or no return of fertilizing material to the soil, will sooner or later produce a state of infertility, and therefore necessitate an amendment of the soil before successful farming operations can be pursued. In this consists the somewhat deplorable condition of

the southern agriculture. Too little regard has been had to the manufacture, accumulation and application of fertilizing material to the soil, so that it is in many places so reduced as to produce only minimum crops. This ought not so to be, as it is an evidence of retrogressive rather than progressive agriculture. The man who attempts to cultivate extensive fields wanting in fertility is laboring in vain; he can hardly expect even a return for his labor, saying nothing of any profits that he ought to receive; and yet, notwithstanding a full knowledge of this fact, men will labor on year after year, and perhaps attribute their want of success to some peculiarity of the season, or some atmospheric changes which they can not control.

Does not this state of things, then, prove the necessity of a change in practical agriculture? And, if so, what change is required?

For one thing, it may be said that no man should undertake the cultivation of any crop until he is prepared to give the ground upon which the same is to be cultivated a sufficient dressing of some sort of manure to warrant a crop that will not only repay for all the labor expended, but will also furnish a good profit on the investment. It requires no argument to satisfy any person that no more labor is required to produce a maximum than a minimum crop; the only difference consists in additional labor at harvesting time, which, under such conditions, most persons are willing to give. Now, although commercial fertilizers are very valuable to the farmer, years of experience have proven the fact that for all crops, and for keeping a soil in excellent condition, there is nothing better than animal manure, mixed perhaps with organic matter; the tendency of this is to render the soil more porous, and so capable of admitting a free passage of the air, which not only tends to assist fertilization by means of the gases which it contains, but also to keep the soil in dry seasons more moist, by means of insensible deposits; while, on the contrary, the tendency of mineral and inorganic manures is to compact the soil, rendering the same more difficult of penetration by the roots, as well as difficult of cultivation. One of the first requirements, then, in the line of *progressive agriculture*, is, that each and every tiller of the soil should inaugurate some system by which the fertility of his fields may be restored, and not only that, but that it be raised to such a degree as to be able to produce maximum crops. This, of necessity, will require some time and patience, and may be accomplished in different ways, one of which is by the saving of everything that possesses fertilizing elements, and which frequently is allowed to go to waste, and applying the same to the land. But the ways and means must be reserved for other articles.—*The Rural Alabamian.*

Arrangement of Cut Flowers.—The London *Gardener* says that of all the various mistakes made by persons in arranging flowers, the commonest is that of putting too many into a vase; and next to that, is the mistake of putting too great variety of colors into one bouquet. Every flower in a group should be clearly distinguishable and determinable without pulling the nosegay to pieces; the calyx of a clove Pink should never be hid by being plunged into the head of the white Phlox, however well the colors may look. Sweet Peas never look so well in the hands as they do upon the boughs over which they climb, because they can not be

carried without crowding them; but put them lightly into a vase with an equal number of Mignonette; or rather, ornament a vase half full of Mignonette, with a few blossoms of sweet Peas, and you get a charming effect, because you follow the natural arrangement by avoiding crowding of the blooms, and putting them with the green foliage which they want to set them off. Few people are aware, until they try it, how easy it is to spoil such a pleasing combination as this; a piece of Calceolaria, scarlet Geranium, or blue Salvia, would ruin it effectually. Such decided colors as these require to be grouped in another vase, and should not even be placed on the table with sweet Peas. They also require a much larger preponderance of foliage than is wanted by flowers of more delicate colors. It is unquestionably difficult to resist the temptation of "just putting in" this or that flower, because "it is such a beauty;" a beauty it may be—and so may be an Apricot—but it would be out of place in a basin of green-pea soup! There is at least one proper place for every flower; then let every flower be in its proper place.

THE COLORADO DESERT AS AN INLAND SEA.

Could the Colorado Desert be again filled with water? It is an interesting question. From the Gulf of California, it is probably an impossibility. The gradual silting up of the old gulf-bed at the mouth of the river, and the drift of sand by the wind, have interposed a barrier too extensive to be easily removed. By turning the Colorado River into the desert it might be accomplished. The project has for years been discussed, of taking enough water from the river to irrigate a stretch of fertile land, alluvial deposit, found at the southern end of the desert; but the idea of going further than this, of diverting the river into the desert, and forming a large fresh-water lake, seems never to have been broached. Nature, unassisted, is now attempting this. The drift of sand, through the prevailing western wind, is from the desert toward the east. This drift has kept the river walled in upon the east side of the valley, and has apparently constantly forced it further in that direction.

Could that desert be refilled with water—converted from dry, hot sand to an inland lake—the very heat which is reflected from the barren mountain-sides around would be a power of good instead of evil. The constant evaporation would render heat latent which is now active, thus lowering the annual temperature very perceptibly. This lowering of temperature alone, even if unaccompanied by an increase of moisture in the air, would give a greater rainfall by the more perfect condensation which it would cause. But the evaporation from the surface of the lake would materially augment the supply of rain-currents, thus acting in a double manner—a decrease of temperature and an increase of moisture from precipitation. These rain-currents would also meet with less difficulty in making their way against the ocean winds—as these winds, caused largely by the heat of the desert, would be less violent—and would, therefore, with more certainty and regularity, deposit their supply of moisture over the plains of Los Angeles, San Bernardino, and San Diego. When it is considered that every additional inch of rain is worth millions of dollars to these southern counties, the value of such a change in quantity and certainty of fall may be readily appreciated.—*Overland Monthly for January.*

"A GRAIN OF MUSTARD."

I was one of the least of the small, small things
Which from our Father's footstool springs—
But a little seed, that was wafted away
By the frosty winds of an autumn day,
Till I sank at last in a narrow cell,
Where withered leaves above me fell.
It was dark and drear in that little spot,
And I felt myself a thing of nought,
As through each long, long winter day
Alone, inanimate, I lay.

The sighing winds swept wailing near,
And through their plaint I seemed to hear
These words: "A sparrow can not fall,
Unnoticed by the Lord of all."
Then why should I, a little seed,
Sleep in the ground without His heed?
For One, who likened such as me
To "Faith," while in his ministry,
Inspired the vital germ within,
Till the genial spring, with dewy wing,
And warm, bright, sunny hours,
Awoke again, o'er hill and plain,
The dormant leaves and flowers.

I felt unfold my shroud of mold,
My tiny leaves expand
To stalk of green with foliage sheen,
Among that flowering band;
A golden crown then bow'd me down,
And for this blessing given
I waft above, with breath of love,
Sweet fragrance unto heaven. BETA.

SAN FRANCISCO, January 27th, 1873.

IVY FOR DRAWING-ROOMS.

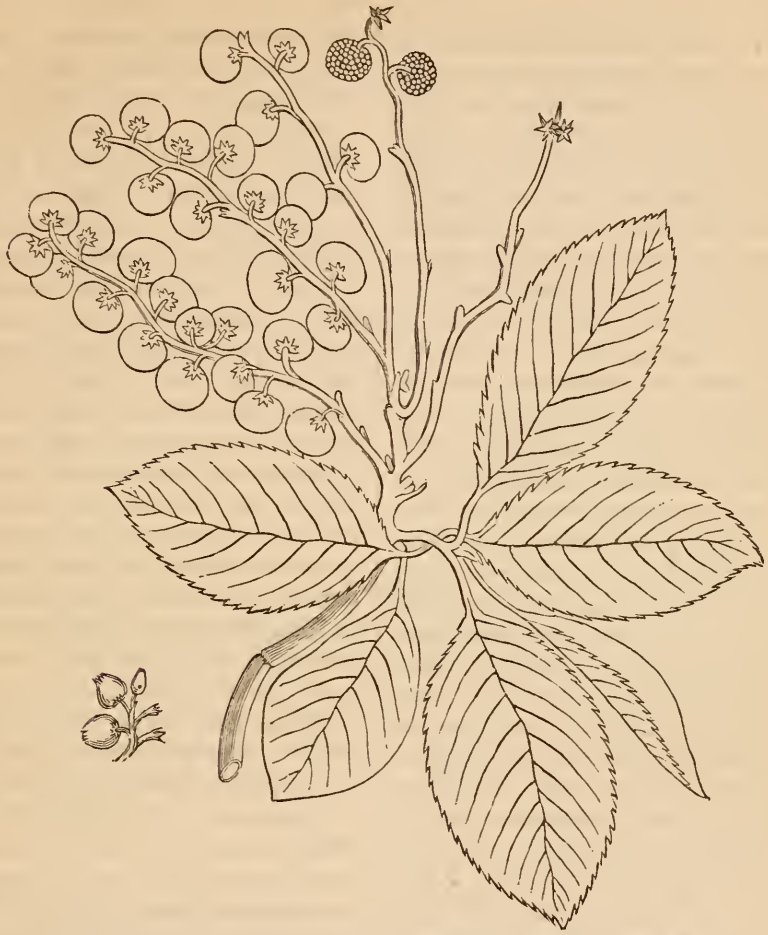
A writer in *Hearth and Home* says: The trailing Ivy is certainly among the most beautiful drawing-room decorations. Its dark green leaves harmonize well with all other colors likely to surround it, and its graceful branches render even square windows and frames beautiful.

Six years ago a sprig of Ivy was brought from Abbotsford to Mrs. Chas. Palmer, of Brooklyn, and it now graces the arch of the folding doors between the parlor and third room of her lovely home. When first brought, this precious sprig was rooted in water, and then planted in the garden, where it remained till it had grown large enough to be brought into the house. Every spring, the shoots grown during the winter are carefully cut off, and the branches tied loosely together. The whole vine, so tied, is planted in good soil, and fastened to the garden fence, there to remain, through the summer months.

Mrs. Palmer has now two vines of about equal length, which are transplanted into large pots every fall. Each leaf is then rubbed on both sides with sweet oil, and after the pots are put in place, one on each side of the folding doors, the vines are carefully trained, and secured by strings and tacks to the wood-work. The branches of the vines on the opposite sides of the arch are interlaced as they meet, so that no division is apparent. The earth in the pots is watered daily.

Mrs. Palmer oils the leaves of both her large vines in three or four hours, by simply moistening her fingers in oil, and lightly rubbing each leaf on both sides at the same time. She is amply repaid by the entire absence of mould or whiteness from the leaves, and the fresh, vigorous appearance of the plant.

Trained over windows, doors, or pictures, the Ivy always produces a fine effect. For decorations on a small scale, vines may be grown by simply immersing the stems in small vials of water carefully secured to the frame to be ornamented. Indeed, by a judicious placing of a number of these, so that each root may have its own vial, a fine effect of luxuriance may be produced. The tops of long champagne-glasses, which have lost their stands, may be substituted for vials, and the effect greatly improved by placing either in suitable spruce-wood holders.



THE MADRONA TREE.—Branch with leaves and fruit of the Madroña *(Arbutus Menziesii)*, half natural size. Also flowers of *A. Menziesii*, half natural size.

THE MADROÑA TREE.*

BY DR. A. KELLOGG.

Ant. "Before thee stands this fair Hesperides
With golden fruit."
—*Pericles, Act 1st, Scene 1st.*

Who will solve for us that most marvelous sylvan mystery of the Pacific Coast?—we allude to the almost universal neglect of the magnificent evergreen *Madroña*, an ornamental forest tree, unsurpassed for grandeur or varied beauty.

Let us consider its just claims for a moment. We have at our bidding a lofty tree, fifty to one hundred feet in height; as seen in native haunts on the alluvial lands of the coast, or amid other forest trees, we behold it straight and trim as the most fastidious could wish — when young, easily domesticated, trimmed and trained to any form desirable; at home on foggy coasts with fierce winds, dry hillsides, or barren and burning peaks; ever clad in foliage of living green, equal to the most majestic *Magnolia*. Other trees may sleep

* *Arbutus Menziesii.*

in quiet, waiting the return of the wild song-bird, and the renewing breath of spring; but love's highest emblems never sleep; ever on the alert, she is awake with the new year, bringing gifts to the dear ones, and good to all living. Laden with shagreened orange and red berries, the most beautiful the eye ever beheld —surpassing the choicest strawberries— sweet, nutty, and delicious to the taste, she sub-tropically overlaps the rolling year with ceaseless glory. Anon the sweet breath of her flowers—now in bloom—greet the sense, fragrant and exhilarating as odors wafted from the Happy Isles; the busy bee and the butterfly sip their nectar, but no noisome insect infests this charmed tree. The white and blushing blooms peep over the dark green background, crowding their clusters into view, or bashful and half concealed, the whiter and purer bells hide beneath the shade. It is thus she modestly droops her pretty heath-like clusters, cheering the winter months. How neat at all seasons! Changing her dress as custom requires—yet always elegant, caressing the eye, ever suing for admirers—exfoliating bark, or laying off a few superfluous leaves in the hot months of July and August—the most strikingly picturesque tree of all the groves—limbs now out fresh, smooth, and soft, with exquisitely freshened green, tender and delicate as a maiden's skin—fair tablets to carve "Rosalind" upon; the very sight of which is like inspiring a sweet zephyr just astir, breezing from out some cool, shady grove, when the traveler is faint and weary. Even the fading foliage falls unobtrusively down as comes "still evening on" in twilight dews. "Fading foliage!" did I say? Nay; the beautiful leaves brighten, like celestial hopes above, into every shade—to hallowed gold and royal purple, in exchange for the natural green of earth. So, also, the sea-green surface beneath yields to a softened, mellow white, no artist could cease to admire. With such a sheen, the enlivened shade is by far the most cheerful that ever bore that name before; myriads of bright and gay reflectors spiriting it away—meanwhile, shedding their "sweetness on the desert air." Our feet never pressed her half-dismantled robe without a feeling akin to entering the neatest ladies' parlor in the land. Instinct with the feelings of the Great Chief, we are fain to echo the eloquent apostrophe * * * "The earth is my mother—I will repose on her bosom." With uncovered head, and due reverence in the presence of orderly Nature, we are oft prone to tarry beneath the beautiful boughs; and, may we say it? always leave with the lingering regrets of a lover. Returning anon, behold the sky-green bark changed to deep orange, burning red, or sober cinnamon brown, out of due respect to autumn, and the fashion of the season. How strange the view! What marvel of moods! Fascinating by every art that could please, with ever-varying beauty. Could imagination, fiction, or fancy, portray to itself a sylvan object more wonderful, more chaste, or more charming! Consider again, that it sink deep into thy soul—its broad magnanimous canopy of large, thick, rich, shining green, and tropical foliage—vivid semblance of the Grand Magnolia (*Magnolia grandiflora*) of the South—laden, as it were, with a mass of burning berries, as we have seen it this season—its smooth, red, naked limbs, like the native red man, giant of the woods, stalking the forest with majestic tread—and you have before you the *handsomest tree of the West.*

Spare us, dear reader, the merited allusion to its timber. Ghosts of de-

parted saw-mills, and vandal skeletons with axe in hand, loom up from the other place to haunt the evening of our days. We would rather sit on Madroña's knees—that often resemble those of the deciduous Cypress of the East—and teach your children the wisdom that shall reverence sylvan use and beauty, that they may offer betimes some acceptable incense of affection for the native forest trees of the land. True, this tree, like others we could name, does not bear transplanting from the wild state well, from lack of the usual number of fibrous roots of many other trees; but it germinates easily and grows freely from the seed. "Why, then, is it not more cultivated?" The nurserymen reply, "Because, there is no demand." These and other trees and seeds should be put in the ground as soon as possible after the *first rains*.

For those not familiar with this tree, a very inadequate sketch, made by the writer many years ago, may be seen in the 6th volume of the Pacific Railroad Reports, page 23d.

RECENT FRENCH DISCOVERIES IN HORTICULTURE, ETC.

A correspondent sends us the following translation from "*Le Bien Public*," of Dijon in Burgundy, of the 21st of April:

"An agriculturist has discovered, it is said, the means of preserving the grape-vines from their most dangerous enemy, the Phyloxera, a sort of vine-fretter or vine-grub. It seems by mixing soot with the earth around the roots of the vine, the insect is paralyzed and is killed.

Secondly, a discovery curious enough has been made recently.

An agriculturist has observed that by watering vegetables and fruit trees with a solution of sulphate of iron, the most astonishing results are obtained.

Beans have gained 60 per cent. on their ordinary size, and what is better their taste is much more savory. Among fruit trees, the pear-tree is most benefited by that process of watering.

Third, the *Revue d' Economie Rurale* announces that a new process of early vegetation has been tried with the greatest success by a horticulturist of Chatillon, France, who, besides the heating of the interior air in the green-house (hot-house) heat also the earth itself, the hot-bed on which the plants grow.

For this, he establishes at a certain depth pipes through which steam circulates constantly. The steam penetrates the interior of the earth by means of valves opening from place to place.

Such pipes are from five to ten centimetres (from two to four inches) depth by the side of the plant beds of strawberries, flowers and "graminces;" from fifteen to twenty centimetres (about six to eight inches), for fruit trees.

The earth thus artificially heated produces vegetables and fruit with an economy of half the time necessary when the interior of the greenhouse only is heated.

Thus, every one could see at this agriculturist's, early in April, strawberries that had blossomed, formed their fruits and ripened in fifteen days; violets that had developed their flowers in ten days; asparagus and artichokes which have grown and been gathered in thirty-five days.

Finally, within only forty-five days, dwarf cherry-trees have budded, blossomed, and brought forth fruits in a perfect state of ripeness."

This wonderful process of early vegetation is new as to its application to gardening. But it is taken from nature. It is well known that in several thermal stations, and especially at Aix, in France, the gardens which are near or above the thermal fountains, produce early fruit and vegetables (*primeurs*) in winter; the earth being heated by water-steam, the heat of which raises to eighty degrees centigrade. —*Maryland Farmer*.

FOREST-PLANTING, A SOURCE OF WEALTH.

BY PROFESSOR EZRA S. CARR.

In the November number of this journal, the rapidity with which our country is being disforested was shown from departmental statistics; in this I desire to call public attention, and particularly that of owners of large bodies of land in California, to the importance of forest-planting, as a source of future wealth. The value which the crowned heads of Europe have put upon their forests is well known; the stringent, and, as it might seem, almost inhuman laws made for their protection, are the result of a wise and far-reaching policy, far more creditable than our national indifference. In this, as in so many other things, with us, the necessary legislation will follow enlightened public opinion, itself the effect of individual examples and successes.

The first laws made in England for the preservation of forests (not to be confounded with laws for the preservation of game), were made by Queen Elizabeth, in consequence of orders given to the commanders of the Spanish Armada: viz., in the event of conquest, to destroy the English forests, and especially that of Dean.

Now Dean was, like Windsor and Sherwood, an appanage of the crown, filled with noble Oaks of such excellent quality for ship-building, that its destruction was equivalent to cutting off the right arm of the nation. Luckily for England and for us, the Spanish axes did not accomplish the mischief they intended; the great Oaks grew on unharmed until the time of Charles I., who reduced their numbers from 105,537 to some 30,000; one of the crimes against the English people for which a sad reckoning-day was to come. One of the first movements of the Restoration was the re-planting of 11,000 acres; and the forest of Dean, sixty-four square miles in extent, is now fully recovered.

Windsor Forest, once 120 miles in circuit, has dwindled to about fifty-six, of which the Little Park, immediately connected with the castle, containing 500 acres, and the Great Park containing 4,000, are the most important. It is well stocked with game, and contains choice plantations of exotic trees and shrubs.

The glory of Sherwood, once so famous in the legendary history of England, has departed, but it still contains 1,500 acres of very old oak timber, and within its ancient limits are found many interesting trees. The New Forest in Hampshire, originally ninety miles in circumference, also contains timber of great value.

The history of Arboriculture in England, both in the Royal Forests and the seats of the nobility, is of great practical interest to us, because the kind of trees there found of most value for timber, fuel, and the various purposes of the arts, will all flourish in a large part of the United States, and *some of the best of them are indigenous here.* In the case of the Royal Forests, the records have been carefully kept for a long period, while the local traditions of some historic trees extend back to a remoter time than that of Robin Hood or Herne the Hunter.

They are under the general control of the Crown Commissioner of Woods and Forests, and employ a small army of officials of graded rank; Lord Wardens, Deputy Wardens, Verderers, Woodwards, etc., who, it is said, deplete the royal revenue, and contract the ancient limits. It is comforting to know that they are subject to some of the evils incident to public domains

elsewhere; that squatters thrive where poachers perish without anybody being to blame. But notwithstanding these drawbacks, the Royal Forests contribute no inconsiderable part in the revenues of the crown.

The grandest tree of these forests is the Oak, the tree which, living or dead, contributes so much to the beauty of the Englishman's home, and which may be said to have given him the supremacy of the sea. It is believed that an Oak after reaching a circumference of four feet, gains a solid foot every year, and it is on this basis that the profits of the plantations, as timber, are estimated. But the thinnings are also very valuable for poles, posts, hurdles, etc. Evelyn estimated the total profits of 1,000 acres of well matured oak timber, at £670,000. The relative value of the Oak has changed somewhat by the introduction of foreign trees of a more rapid growth. Immense plantations of the Norway Pine, Scotch Fir and Larch, have superseded them in the north of England and Scotland.

Forest-planting, in Great Britain, commenced about the year 1664, through the instrumentality of John Evelyn and the Royal Society.

The wide popularity of Evelyn's writings, and his own zeal and enthusiasm, gave an immense impulse to tree planting in England. Let us see what came of it in a hundred years. One or two instances must suffice. In the year 1783, the Duke of Gordon sold his plantation of Scotch Fir to Mr. Osborne, of Hull, for ten thousand pounds sterling. Mr. Osborne made of it forty-one ships, at a cost of seventy thousand pounds. At the castle a specimen plank is shown from this first harvest, six feet long by five feet five inches in width. The ground was not then cleared, but left to produce successive crops of timber.

At Holkham, the seat of the Earl of Leicester, there is a park of 3,200 acres, "farmed in an admirable manner." The first earl planted one thousand acres of it with *acorns* of the *Quercus sessifolia*, and lived to witness, with his family, the launching of a noble ship, built from some of the trees, and to see the forest "worth a prince's ransom."

The Scotch Pine attains perfection, as timber, at from 150 to 200 years old. It is planted close, and the trees, like those of the great natural forests of Oregon, reach from fifty to sixty feet without a branch, and are from eight to ten feet in circumference. The thinnings alone are regarded as giving a fair profit on the investment.

The relative growth of the different trees used in English plantations, may be seen from a record of actual growth kept by the Marquis of Lansdowne. The trees were planted in the year 1675, on a swampy meadow with a gravelly sub-soil; the measurement was taken in July, 1785:

Name of tree.	Height in feet.	Circumference. ft. and in.
Lombardy Poplar..	60 to 80	4 8
Abele.....	50 " 70	4 0
Plane.....	50 " 60	3 6
Acacia (Locust)....	50 " 60	2 4
Elm.....	40 " 60	3 6
Chestnut.....	30 " 50	2 9
Weymouth Pine...	30 " 50	2 5
Cluster " ...	30 " 50	2 5
Scotch Fir.....	30 " 50	2 10
Spruce "	30 " 50	2 2
Larch	50 " 60	3 10

I will not dwell upon the various uses of this timber, or of the calorific value of the different species. But from the

"Close grained chestnut wood, of sovereign use
For casking up the vine's most potent juice,"

to the tree which only Americans despise, Lombardy Poplar, there is not one which we shall not require in California within fifty years, because each is as

admirably fitted to some special want of the artist or manufacturer, as the Lime is for the most delicate carving, or the Willow for gunpowder.

The indigenous trees of the Pacific Coast are the most highly prized, and among the most profitable in European plantations. The nurseries of France, Germany and Italy, are well stocked with our giant Sequoias, our Firs and Pines. Noble avenues of American Plane, and the Liriodendron or Tulip-tree of the Middle States, adorn the cities of central and southern Europe. A few poor specimens of these trees may be seen in private collections in California, but the nurserymen do not propagate them. As yet, there is little demand for anything but quick-growing, showy trees—Monterey Cypress, Blue Gum and Acacia. All our forest-planting seems tending towards *Eucalyptus culture* on a large scale. This seems the greater pity, because so large a part of the arboreal world is at our command from which to choose. The Cinchona, of South America, would doubtless flourish in some localities in our State; and China and Japan have many useful trees which could be easily acclimated here.

It is only by observing and respecting the methods of Nature that men succeed in gaining mastery over her hidden resources. Now, Nature never plants a field or forest with a single species; she loves an infinite diversity. A plantation of Blue Gum would be an abomination in her sight, and, we may be sure, she has some chosen parasite in reserve with which to destroy it. In Scotland, because Larches were most immediately profitable, they planted more and more Larches, until a fungus came which devoured first their hearts, and then all their ligneous fibres, until nothing was left of them but bark and roots. Then a cry went forth that the Larches were a humbug and a failure, until De Balfour suggested that they had become diseased from overcrowding and overstocking the land. Then it was found that, when the Larch was associated with other trees, the Ash, and the Oak especially, in equal proportion, it was as healthy as ever.

Diversified planting, like diversified farming, will prove the only profitable mode, for California, in the end. A thousand acres planted with a variety of evergreen and deciduous trees with due regard to their habits and economic uses, we believe, would be one of the safest and most permanently profitable investments that could be made upon the land. Nor need we wait even a quarter of a century for returns.

The Eucalypti, intrinsically valuable in so many respects, make admirable nurses for slower growing and more tender species, and may be used as soon as this object is accomplished. The rate of their growth and importance in our forestry, and of some other exotic trees, will be treated in a subsequent paper.

ENGLISH VIEW OF VEGETABLES AND SALADS.

The *Gardeners' Chronicle*, speaking of vegetables for culinary use, truly says: Neither one nor the other should be washed until they are about to be cooked or eaten. Even Potatoes lose flavor quickly after being washed; so do Carrots and Turnips; while water will quickly become tainted in summer in contact with Cauliflowers and Cabbages, and thus destroy their freshness and flavor. The case is still worse with Salads. If washed at all, it should be only just before they are dressed, and they should be dried and dressed im-

mediately. Nothing ruins the flavor of vegetables, and renders good salading uneatable, sooner than water hanging about them. If Lettuces are quite clean, they make the best salad unwashed; but, if washed, the operation should be done quickly, the water instantly shaken out, and leaves dried with a clean cloth. But alas! how often are they cut and washed in the garden in the morning, and pitched into water in the scullery sink until wanted. Then we are gravely asssured that our gardeners can not grow salading like the French! But what French "artiste" would be mad enough to rinse out his salad juice, then recharge his lettuces and his endives with semi-putrid water? The best practice is simply to remove all superfluous earth by scraping or rubbing, and all rough tops of leaves by cutting. Enough tender leaves may be still left on Cauliflowers and Broccoli to overlap the flowers. Salad should be sent in from the garden with most of the outside leaves and main root on. The tender leaves are easily tainted and injured by exposure, and if the chief root is cut off short, much of the juice oozes out at the wound. Where vegetables and salading have to be bought from a town green-grocer, the conditions are altogether different. Not only washing, but soaking often becomes requisite to restore something like pristine crispness.

OLD FLOWERING PLANTS.

BY F. A. MILLER.

An impression seems to prevail among those who cultivate flowers here, that flowering plants should last forever, and do well. This is unreasonable, and demonstrates that the nature and wants of many plants are not really understood. Plants of the garden as well as those of the greenhouse, conservatory, and window, have their time.

It is true that, by proper cultivation, all plants will do well for a much longer period than if neglected; but the time will come when they should be replaced by new stock.

No one would attempt to cultivate the Grape-vine by leaving it entirely to its own chances; in truth, it is a well-known fact, that it requires a certain amount of skill and experience to cultivate Grape-vines properly. The same may be said of Currants, Raspberries, Strawberries, and all other useful and ornamental trees and shrubs.

People hereabouts expect entirely too much for their money. When applications are made to a florist for a plant, the following queries are made: "Is it evergreen? will it flower all the time? are the flowers fragrant? will it grow up to a big bush?" etc. Now, it is not very often that in any one plant all these qualities are combined. If flowers are desired continually, plants must be selected which will produce flowers at different seasons. Some of the most desirable flowering shrubs are not evergreen, and, therefore, they are not looked upon with much favor. All this is wrong, and should be corrected at once. I have often endeavored to convince people, that it is far better to go to the nurseries, and select Roses, for instance, from the open ground for planting during the rainy season; these will do much better than Roses forced into bloom under glass; but from my own experience, I can say, that Roses so forced meet with a much better sale, than if taken up from the ground. Some say that they want to see the flowers when they purchase; I would say to them, go to a responsible florist, and you will not be deceived in the varieties you select. I would trust a

respectable florist just as far as I would a respectable druggist.

But to the point. You purchase a Chinese Primrose, say, in a four-inch pot, full of flowers, and in a healthy condition at this time; you may reasonably expect that it will continue to flower well for about three months longer, when it should be shifted into a five-inch pot. In doing so, only a portion of the soil should be removed, and replaced by light sandy loam, mixed with one-quarter old rotten manure. After shifting, water well, and place in a shady place for a week. You may then give it its former sunny position again, and new foliage and new flowers will make their appearance, and continue to do so for three or four months. At the beginning of next winter, shift again into a six-inch pot, in the same manner as indicated before, and your Primrose will continue to flower during the winter months of 1873 to '74. By this same treatment you may keep it another year, but I advise you to procure, after this second year, young plants again; in fact, I throw away these old plants always, to make room for the more vigorous young plants. Double Chinese Primroses I retain for a number of years, because they produce a greater abundance of flowers when several years old. Primroses, of course, should only be cultivated under glass, in greenhouses, conservatories, or windows, where they will thrive admirably.

The Cineraria is a beautiful flowering plant for winter decoration, but is of still shorter life than the former; yet, under very simple treatment, I have seen these do well for two years. A Cineraria in bloom now, will continue so for four or five months, after which time it may be set aside in some shady place in the open ground. In autumn, take the plant out of the pot, shake off all the soil, and replant in a smaller-sized pot, and for further treatment the same as for the Chinese Primroses, only keeping a little more shaded. However, I would say, that the Cineraria will not do so well in the window as the Primrose, the dry air of the room being rather injurious to it.

I have mentioned these plants as examples; but this rule may be applied, to some extent, to most plants cultivated for flowers or foliage.

Take, for instance, the Rose, which is known to everybody. In this climate the Rose makes a wonderful growth of wood, most of which, and sometimes all of it, is permitted to remain. The strength of the plant is exhausted in useless wood and foliage, and a very few, if any, good flowers are produced. If this is allowed to go on for several years, the plant becomes actually worthless. If I plant a Rose-bush, I plant it about one inch deeper than it has been growing previously. I cut the main stalk back to within twelve or eighteen inches (according to its strength), of the ground; and, if a very weak plant, to within six inches, or even less; the side branches I cut back to two or three sound buds. If planted during the winter months, some very good flowers will be produced in spring following. After the first flowering, and when the new wood is hardened, which is about the month of June, I cut back the new wood to about four or six buds on the main branches, and to two or three strong buds on the side shoots; then stir up the soil, and give a good watering. The plant will shoot out again, and good flowers will be produced in abundance during the latter part of summer and autumn. This treatment applies more particularly to hybrid perpetual Roses, such as *Geant de Batailles*, *Madame Laffay*, etc.

Tea Roses, by proper pruning, a little at a time, so as to keep proper shape and form, will bloom continually.

In order to always keep a fine selection of Roses, and healthy vigorous plants, I would replace the old stock by new plants every six years, and enrich the soil well every two years. In replacing old plants by young stock, I would also advise a very thorough overhauling of the ground, adding new soil and enriching it well. Suckers, growing up from the roots, should always be removed when they first make their appearance.

Editorial Portfolio.

IRRIGATION.

From the earliest periods, man has sought to insure his daily food by raising from the soil those supplies, which experience taught him were too precarious when he solely depended on the exciting though uncertain chase, the scanty and unreliable gleanings of wild forest fruits, and the still more uncertain take from the waters; and he has sought to obtain, by irrigation, that certainty of produce which sad experience taught him could not be relied on while subject to the alternation of seasons of drought with those of genial rains, the latter too often supplemented by disastrous floods. We consequently find unmistakable traces of most extensive systems of irrigation in doubtless the first-peopled portions of the Old World. The plains of Assyria and Babylonia are literally covered with immense ramifications of canals, which were doubtless used both for irrigation and navigation. Such systems also prevail from the remotest antiquity throughout Mesopotamia, Persia, India, China, and others of the most ancient settlements of the human race. It is on record that Egypt has possessed, from 2000 B. C., most extensive systems of canals and artificial lakes; in fact, irrigation was one of the most ancient applications of science to agriculture, and had been practiced by the ancient Egyptians, Assyrians, Babylonians, and others, from time immemorial.

Damascus, located in Syria, is reputed to be the oldest city in the world; its fame is written in the earliest records, and it is celebrated not only for its magnificence, but for the marvelous fertility of its immediate vicinity, although the country surrounding it was a dreary desert. The character of its surroundings remains the same to the present day, which is attributable to the practice of irrigation still pursued on that ancient spot of land. The water for this purpose is still drawn from the rivers Abana and Pharpar, names noted in Sacred Writ, where Naaman, the leper general, vaunted them above the river Jordan, when told by the prophet Elisha to wash in the latter river, and be clean. The instance of Damascus proves the persistent benefit of the practice.

According to the earliest records of China, irrigation has in that empire been utilized to a vast extent.

On this continent, the ancient inhabitants of Peru irrigated extensively, and the Spaniards were astonished to find that the Aztecs far surpassed the Europeans in their application of this aid to agriculture. It has also been found to be in use among many rude tribes in various parts of the world.

Irrigation is supposed to have been introduced into Britain, by the Romans, shortly after their conquest of that island.

In England, and on the continent of Europe, a lively interest has of late

years been evinced in this science, but more particularly in the southern parts. Lombardy, part of Spain, the south of France, and Italy, and the great plains and valleys of the Po, the Adige, Tagus, Douro, and others, are all most extensively subjected to systematic irrigation. Land under irrigation in Spain, obtains tenfold the price of similar land in the immediate vicinity, but not irrigated. In the valley of the Po, there are said to be 1,600,000 acres of land thus watered. Italy, however, is the only country in Europe which has shown anything like a system of general irrigation. There a net-work of noble aqueducts and canals ramifies in all directions over the country. Many of these have been in existence upwards of eight centuries. The great canal known as "Vecchiabia," was in a flourishing condition in the eleventh century. In 1220, the "Adda," which waters the plains of Lodi, was completed, and in 1460, the canal of "Martesana," extending for a distance of thirty-two miles, with many side branches, was finished.

In Hindostan, at the present day, the whole of the *rubee*, or small grain crop, is artificially watered.

In every part of the Mysore country, as well as in other parts of India, water is retained or preserved for the purpose of irrigation. The Sultan Tippoo caused banks to be made between the bases of the hills, thus intercepting the streams, which during the rainy season flow from the hill country, and, instead of being lost, are collected into vast reservoirs for agricultural use; and within the last few years, still more extensive and ramified systems of irrigation have been constructed by the British Government, and we have met somewhere with the statement that there are tens of thousands of reservoirs and artificial lakes, constructed by dams, of from one-half to one and one-half miles in length, across the streams, serving as feeders to thousands (3,330) of miles of irrigating canals.

It can thus be shown that irrigation is of the highest importance in the cultivation of the land for the production of food, and it is a subject of supreme interest to the people of these States, and particularly of those bordering on the Pacific Coast, for vast tracts of our finest grain-producing land can never be rendered steadily productive but by an extensive and systematic application of this principle. Situated as this continent is, between the crowded populations of Asia and Europe, the heaviest production of cereals will, at all times, find a ready market, as it will certainly occur that some distressing influence, either of war, flood, pestilence, or famine, will always create a pressing demand for such produce among the dense masses of people alluded to; and a facility of canal and river carriage being attained, and the produce once at the ports, it will be eagerly sought and carried away. But without irrigation, agricultural enterprise is altogether too hazardous, as the rainfall of the Pacific Coast is not intermittent as it is in the East, throughout the year, but only during the five winter months, and severe droughts are frequent. The one of '70-'71 was very disastrous, and in the San Joaquin Valley the average of seasons of insufficient moisture is four in seven; yet, during the last season, a small portion of this land, under rude cultivation, yielded 10,000,000 bushels of wheat.

The vast plain of the Sacramento and San Joaquin valleys, situated in Central California, is about 500 miles long, with an average width of forty miles, and has an area of 20,000 square miles, or about 12,000,000 acres of farming

land, with, say, fifty per cent. more of available land in the foot-hills. This plain is bounded on the east by the immense chain of the Sierra Nevadas, running nearly north and south, and on the west, by the Mount Diablo Range. The snows of the Nevadas yield a superabundant and never-failing supply of water, and among the cañons of these mountains arise for the San Joaquin Valley, the Kern, Tule, Kahweah, King's, San Joaquin, Merced, Tuolumne, Stanislaus, and Calaveras rivers; and for the Sacramento Valley, the American, Yuba, Feather, and Putah rivers, the Cache Creek, and the upper waters of the Sacramento. The Sacramento flowing from the north southerly, and the San Joaquin running from the south northerly, are both large and navigable. These, after gathering the waters of their twelve or thirteen tributaries, discharge themselves into Suisun Bay, and through the Bay of St. Pablo into San Francisco Bay.

Thus among the mountain valleys of the Nevadas could be stored water without limit, to be unlocked and dispersed, as need required, for the most elaborate schemes.

Again, in the southern part of the San Joaquin Valley is situated Tulare Lake, 200 feet above the level of the ocean, with an area of 700 square miles, or 448,000 acres; its feeders are King's and Kern rivers, and Buena Vista and Kern lakes. This splendid sheet of water is destined doubtless to play an important part in the future of the valley of the San Joaquin, as at least two-thirds of it can be irrigated, to an extent of about 7,680,000 acres.

This district of country, comprising the counties of Kern, Tulare, Fresno, and San Joaquin, differs widely from other portions of this extensive plain, as well in its large and deep cañons in the mountains—whence the water, pouring in volumes from their dark recesses, distributes itself over the comparatively level surface of the valley — as in the innumerable channels cut by these waters, forming countless islands, large sloughs, and immense tracts of swamp-land.

While thus briefly endeavoring to draw attention to the antiquity, universality, and paramount importance of works of this character—and also urging on the public, as we have frequently done during the past two years, the absolute necessity for the comprehensive and extensive application of irrigation to the agricultural lands of this coast—we are highly gratified to have the opportunity of directing public attention to the operations, in the south of California, of a company of our most reliable capitalists, who, as "*The San Joaquin and King's River Canal and Irrigation Company*," have for more than two years been engaged in a most important enterprise, in the San Joaquin Valley. Already forty miles of canal have been built and completed, from the junction of the San Joaquin River with Fresno Slough, and running in a northerly course to Los Baños Creek. This canal was commenced in the summer of 1870. It is fifty-four feet wide, thirty-two feet on the bed, and four feet in depth, and will supply 360 cubic feet per second, or 350,000,000 cubic yards per hour; and was utilized last summer for 30,000 acres of land.

Work has also been commenced at Tulare Lake. This is altogether a grand project, and comprises not only the supplying of water for irrigation and for the conveyance of passengers and freight, but also the providing of water-power for manufacturing purposes, and for all the varied needs of cities and large communities, including the supply of

pure and fresh drinking-water. This will necessarily embrace a most extensive system of embankments, levees, dykes, ditches, channels, canals, and other works of irrigation; these various operations to be gradually extended and ramified as the country fills up with population.

The gentleman under whose masterly engineering these most important prospective works are being carried on, is Mr. R. M. Brereton, who so eminently distinguished himself in the superintendence of the recent engineering operations of the British Government in India, to which we have alluded in this article.

The invitation of the company to the public is most liberal. They have no debts, and they invite subscriptions for stock (shares $100 each) on exactly the same terms with themselves. Deposit, $1; $2 payable at thirty days, and $2 at sixty days.

We wish them every success in this public-spirited enterprise.

We are pleased to see that the *Garden* has considered the article on *Bulbs*—communicated to the November number of our magazine, by our esteemed correspondent, Dr. Kellogg, President of the Bay District Horticultural Society—worthy of a place in its columns. And we are gratified that the *Bulletin* has found interest in *Native Hedges*, by the same author, in our January number.

We wish to draw the attention of our subscribers to the spirited photograph of the residence of T. H. Selby, Esq., which serves as frontispiece to our present number, and illustrates *Rural Homes* by Mrs. E. S. Carr. It is a fair sample of "Christmas-Photographing" in California.

WOODWARD'S GARDENS.

These gardens maintain their position in public favor, and their spirited proprietor, with his ever active auxiliary, Andrews, is continually catering for the public gratification. Very extensive alterations are being made in the southwest angle of the grounds. Many additions and changes have been made to the stock in the conservatories.

REPORTS OF SOCIETIES.

Bay District Horticultural Society of California. — The regular monthly meeting of this Society took place on Saturday, January 25th, 1873.

The Committee on Premium List for the Spring Exhibition handed in their report, which was accepted. The Exhibition will open on Thursday, May 1st, and continue for nine days. The premiums offered amount to $1,400 in cash.

A large number of premiums are offered to the young Misses who received plants at the Exhibition of 1872, and who will exhibit them at the Spring Exhibition.

The Board of Trustees of the Society was appointed as the Committee of Arrangements for the Exhibition.

The following gentlemen were elected regular members of the Society: Th. Bogel, James Carroll, and John Kidwell.

A question being raised as to the proper treatment of Tuberoses in California, the opinion was almost unanimous that Tuberoses should not be taken up every year, but be left in the ground, where their flowering capacity will increase from year to year.

As to Banana culture in the milder regions of California, it was conceded that the Banana does not require any artificial heat in order to ripen its fruit

in any of the milder districts of California.

The Secretary was instructed to have the Premium List for the Spring Exhibition printed and distributed; and we are authorized to say that the same will be on hand for distribution about the 10th of February.

Several of the members expressed themselves in favor of establishing an Herbarium at an early date.

North American Bee-keepers' Society. The *second* annual meeting of this important Society was held at Indianapolis, Ind., on the 4th, 5th, and 6th of December last, when the Rev. W. F. Clarke was elected President; D. L. Adair Corresponding Secretary, with other officers. Has California no membership in this Society?

The third annual meeting will be held at Louisville, on the 3d, 4th, and 5th of December, 1873.

Wisconsin State Horticultural Society.—The annual meeting of this Society will be held at Madison, commencing Tuesday evening, Feb. 4, 1873, and continue through Wednesday and Thursday.

American Pomological Society.—The fourteenth session of this Society will be held at Boston, Mass., on Wednesday, Thursday, and Friday, the 10th, 11th, and 12th of September, 1873.

FAIRS AND EXHIBITIONS.

International Agricultural Exhibition in New South Wales.—The Agricultural Society of New South Wales proposes to hold a Metropolitan International Exhibition in the Exhibition Building and Prince Alfred Park, Sydney, commencing April 22d, and closing about May 3d, 1873. The Council having charge of this Exhibition cordially solicits agriculturists and manufacturers of every class in the United States —especially of every description of machinery and agricultural implements— to contribute specimens to the Exhibition, with the view of opening with that colony a valuable market for the sale of the various manufactures of this country, which stand deservedly high in that interesting and thriving colony, to which, with the Australian and adjacent colonies, it is predicted a large and most profitable trade will soon be opened, owing to the fact that our facilities for reaching those markets are much greater than those of any other country, shipments being made from San Francisco direct, either by sailing-vessels or steamships, at least once in each month. Awards will be made to exhibitors solely on the merits of their articles, without regard to the country from which they came. The Department has been favored by Mr. Jules Joubert, Secretary of the Society, with schedules of prizes, which are unusually liberal.—*Monthly Report of Dept. of Agriculture.*

A meeting has been held at the office of the Royal Horticultural Society, South Kensington, London, to consider the best means of promoting a representation of British Horticulture at the approaching Great Industrial Exhibition at Vienna, Austria.—*Exchange.*

OUR EXCHANGE TABLE.

Rural New Yorker, an excellent weekly journal, always welcome, published by D. D. T. Moore, 5 Beekman street, New York. $2.50 per annum.

For Everybody, a very readable paper, published by H. H. Sage, 325 Broadway, New York. $3 per annum.

California Agriculturist, monthly. S. Harris Herring & Co., San José. $1.50 per annum.

Rural Alabamian, a monthly magazine, forty-eight pages of very useful matter. C. C. Langdon & Co., Mobile, Alabama. $2 per annum.

Country Gentleman, weekly journal, published by Luther, Tucker & Son, 395 Broadway, Albany, N. Y., contains much excellent matter.

Prairie Farmer, a weekly newspaper well deserving support, published by Prairie Farmer Co., Chicago. $2 per annum.

Rural Carolinian, an excellent and practical magazine, published monthly, by Walker, Evans & Cogswell, Charleston, S. C. $2 per annum.

American Farmers' Advocate, monthly magazine. Advocate Publishing Co., Jackson, Tennessee. $1 per annum. Cheap and good.

North Western Farmer. This is also a monthly magazine full of interest, published by Kingsbury & Billingsby, Indianopolis, Ind. $1.50 per annum, in advance.

Farmers' Club, monthly newspaper, published by F. P. Lefevre, Oxford, Pa. $1 per annum.

Farmer & Gardener, semi-monthly journal, very readable, published by Jas. L. Gow, Augusta, Ga. $1 per annum.

North American Bee Journal, useful to bee-keepers, published by A. F. Moon, Indianapolis, Ind. $2 per annum.

NOTICES OF BOOKS.

We received the February number of the *Overland*, and found, as usual, much highly interesting matter. "Dips, Spurs and Angles," is good, and a professional friend assures us that it is drawn from the life, as he recognizes the doctor as a patient of his, and knows much of his exploits. "An Indian Reservation" and "Early Jesuit Missions in California," both characteristic articles. "Etc." and "Current Literature" as usual, spirited and to the point.

The Flower Garden, a quarterly magazine of floral progress; short, sketchy, illustrated, with interesting notices of plants. This work is bound up with the copious catalogue of Reach, Son & Co., 76 Fulton street, Brooklyn, N. Y. Price per annum, $1.

CATALOGUES RECEIVED.

It is a special pleasure to us to read over the catalogues of our friends the nurserymen, florists, and seedsmen—it affords us the opportunity of recognizing so many old friends, and of making so many new acquaintances, and at the same time of pointing out to our readers where judicious selections may be made.

We have received the advance *Retail Price List* of Briggs & Brother, Florists, of Rochester, N. Y., a very excellent list. We shall be happy to notice the catalogue, if forwarded to us.

The *Nursery Trade List* of Benjamin Reed & Co., of Aberdeen, Scotland, is at hand, copious, and well worthy of careful perusal.

Also, the *Wholesale Catalogue* of the Mount Hope Nurseries, Rochester, N. Y., for the spring of 1873; Ellwanger & Barry, Proprietors. Very concise and useful.

H. A. Dreer's very neat illustrated Garden Calendar to hand. List full, prices moderate; and cuts spirited and true to nature. Published by H. A. Dreer, 714 Chestnut St., Philadelphia.

FAVORS RECEIVED.

Thanks to Messrs. Carmany & Co., for the annual retrospective sheet, for 1872, of their *Commercial Herald and Market Review*—a most elaborate and exhaustive compendium of productive and commercial statistics, highly interesting, instructive, and useful. We wish we had it in octavo form, so that we could place it on our book-shelf for ready reference.

NEW AND RARE PLANTS.

The *Garden* (English) says: "The new conservatory climber, *Tacsoma Exoniensis*, which received a first-class certificate this summer at Birmingham, is in fine bloom in Mr. Veitch's nursery, at Exeter. Even in a cool greenhouse it has now upward of a hundred flowers on it, in different stages of growth.

—*Rural New Yorker.*

The Campanula Vidalii, is recommended as a perfect gem for the greenhouse. It is a low growing plant, with racemes of pure white, bell-shaped flowers.

New Double Chinese Primrose—(*Primula sinensis coronata.*) This new and promising double Primrose has been produced by Miller & Sievers, florists of San Francisco, and is a very distinct variety. The flower consists of cut-lobed, fringed and laterally recurved petals, and the centre of unexpanded fassicles (connivent clusters) of floral leaves. Color, pink with a purplish tint.

A Sensitive Oxalis.—The late Dr. Welwitsch, of the *Gardener's Chronicle*, tells us he discovered, in Angola, an *Oxalis* so sensitive that its leaves would close by a mere footfall near it. But the leaf-stalk does not fall as in the common sensitive plant, but closes in over the crown, going up instead of going down.—*Gardener's Monthly.*

New Canterbury Bell.—Almost everybody knows the Canterbury Bell. Large blue or white flowers, and covering a pretty large plant with large blossoms, there are not many new plants showier than this old-fashioned thing. Lately this has been "improved:" at the base of the bell-shaped corolla there is usually a green five-cleft calyx; but in this new race the green calyx segments have been developed into broad petal-like processes, of the same color as the corolla, giving the plant a very unique and grand appearance. But our readers must not look for it in seed catalogues as Canterbury Bell. This is too vulgar; but they will see it as *Campanula medium calycanthema alba.* — *Gardener's Monthly.*

New Bicolor Geranium—"Pride of Mount Hope." It is a seedling of Messrs. Ellwanger & Barry, and a cross between Buist's Beauty and the well-known Mrs. Pollock; foliage large and of a brilliant yellow color, with a broad chocolate zone. Unlike all other Bronze Geraniums we have yet seen, this succeeds best under the hottest sun; the bright colors of the leaves do not appear on plants grown in the shade or under glass. Its vigorous habit and highly colored foliage will make it, we think, a very effective and valuable plant for borders, edgings, etc. "It is certainly far more effective than any tricolor or bicolor yet introduced," is a reliable English opinion of it. — *Gardener's Monthly.*

Achyranthus Casei. — During the summer of 1871, Mr. Case, of Richmond, Ind., secured a sport from *Achyranthus Lindenii*, very similar in its markings to *Achyranthus aurea reticulata*, though

differing from it in having perfect leaves, like the original *Achyranthus Lindenii*. It stood the sun well during the past summer, retaining its color, and every way proved, Mr. Case says, a good bedding plant.

—*Gardener's Monthly.*

New Magenta Primrose — *Lady Madelina Tayleur*, (Knox). Mr. Cannell, in his English Catalogue, says: Who, when they first see the dear old English Primrose showing its bright, yellow bloom, can help but welcome it as the herald of approaching spring, and feel that stern and dreary winter has passed and gone, and that the glorious and flowery summer is near at hand; but how much more is that beautiful yellow emblem surpassed by the introduction of that splendid bright magenta-colored variety, which valuable kind was raised in Ireland. Its habit of growth and freeness of bloom, is in every way similar to the yellow variety. It is figured in the *Floral World*, and considered by the editor of that periodical, who had a plant submitted to him for inspection, to be one of the choicest hardy gems of new plants this year. A great acquisition for spring bedding. — *Gardener's Monthly.*

Amaranthus salicifolius.—This new plant of last year did not please in the early part of the season, but in the fall, when it changed the color of its upper leaves, it became a great favorite.

—*Gardener's Monthly.*

The Knowfield Beech. — Everybody knows the beauty of the blood-leaved Beech. This new variety is advertised in England at a high figure. It is said to have stripes of green and gold through the regular blood-colored leaves. The little plants are five dollars each. It is said to have been a sport from a blood-leaved Beech, and has maintained its character under propagation. If it comes out as it is represented, it ought to be one of the finest things ever introduced.—*Gardener's Monthly.*

NEW VEGETABLE.

New Onion—The Queen.—The English say that this is an extra early kind. "If sown in February, it will produce onions from one to two inches in diameter in four months." It is also said to be a good keeper.—*Gardener's Monthly.*

WORK FOR THE MONTH.

BY F. A. MILLER.

At the time of writing this, a glorious rain has set in again, after a long spell of pleasant weather, which has enabled farmers and gardeners to go on uninterruptedly with the preparation of the ground, sowing, and planting. Taking everything into consideration, this son seems likely to prove one of the finest on record for a plentiful crop of everything. Grand results are almost certain, and in view of this fact, I would appeal strongly to our farmers, gardeners, and cultivators, on however small a scale, to devote a small amount of money and labor to the planting of trees, shrubs, and flowers, which will surely make their homes more pleasant and cheerful. These improvements are not made in vain; the comfort which they afford can only be appreciated by those who have actually commenced the work.

If fast-growing trees are desired, no better can be recommended than the Australian Gum-trees (*Eucalyptus*), of which several good varieties may be bought very reasonably. I would recommend in particular *Eucalyptus glo-*

bulus, E. obliqua, E. amygdalina. Purchasers should see that the balls of earth around the roots are well secured; if the earth is allowed to crumble from the roots, they will surely perish.

The Acacia is a very good evergreen tree, and thrives exceedingly well here. Plant at least three or four varieties. For shade, I recommend *A. latifolia, A. hemolophylla, A. floribunda, A. melanoxylon, A. linearis, A. mollissima;* for windbreaks or hedges, *A. verticillata* and *A. armata* are excellent.

For ornament, *Cordylines, Dracoenas,* and *Grevillia robusta* are very desirable.

Of coniferous trees, good varieties are too numerous to mention: Lawson Cypress (*Cupressus Lawsoniana*), Monterey Cypress (*Cupressus macrocarpa*), Monterey Pine (*Pinus insignis*), *Juniperus funebris, Libocedrus decurrens,* and many others, are fast-growing trees, apt to thrive well everywhere. I have mentioned these trees for general planting on farms and around country residences.

The ground in the vegetable garden may now be prepared by first giving a good top dressing of old stable manure, which should be incorporated with the soil by spading it about twelve inches deep.

For Asparagus, Rhubarb and Carrots, the soil should be worked deeper, in order that the roots may penetrate to a greater depth. Lettuce, Radishes, Spinach, Carrots, Early Turnips, Parsnips, Peas, Onions, Asparagus, Celery, and all the hardier vegetables, can be sown in February and March.

The planting of bulbs in the flower garden should be continued. Hyacinths, Tulips, Pæonies, Lilies and Amaryllis, deserve a place in every garden.

Gladiolus are indispensable; but I would recommend to plant them in succession every month, that we may have them in bloom at all seasons of the year. I have already planted some, which are expected to flower in May. For a brilliant show in the garden, and as cut-flowers for vases, they are exceedingly fine.

Hardy flower-seeds can be planted in February and March; as such, I would recommend Candytuft, white and purple, Sweet Alyssum, Stock Gilly, Wallflower, Pansy, Larkspur, Mignonette, Nemophila, Sweet Peas, Phlox Drummondii, Portulacca, Pentstemon, and Gypsophila.

Plants in the greenhouse, conservatory, and the window, should as yet be watered sparingly. The frequent fumigation of the greenhouses with tobacco smoke, and the careful cleansing of plants from insects and dust, should be attended to. The warm weather brings insects by thousands, and unless their progress is checked, they will soon get the best of you. Diluted soap suds make a very good wash for plants.

During warm days, give plenty of fresh air for the greater part of the day.

The propagation of tender plants must still be delayed, unless artificial heat can be applied; the same I would say of choice flower, tree, and shrub seeds.

If Dahlia roots have been taken up in autumn, they may now be set under the shelves of the greenhouse, or some other protected place, covered with dry earth, and permitted to sprout; when sprouts make their appearance, the roots may be divided so as to give one or two round eyes or sprouts to a root; they may then be planted singly into the open ground.

Black Hamburg Grape Vines are mentioned as at Castle Wellan, Ireland, said to be one hundred years old, and which yet bear very fair crops of fruit.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

Of the great value of fruits as food, little need be said. This is now, nearly universally, thoroughly understood, and of their tendency to promote not only health of system, but even morality of character, much has been written. But the good of every kind for man can scarcely be too often repeated. Let the well-being of the human race be continuously impressed upon our thoughts and memory, and we need frame no excuse for so often, in these articles on the fruit markets, reiterating our advice to the public to use ripe fruits (the objects of our favorite notice and treatment in all our writings, through a now rather exceptionally prolonged life) in a liberal manner, as the partaking of them freely not only *prevents disease*, but their regulated enjoyment helps to remove that which already exists. All ripe fruits are, also, more or less nutritious. Professor Salisbury, too, has clearly demonstrated that the APPLE is superior to the POTATO, in the principles that go to increase the muscles and the *brain* of man; and in fattening properties, it is nearly equal, when cooked for swine, or fed raw to that great friend of man — the horse — and also to some other of our domestic animals. The juice of ripe Grapes has cured epidemic dysentery, and French physicians often send their dyspeptic patients to the vineyards to feast freely on their produce, and they often derive great benefit from so doing. They have also occasionally advised the use of "cooling acid fruits;" and the earliest writers have directed the sugary ones, as Figs, for food in convalescence. Families, where fruits are most plentiful and good, and prized as an article of daily food, are most free from disease of all kinds, and more especially from fevers and "bowel complaints." Most fruits aid digestion — some directly, some indirectly — and lessen the desire for alcoholic or stimulating drinks. The juicy ones act as "diluents," and all as "diuretics;" the free acids neutralizing, or rendering soluble the earthy matters in the blood, and carrying them off rapidly through the natural channels. So great a use of the flesh of animals, forming our chief diet at all our meals, is not only unnecessary, but, we think, decidedly prejudicial to man's health and well-being. At any rate, our own experience is, that by discontinuing the eating of meat to some extent, we have been rewarded, for the last twenty years of our life, with better health and more real enjoyment, than we had experienced during many years before, when meats formed a large portion of our food.

There can not be found in any part of the world, perhaps, a more propitious climate and soil for the propagation and success of fruits in general, than in California. The influence of climate on varieties has the effect to create more or less rapid growth of both tree and fruit, as we go north or south, causing in the tree a coarser, spongier and softer wood, when grown south; and in the fruit, greater size, more open and coarser texture of flesh, and corresponding depreciation in flavor, with earlier maturity in the Apple and Pear; but the Peach, Apricot, and Nectarine, have additional character and sweetness, and the juices are more elaborated. This may be said to be true, in a measure, here in our warm, stimulating climate. But if we suffer in some degree from a rather too pushing climate and soil in regard to some of our fruits, we gain more by the congeniality of our region with others, and are enabled to

embrace a much larger variety of fruit than the more northern and cooler climes, and can enjoy many—especially the Strawberry—for a longer time every year. We need not the forcing of fruits by man's hot-house labor and ingenuity, but are indeed largely blessed from the prolific hand of Nature almost alone, and whether the bounties of Pomona are enjoyed at the rich man's table, or are munched by the laborer at the roadside—whether dealt out to the million, or picked from the sidewalk by the ragged urchin (though, fortunately, owing to the great abundance of all kinds of food, there is but little necessity for the latter mode of procuring them). The supply is indeed plenteous. However, it is time for us to speak more practically of the condition of our fruit-markets this month.

Of Los Angeles Oranges we have further arrivals, and they come to a good market at this time, and will find, no doubt, a speedy sale.

Of Bananas we have had a pretty good supply for some time.

Although California Apples are in plenty, and have a somewhat dry and mealy character compared with those brought from one or two hundred miles north of us, or with the Oregon fruit, yet we think there is an improvement in their juiciness compared with the produce of the last two years. Oregon Apples have not yet arrived in large quantities.

The Italian Chestnuts have failed in their usual good condition this year, and there are but very few good ones in the market.

California dried Figs are in their best condition, now, on account of their freshness.

Eastern Chestnuts are good and plentiful, and are quotable at 25 cents per pound. Filberts and Brazil-nuts the same. California Walnuts outsell the Chile from 5 to 8 cents per pound, and fetch 20 cents. Hickory, 20 cents. Native Almonds, 20 to 25 cents for hard, and 25 for soft-shell. Smyrna Figs, 25 to 50 cents; Prunes, 20 to 35 cents per pound.

Apples sell by the box from $1.25 to $2.50; Pears, $1.50 to $3.50 per box. The chief Pears, and the best, are the Winter Nelis—the Glout Morceau is scarce as usual—Easter Beurrés are in good quantity. The Vicars are nearly gone. The large baking Pears are more interesting for their great size, than for their valuable qualities.

We observe in Clay Street Market some fine California dried Raisins, and pitted Plums. The Plums are Coe's Golden Drop, Jefferson, Ickworth, Petit d'Argent, Reine Claude de Bavay (Green Gage), Bradshaw, Columbia, and Gen. Hand. They are very large and rich in flavor—from Mr. Ballou, San José. They are put up nicely in boxes, and look as tempting as the best dried French Plums, or Plums d'Ente. The price is 30 cents per pound, and by the box $3.50.

Grafting Geraniums—Has been practiced very little in this country, but when our gardeners learn its value, it will be extensively used for the slow-growing but elegant Zonale varieties. Even for the purpose of obtaining a supply of good, strong cuttings, grafting the weaker sort upon the stronger will be found of considerable value to the commercial florist.—*Exchange.*

It has been discovered by Minnesota farmers that two acres of sunflowers will supply a family with fuel through a long winter. The wood of the stalk and the oil of the seed, it is said, make roaring and cheerful fires.

Correspondence.

To the Editor of the California Horticulturist:

Dear Sir:—Since your publication of the article on "Hyacinths in Sponge," in the January number, I have invested in some bulbs of that description, and followed the directions given in the article. Although but a short time has elapsed since I placed the bulbs in the sponge, I can already see very satisfactory results in growth.

A friend, living in Oakland, has had somewhat longer experience in this new mode of culture, and tells me that a bulb of the Chinese Hyacinth, treated in this manner, pushed out its foliage to the height of a foot, threw up its first flower-stalk, and bloomed, in thirty-one days; the second flower-stalk being then well developed.

I have two bulbs under treatment, which promise well. I also learn that several of my lady friends have undertaken the experiment, and I expect to be able to give you full details of their success, as well as my own, in a future number of your valuable journal.

M. A. C.

San Francisco, Feb., 1873.

Editorial Gleanings.

HOW THE FUCHSIA ACQUIRED CELEBRITY.

The New York *Tribune* relates the following pleasant story about the first Fuchsia:

Old Mr. Lee, a nurseryman and gardener near London, well known fifty or sixty years ago, was one day showing his variegated treasures to a friend, who suddenly turned and declared, "Well, you have not in your collection a prettier flower than I saw this morning at Wapping." "No; and pray what was this phœnix like?" "Why, the plant was elegant, and the flowers hung in rows like tassels from the pendant branches, their colors the richest crimson; in the centre a deep purple," and so forth. Particular directions being demanded and given, Mr. Lee posted off to the place, where he at once perceived that the plant was new in this part of the world. He saw and admired. Entering the house, he said, "My good woman, this is a nice plant; I should like to buy it." "Ah, sir, I could not sell it for any money, for it was brought me from the West Indies by my husband, who has now left again, and I must keep it for his sake." "But I must have it." "No, sir!" "Here," emptying his pockets, "here is gold, silver, copper;" (his stock was something more than eight guineas). "Well-a-day, but this is a power of money, sure and sure!" "'Tis yours, and the plant is mine; and, my good dame, you shall have one of the first young ones I rear, to keep for your husband's sake."

A coach was called, in which was safely deposited our florist and his seemingly dear purchase. His first work was to pull off and utterly destroy every vestige of blossom and blossom-bud; it was divided into cuttings, which were forced in bark-beds and in hot-beds, were re-divided and sub-divided. Every effort was used to multiply the plant. By the commencement of the next flowering season, Mr. Lee was the delighted possessor of three hundred Fuchsia plants, all giving promise of blossom. The two which opened first were removed into his show-house. A lady came: "Why, Mr. Lee, where did you get this charming flower? "It's a new thing, my lady—pretty, is it not? "Pretty! 'tis lovely. Its price?" "A guinea. Thank your ladyship;" and one of the two plants stood proudly in

her ladyship's boudoir. "My dear Charlotte! where did you get that elegant flower?" "Oh, 'tis a new thing; I saw it at old Lee's; pretty, is it not?" "Pretty! 'tis beautiful! Its price?" "A guinea; there was another left." The visitor's horses smoked off to the suburb; a third flowering plant stood on the spot whence the first had been taken. The second guinea was paid, and the second chosen Fuchsia adorned the drawing-room of her second ladyship.

The scene was repeated, as new comers saw and were attracted by the beauty of the plant. New chariots flew to the gates of old Lee's nursery ground. Two Fuchsias, young, graceful, and bursting into healthful flower, were constantly seen on the same spot in his repository. He neglected not to gladden the faithful sailor's wife by the promised gift; but ere the flower season closed, three hundred golden guineas clinked in his purse, the produce of the single shrub from the window in Wapping; the reward of the taste, decision, skill and perseverance of old Mr. Lee.

Cut Flowers.—In cutting flowers for vases or bouquets, it is never well to break them abruptly from the stems, but cut them off with scissors or a knife—the latter being the best, as it is less likely to injure the minute pores or tubes of the stems which draw up the moisture needed to nourish the flower. If they are gathered while wet with dew, they will keep longer than if cut when the sun shines hotly upon them. If it is desirable to keep them a great while, a pinch of saltpetre and of common salt added to the water will prevent their decay, and also remove all unpleasant odors from the stems. Boiling water turned upon the stems of faded flowers, and allowed to stand upon them until completely cool, will frequently restore them to freshness. Cut off the stalks for half an inch or so before putting them into cool water, which should not be icy cold.

A Floral Curiosity.—A wonderful flower is described as existing at Constantinople, belonging to the Narcissus family of bulbs. There were three naked flowers on the stalk hanging on one side; the underneath one was fading, while the two others were in all their beauty. They represented a perfect humming-bird. The breast, of bright emerald green, is a complete copy of this bird, and the throat, head, beak, and eyes, are a most perfect imitation. The hinder part of the body and the two outstretched wings are a bright rose color, one might almost say flesh colored. On the abdomen rests the propagation apparatus, of a deep, dark brown tint, in form like a two-winged gad-fly.

The Diadem Pinks.—No flower novelty introduced in the past ten years has given so much delight as the Diadem Pink. At first some trouble was experienced from mixed seeds and sorts untrue to name, but now propagators have obtained a strain of true character, and the bloom of perfect plants is unequalled for its brilliancy by any other plant in the flower-garden. The Diadem Pink is a flower that is so eminently worthy of culture in every garden, we can recommend it for general trial. With us it has done exceedingly well on light, warm soil. They will bear considerable manure, applied well-rotted in either the fall or spring. The same treatment given to Sweet-Williams will produce good blooms of this also.—*Ex.*

Cross Breeding of Fishes.—Mr. B. Hanson, of Stavanger, in Norway, has, according to a correspondent of the *London Athenæum*, accomplished a very novel feat in pisciculture by producing a new hybrid species, a cross between *Salmo alpinus* and *Salmo eriox*, the former species spawning four weeks before the latter. Mr. Hanson's manner of bringing together the spawning maturity of the two species is ingenious. When *Salmo alpinus* has been spawning for some time, Mr. Hanson secured a female fish in an interesting condition, and imprisoned her in a perfectly dark tank, where he left her alone. In like manner Mr. Hanson, as soon as possible, secured the sire of the first couple of *Salmo eriox* he found in mature condition for spawning, and put him under a similar arrest, and kept a close watch over both until the time of the sire came. In this manner Mr. Hanson succeeded in rearing, with only a loss of one per cent. in his spawning boxes (supplied from a subterranean well which flows with a uniform temperature of about 5½ degrees Réaumur all the year round) a new species, which attains a full development in four years, and is remarkable for its exceeding vigor and wildness in water, and its palatableness on the table. Mr. Hanson entertains sanguine hopes of this species becoming self-productive in course of time, contrary to all experience of hybrid fish, because he has already caught in his pond several individuals with roe in them.

Butchering Young Trees. — Young shade trees on the outskirts of the city are being horribly hacked and butchered by parties who have the cheek to call the operation "pruning." If there is no provision made in the code for the severe punishment of parties guilty of such vandalism, the Commissioners have failed to fulfill their whole duty. The cork-barked elm, naturally a symmetrical tree of sturdy growth, needs but little trimming at any time, and to witness an unskillful operator slashing away right and left with knife and saw among its shapely branches promiscuously, is a species of barbarity and a sacrifice of the beautiful which should be frowned down everywhere. This promiscuous, slashing process to which handsome young trees are too frequently subjected, seems to be done with a view of producing a tree to resemble as nearly as possible a gooseberry bush placed on the end of a long pole. The process is simple tree torture, and the parties executing the miserable work appear to possess about as keen and delicate a sense and appreciation of ordinary good taste and useful art as a pack-mule might be expected to manifest. —*San Joaquin Independent.*

A Timely Hint. —In transplanting tomatoes, cabbages and tobacco plants, prepare a tub of manure water, and thicken it to the stiffness of mush by stirring in rich garden mold; dip the root of the plant in this paste before setting in the ground; press the earth firmly around the root, and sprinkle with manure water.

The grandest forest of pine lumber in California, containing white, yellow and sugar pine, cypress and arbor vitæ, and other trees valuable for timber, lies between Susan Valley and Pit River.

Wild flax, which appears as if it might be tamed, has been found in the Klamath Lake country.

MILLBRAE.

Watkins, Photo. Residence of D. O. Mills, Esq., (President of the Bank of California,) San Mateo County, Cal *For Cal. Horticulturist.*

THE

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THE RURAL HOMES OF CALIFORNIA.

BY MRS. E. S. CARR.

MILLBRAE, *the Home of D. O. Mills, Esq., President of the Bank of California.*

No adequate idea of Millbrae can be obtained from a single picture. The estate is so large; so much of its beauty is hidden in the sheltering hills and along wild, wooded cañons; so many works of art and of taste have been gathered to adorn this truly noble and attractive residence; as to require a series of pictures for its full illustration. The development of its natural advantages will require more than one life-time for its accomplishment; but we hope to show how wisely the work has been planned, and with what careful and loving study of many beautiful arts its finishing proceeds.

Millbrae, covering 3,000 acres, and the adjoining Easton estate containing 3,000 more, belonging to another member of the family, is farmed as one property. It was originally a part of the Burri-Burri Rancho, and was purchased from General Wilson sixteen years ago.

The San José Railroad cuts across the eastern portion, behind which the Sierra Moreno rises in a series of irregular benches to an altitude of nearly three thousand feet. Every variety of landscape, from wild, rugged gorges, clothed with the Douglass Fir and Madroña, to those of softest pastoral beauty, may be enjoyed within its boundaries—mountain stream and loch, the gentle curves of San Bruno, the wider sweep of the great bay with Diablo in the distance, and the ocean itself.

With all this diversity of surface, there is scarcely an acre of its land not valuable for agricultural purposes. San Mateo is one of the great dairying counties of the State, and Millbrae is its great milk-dairy. The fogs which condense on those uplifted pastures keep them green for months after the valleys are withered and sere; and during the driest period, the overflowed lands along the bay afford abundant food for cattle. Twice a day the railroad train takes the product of pure, fresh milk, from five to seven hundred cows, to be distributed within an hour in San Francisco.

It is said that Woburn Abbey, the most complete place in England, is also the most complete *farmery* in the world; and as truly it may be said that the most costly and finished home in California rests upon a solid basis of utility.

The admirable management of this

dairy deserves more than a passing notice. First of all, the manager, Mr. A. F. Green, is a master of his business, and detects the qualities of an animal from its points, as unerringly as Prof. Owen would reconstruct its skeleton from a single bone. His large experience and careful oversight, with the liberal outlay which has been made to secure the best and most economical methods of housing, feeding, and tending the stock, have brought the gross proceeds of the *milk* sales to $7,000 per month. The stock, mostly graded Short-Horns and Devons, is carefully bred, and shows constant improvement. The best English dairymen prefer half or quarter-bred stock to the full-blood, and our experience in California seems to coincide with theirs. No inconsiderable profit is derived from the sale of calves, and cows turned off for fattening.

Looking at the photograph, the long line of buildings seen upon the railroad to the right of the mansion is the dairy, which consists of a centre and two enormous wings. As you enter the first, you see huge vats filled with running water; these are the cooling tubs into which the milk-cans are plunged as soon as they are filled; in the rear is a large apartment where they are washed, aired, and dried. The wings contain a double row of cattle-stalls; an iron track runs through the centre, along which the loads of cut-fodder, oil-cake, etc., is conveyed and thrown into the feeding-troughs. Ventilation is so perfect, and cleanliness so thoroughly attended to, that there is less to offend the most fastidious sense here, with 500 cows under one roof, than in the barn of an ordinary farmer.

North of the dairy is the farm-house, a very comfortable and convenient home for the twenty-five men employed in milking and taking care of the animals. The building to the left, near the entrance, is occupied by the manager. Between the dairy and the bay, Mr. Mills has recently inclosed with a levee four hundred and fifty acres of salt marsh, which is now covered with *fresh* water. It is to be hoped that this costly experiment in reclamation will result as favorably as the Duke of Bedford's, who pumped 18,000 acres dry with steam-engines, and made of it the most profitable farm in England.

The Millbrae Mansion House occupies a site chosen by Mr. Olmstead after much careful study of the property, and answers more than any building we have seen, East or West, Mr. Downing's ideal of the perfect American Home—"A country house where the establishment may be moderate, the living rooms compact and well arranged, the labor-saving appliances multiplied." It is all this and more. It is the product of tastes enriched with the best experiences and advantages of city life, brought to bear upon Nature in developing her highest uses.

The poet Holmes wrote, with an east wind blowing upon him, his conviction that "the finest women grow under glass." If it could be true anywhere, it should be when the crystal gives you so much of sunlight and moonlight, and discloses every change upon the Great Mother's face. A view like that from the library windows at Millbrae, across the green meadows, over the blue waters of the bay, through the Livermore Pass into the pleasant Suñol Valley, up to the great cone, now white with winter snow—or southward, over cultivated fields toward the valley of San Mateo, whose embowered homes and white steeples bring a sense of neighborliness into the seclusion—certainly must tend to make "the man and

the action fine" to whom they are as daily bread.

A very correct impression of the architectural effect of the building is given by the photograph. The massive simplicity of its style is well carried out in the interior. Alighting within the *porte cochere*, you pass through a vestibule into the staircase hall—a nobly proportioned apartment, enriched with beautiful woods, and adorned with choice masterpieces of the sculptor's art. Folding doors open from this into the drawing room, which has an eastern outlook, through a wide veranda inclosed in plate glass. This room is *en suite* with the library (one in fact as well as name), wherein one may keep company with the best minds of all the ages; also with a beautiful morning room, and the luxuriantly appointed billiard-room. The south front commands a view across the lawn to the conservatory, and contains the dining-room and its accessories. There is a private office on this floor, and, in short, every convenience which the various tastes of the family or their guests may require. All the offices which are usually crowded to the rear of our dwellings, are placed in the basement—so light, airy, and well ventilated, so filled with all labor-saving appliances, as to leave nothing to be desired in that direction. The bowling alley reaches across the building, and occupies the west front of the basement-story. The main staircase leads to the picture gallery, which occupies the space immediately over the hall; and here we are tempted to linger far beyond our prescribed limits. Spacious chambers, filled with every luxury of modern life, open to us on every side; but Art makes its own atmosphere. Standing before Merle's exquisite painting of "Poverty," you are borne far away from Millbrae to the crowded streets wherein the old, old story of sacred Motherhood, in conflict with Want and Sorrow, is told anew. Here, too, is the famous picture of Cleopatra before Cæsar, by Gerome, over which critics dispute even as historians have quarreled over the great Subject, whose feet were of clay, and whose face was a consuming fire. I think History, and Shakespeare, and William Story are all justified in this painting. There she stands, lithe as a leopard, graceful as a date palm, the incarnation of intelligence and will, without a trace of moral quality. American art is well represented at Millbrae, both in painting and sculpture. Randolph Rogers' "Ruth" adorns the hall, and the gallery contains choice pictures by Bierstadt, both Harts, Bradford, and many others. One feels that the arts of home decoration have been well and faithfully studied to produce the results seen in all the appointments of the Millbrae home. Something quite beyond the upholsterer's art has determined the style of ornamentation, the harmony of colors, and adaptation of forms to uses.

The conservatory, finished only a year ago, already affords many new and interesting subjects of botanical study. It is the finest structure of the kind on the coast, and serves the double purpose of a grapery and tropic house. In the latter department, directly under the great dome, the spray of a fountain can be thrown to the roof, to fall again in a grateful shower upon the plants, whenever it is needed. Extensive propagating and forcing houses are placed near, and the apparatus for heating and ventilation is the best in use.

As much may be said of the barn and stables, which are seen near the foreground of the picture. Both these and the gardener's house are concealed from the windows of the mansion, either by

the contour of the hill or the oaks which cover it.

The *home grounds* are improved upon well considered plans, and present many attractive features. A glazed pavilion, which commands a lovely prospect, and invites one to rest after a walk in the oak grove, or along the banks of the trout ponds, is an embellishment of recent date. So are the precious bronzes and antique vases which are now finding appropriate places on the lawn.

Whatever may befall Millbrae, it will never lose its verdure "while grass grows and water runs." For the water resources are ample; a reservoir of six thousand gallons, fed by perennial springs, supplies the house and contiguous grounds, backed by one still larger — holding a million gallons. Should these fail, Spring Valley, with its lake three miles in length, is in the near neighborhood.

If we have lingered too long over this description, it is partly to show the reasons for believing that this part of California, despite the winds which make the trees one-sided, is destined to become the seat of the highest civilization. The busy metropolitan life of the Bank President enhances the delights of a rural home occupied and enjoyed at all seasons of the year, and the pleasure of improving it is fully shared by the ladies of the family. Still young enough to be "planting backlogs for their old age," the Millbrae folk have learned that "the best furnished soul knows both town and country at its best," and how to combine most happily the advantages of both.

Sweet potatoes to keep well must be thoroughly ripened. Then they should be stored, or hung up in a warm, dry place.

ANNUALS.

BY F. A. MILLER.

It is really surprising that we do not see more annuals cultivated in our gardens, when it is generally admitted that they give so great variety and such pleasing effect to the flower-beds. With a very small outlay many little groups of bright and charming flowers could be had throughout the summer season, and until midwinter in this mild climate. I would not recommend planting them singly and isolated, as in such case they would be far less effective, and would, in many instances, not receive proper care; if planted here and there in groups upon the lawn, or intermingled with shrubs in the flower garden, they can not fail to produce very desirable features. I have frequently urged the planting of annuals, and, when doing so, I have been told quite frequently that the seed would not come up, or that the plants would not do well after coming up. I am willing to believe all that, but can not attribute the failure, in such case, to the climate, nor to the seed. The fault, in most cases, lies in improper treatment or neglect.

I will now give a few hints in regard to the planting of annual flower seeds. First prepare the soil well before planting. By preparing soil, I mean this: Clear the ground, intended to be sown, of weeds; give a top dressing of old rotten stable-manure, trench the ground at least spade-deep, pulverize the soil finely, and rake smooth. The seed may then be sown broadcast or in drills; if sown broadcast, a little fine, light, sandy loam mixed with a small quantity of very old manure may be sprinkled over the seed, so as to cover it to the depth of from one-eighth to one-quarter of an inch. My method, however,

differs from this; I sow broadcast, and then work the soil over gently with a rake; most of the seeds will thus be covered sufficiently with soil to insure germination. If sown in drills, I cover very lightly in the same way, as indicated above.

The proper time for sowing can not be given exactly; it depends very much on the state of the weather. In most localities of California, March and April are favorable months. If the seed is sown too early, the coldness of the ground and the frequent rains are likely to injure seeds, if they are ever so fresh and sound. Many varieties of annuals should be raised in boxes covered with glass, and transplanted after having made four or five leaves; but some do not bear transplanting well, and should be sown where they are desired to grow and flower. But the great secret of successful growing of annuals, is the judicious treatment of the young plants after they are up. The soil requires to be kept loose by frequent hoeing, and to be kept clean of weeds. While the plants are young, the weeds should be pulled out with the hand, but as they grow up and are thinned out to proper distances, they should receive frequent hoeing. If artificial irrigation is required, it should be done very carefully, the young plants being tender, and apt to be washed out.

I will now name a few good varieties, worthy of a place in every garden:

Aster (German Aster), is one of the most desirable annuals, of easy culture, and producing very showy flowers of blue, white, red, and other colors and shades. Asters remain in bloom for a long time, and are the favorities of gardeners and amateurs in Europe. I have cultivated them here with very good success. I prefer sowing the seed in April, where the plants are expected to remain. The different varieties now under cultivation are almost endless: Truffaut's Pæony-flowered, Pyramidal-flowered, Chrysanthemum-flowered, new Rose-flowered, are some of the best.

Balsams are an excellent class of annuals, much favored by every European and Eastern florist or amateur. Balsams may be either raised in boxes and transplanted, or they may be sown in the ground, where they are expected to remain. The Camellia-flowered and the Rose-flowered are considered the best. If properly treated, Balsams will grow to the height of two or three feet, literally covered with flowers. A very effective, and, at the same time, a very graceful plant.

Candytuft, both white and purple, are very desirable annuals, flowering in great abundance throughout the year. If they are expected to bloom during summer, they should be planted early (February or March will do well); if they are wanted in bloom in mid-winter, or early spring, the seed should be sown in autumn; say, August or September.

Cockscomb (Celosia) is another of these effective and bright annuals, which meet with general favor everywhere.

Delphiniums (Larkspurs) are hardy annuals of great beauty; they flower very abundantly, and make a handsome appearance, if grown in groups by themselves. They grow about two to three feet in height. The prevailing colors are pink, blue, white, and variegated.

Phlox Drummondii cannot be surpassed by any other annual. The flowers are of very brilliant colors, and, if planted in masses or groups, they produce a very striking effect. The seeds may be reared in pots or boxes, for transplanting, while young. I prefer sowing the seed in the open ground,

and letting them remain there for flowering.

Stocks (Stock Gilly) are well-known favorites, deliciously fragrant, and they bloom uninterruptedly during the first year, until late in winter. The colors are white, red, blue, brown, carmine, and purple of various shades. What are known as Winterstocks, will not bloom during the first year, but continue, under favorable circumstances, to flower for two or three years in succession. The flowers come double or single; the double-flowering varieties are considered the most valuable. The seed may be sown in pots or boxes, under glass, and transplanted, or it may be sown in the open air, to remain where planted; both ways are practiced.

The *Zinnia* is fast becoming one of the most popular of annual flowers. Mr. James Vick, speaking of it in his excellent catalogue lately published, says: "A splendid large plant and beautiful flower; as double as the Dahlia. It is perfectly adapted to our climate, will thrive in any good soil, and may be transplanted as safely as a Cabbage-plant. Seeds may be sown under glass early in spring, or in the open ground, as soon as the danger from frost is over. Transplant when small."

Not being able at this time to describe more of these valuable annuals, I merely mention the following as very desirable: Portulacca, Nemophila, Oenothera, Marigold, Morning Glory (climbing), Lobelia (not strictly annual), Calliopsis, Mignonette, etc.

There are many other flowering plants which bloom during the first year, such as Pansy, Petunia, Scabiosa, Verbena, etc., but they are not considered annuals, and will do well with us for a number of years.

I most sincerely hope that the time is not far distant, when the barren places of our flower gardens will be filled with some of the best annuals, and thus give greater variety, and present a more pleasing appearance.

CULTIVATING FLOWERS.

Most, if not all flowers, succeed best in sandy loam, made rich by the addition of well rotted manure, which should be thoroughly mixed with the soil. Such a soil, thus prepared, will not become hard or baked, but will remain loose and porous. It will not only afford the small and tender plants chance for existence, but it will also enable them to perfect themselves with vigor and beauty.

If your garden is composed of a stiff, heavy soil, a good dressing of sand and manure will assist it wonderfully in the way of plant development; and some of the most delicate plants that would not succeed at all in such soil, in its unimproved condition, will, after such preparation, flourish in the most satisfactory manner.

A heavy soil is greatly benefited by being roughly spaded up in the fall, and remaining in that condition through the winter. In all cases, before sowing the seed, it is of the utmost importance that the soil should be thoroughly pulverized. This important particular should never be overlooked.

Seed should not be sown too early in spring—not until sufficient warmth and dryness has been imparted to the soil. When these requisites are overlooked, and the seed is sown too early, it is apt to perish. When the soil will spade up mellow, crumbling to pieces when struck with the spade, it is in proper condition to be worked.—*Briggs' Illustrated Catalogue.*

ARBUTUS — STRAWBERRY-TREE. *

BY E. J. HOOPER.

Dr. A. Kellogg's interesting and enthusiastic remarks on the Madroña-tree, have led us to think of a variety of the same family of beautiful shrubs, which we remember when a boy, in our family garden in England. This species, which we so readily call to mind, was the most common one then in Europe—the *A. unedo*. The tree we refer to was trimmed so as to be nearly globular in its form, and nothing we thought could exceed its beauty in the autumnal months, when it was covered with both flowers and ripe fruit; the latter closely resembling a scarlet strawberry. These trees grow naturally in Italy, Spain, and also in Ireland, and are now very common in European gardens. They are tolerably hardy in most parts of Europe, and are seldom injured, except in extremely hard winters, which often kill the young and tender branches, but rarely destroy the trees. They would, of course, flourish well in California. But, while we have so splendidly fine and noble a sort here as the Madroña or *A. Menziesii*, we hardly need any of the other varieties of Arbutus. Both these kinds, at any rate, are fine objects for planting singly upon grass plats, or in groups in shrubberies. We had a grand sight of great numbers of Madroñas, with their brilliant scarlet berries, contrasting most strikingly and beautifully with their polished and glistening green foliage, on the Pacific Railroad this winter, while descending from the Sierra Nevada into the Sacramento Valley. What a delightful sight and change this was after passing over the snow-clad mountains and plains, which we had so lately gazed on.

* Natural Order, *Ericaceæ*.

For growing the Arbuti, sandy loam, or loam and decayed vegetable matter, suits them best, and they are said to be readily increased by layers. But plants are most successfully raised from the seed; the only objection being that this process is so tardy, as almost to deter men from taking the trouble. The taste for these lovely shrubs, however, is now likely to increase, and we know where plenty of the seed has been sown, and plants will soon follow, small as they will be at first for some time.

We may add that the berries of the Arbutus are edible, though not agreeable. When eaten in quantities, their fruit is said to be narcotic. A wine is made from it in Corsica, but it has the same property as the fruit. In Spain, both a sugar and a spirit are obtained from it. The bark and leaves of the same plant are used as astringents; in some parts of Greece, they are employed in tanning leather.

SPONGE FISHING.

From the account given by Vice Consul Green, of the Tunisian sponge fishery, in his report to the Foreign Office, which has lately been issued, it would seem that to fish for sponges requires as much if not more skill than to fish for salmon. The sponge fishery is most actively carried on during the three months of December, January, and February, for at other seasons the places, where the sponges exist, are overgrown with sea weeds. The storms during November and December, destroy and sweep away the thick marine vegetation, and leave the sponges exposed to view. The fishery is divided into two seasons, namely, summer and winter; the former commencing in March, and ending in November, and the latter as noted above. But the collection of sponges

is not very productive in summer, as it is confined to the operations carried on with diving apparatus, which can only be used on rocky and firm-bottomed places, or to the success of native fishermen, who wade along the shores and feel for sponges with their feet among the masses of seaweed. The sponges thus collected by the Arabs are also of an inferior quality, owing to the small depth of water in which they have grown. As, nevertheless, calm weather and a smooth sea are essential for the success of fishermen, the winter season, although lasting three months, does not generally afford more than forty-five working days. The Arabs, inhabitants of the coast; Greeks, principally from Karnidi, near Nauplia, (Napoli de Roumania), and Sicilians, are chiefly employed in the sponge fishery; the Greeks, however, being the most expert fishermen, while the Arabs are the least skillful. Sponges, says the *Pall Mall Gazette*, are obtained by spearing with a trident, by diving with or without the assistance of any apparatus, or by dredging with a machine somewhat similar to an oyster-dredge. The Arab fishermen, principally natives of Markenah and Jerbah, employ boats called sandals, manned by from four to seven persons, one of whom is the harpooner, while the others manage the sails, etc. The spearman watches for the sponges from the bows of the sandal, and the boat is luffed round on his perceiving one, so as to enable him to strike it. The depth of the sea in which the Arabs fish is from fifteen feet to thirty-five feet. Although the Greeks are the most expert divers, the majority of them use the spear. They employ small and light boats, just sufficient to carry a spearman and an oarsman. The boat is rowed gently along, while the spearman searches the bottom of the sea by means of a tin tube of fourteen inches in diameter by nineteen inches in length, at one end of which is placed a thick sheet of glass. This tube is slightly immersed in the water, and enables the fisherman to view the bottom undisturbed by the oscillations of the surface. The spears used by the Greeks are shorter than those employed by the natives or Sicilians, but with wonderful adroitness they are enabled to reach sponges covered by sixty feet of water. They hold in their hands from three to four spears, and dart them so quickly and with such precision, one after the other, that before the first has time to disappear under the surface, the second strikes its upper extremity, and thus gives it additional impetus to reach the sponge aimed at. The Sicilians, also, fish with a spear and in small rowing boats, but do not understand the employment of the tube, and have not acquired the knack of the Greeks in using three or four spears; they consequently seldom secure an equal number of sponges, although they are always more successful than the Arabs. The produce of the fishery is, it is stated, susceptible of considerable augmentation by an increase in the number of fishermen, and a new sponge is reproduced within a year wherever one has been removed.

Cinchona in Bengal.—In 1862, Dr. T. Anderson began the cultivation of *Cinchona* (the tree that yields the Peruvian bark), in Sikkim, Bengal. The venture has proved profitable, and, at the present time, he has under cultivation Cinchona trees of three species, to the number of 1,707,115, yielding about 300 pounds of bark per acre. Besides this, he has 480,000 young plants in nursery.—*Popular Science Monthly.*

BOTANICAL AND ZOOLOGICAL FARMS.

BY DR. A. B. STOUT.

It may please your readers, and encourage the zealous in behalf of agricultural progress, to learn the efforts that have been made, and are still faithfully urged, to foster that interest. Several years since a proposition was made before the American Medical Association to introduce the culture, as an experiment, of the Cinchona-tree in the different States of the Union. The reason therefor was, the scarcity and high cost of that invaluable drug, quinine. The same proposal having been introduced before the State Medical Society, of California, some three years since, the subject was referred to a committee. It at once became apparent to that committee that the experiment in California, as a subject of special legislation, would be a horticultural improvement of too slow growth to obtain attention, where quick harvest and great profits were essential to prosperity. The committee, therefore, determined to enlarge the programme, and endeavor to found an institution worthy the creative greatness of California.

The following Act, presented before the Legislature in 1872, was the result, and was favorably regarded. It had many friends, but, unfortunately, was introduced at too late a date to receive full consideration.

AN ACT *to Create and Establish a State Botanical and Zoological Farm for the Experimental Culture of all Desirable Plants of Foreign or Indigenous Growth, available for Economic Purposes; for the Cultivation of Knowledge in Zoology, and for the Foundation of a Public Thermal Sanitarium for the Cure of Chronic Maladies.*

PREAMBLE.—At the meeting of the Medical Society of the State of California, October 19th, 1870, this interesting subject was first introduced to the public attention. A memorial to Congress on the cultivation of the Cinchona-tree in the United States (by the American Medical Association) was presented to the Convention. A committee was appointed to address the Legislature of California, and petition that honorable body to appropriate suitable lands for the purpose. Doctors A. B. Stout and T. M. Logan were the committee selected.

The following year, Oct. 11th, 1871, at the annual meeting of the Medical Society of the State of California, Dr. Stout of San Francisco, from the committee previously appointed, made the following report on the raising of Cinchona, which was accepted and referred to the Committee on Publication:

The committee on this subject report that during the year no facilities have offered which could be used to promote the cultivation of the Cinchona-tree in California. The committee, however, report progress, and ask for further time. The project is entertained that this well approved subject may be availed of to obtain through legislative action the appropriation of lands, not only to try the cultivation of the Cinchona-tree, but for the experimental culture of any other desirable plant; or, in other words, the foundation of a State Botanical and Zoological Farm. Such an appropriation would render a permanent service and honor to the State, while the care and expense devoted to the one single object might be lost by the failure of the experiment. For such an appropriation a magnificent botanical garden might be created. Associated with a State sanitary institution and thermal resort for chronic diseases, it would form a new and superb institution. Forming, as it would, the permanent residence of several competent physicians, botanists, and naturalists, this would secure for it efficient superintendence, while oftentimes the voluntary labor of many grateful convalescents, or other persons infirm from various causes, would diminish the expenses. In this prospect, your committee respectfully asks to be continued.

ARTHUR B. STOUT,
THOMAS M. LOGAN.

The committee was continued accordingly.

Should the bill introduced Februry 23d, 1872, before Congress, by Senator Morrill of Vermont, for the support of Agricultural Colleges, be adopted—"The support of Agricultural Colleges. Washington, February 23d. A bill introduced by Senator Morrill, of Vermont, today was referred to the Committee on Education and Labor, appropriating to each State in which Agricultural Colleges have been established in accordance with the law of 1862, one million acres of public lands for their further endowment and support. No mineral lands are to be taken under this Act"—then would the cession of land be sufficient *to establish four Agricultural Colleges in as many different regions of the State*, so that their benefits would be fairly distributed.

The establishment of these collegiate farms with botanical gardens for experimental horticulture and sanitary objects, would necessarily become points of attraction for farming settlers in their vicinity, and thus every such endowment would become an important centre of progressive civilization and wealth in the State.

As the bill of Senator Morrill proposes the

cession of one million acres, abundant funds will accrue for the support and development of the collegiate farms; for if ten thousand acres were allotted to each farm, in all forty thousand acres, the remainder sold or leased would become yearly an increasing value.

The advantages in a sanitary point of view, in promoting public health by the suppression of contagious diseases and preventing hereditary transmission, are manifest. This sanitary question is now one of legislative solicitude. The addition of a public sanitarium for chronic diseases, with the use of thermal springs and public baths, would in no wise interfere with the agricultural and educational objects in contemplation. Their presence, on the contrary, would give an additional value and interest, and invite a larger influx of interested parties to the district. Ample space for all these objects exists in these large tracts to permit the various departments to be isolated. The following quotation from page forty-nine, article "Social Evil," in the first biennial report of the State Board of Health, 1870 and 1871, explains the merits of the subject:

"The great diminution in the amount as well as the virulence of venereal maladies in the present, as compared with the ancient times, and the power exercised over the disease, as well on its primitive forms as on its hereditary transmission, by medical treatment, evidently allows the inference that still greater mitigation of the evil may be effected.

"The squalid poverty and filth of former ages no longer exist in our favored country. In a comparative view the poor of our country are all rich. But yet reformative legislation may very much accelerate the progress of improvement. To this end the establishment of hygienic institutions to which the afflicted may easily resort, without the necessity of a record or register of their affliction, will render benefit. The disgrace and secresy which accompany contamination contribute immensely to prolong and intensify the evil, and very few are willing to make a public record of a mortifying fact. Let, then, the cure be made as private for the indigent as the rich. In large towns hospitals and dispensaries should be opened, of easy access to all parts of the place; and in counties, a County Physician, with an ample salary, should visit through the county, whose services would be free to the poor. The magnificent public baths of ancient Rome are an institution which would do honor to our philanthropic age.

"It was, perhaps, this very matter that led the statesmen of that epoch to call them into existence. The religious orders of those times were clever enough to convert to their uses the thermal springs of their respective countries, and by investing them with the idea of divine visitations, won the merit and the profits of divine cures."

If, then, the Legislature would appropriate some thermal springs of acknowledged efficiency and devote them to public use, with free accommodations for the indigent, and as a State hospital to which the poor sick of the State might resort at a very low cost, or for nothing, and even in extreme cases give free transport to the locality, more absolute relief and benefit would be done to the State than by direct legislation against the "social evil."

At present such resorts are occupied as private property, and are only accessible to those who have ample means to pay for their enjoyment. Therefore,

The People of the State of California, represented in Senate and Assembly, do enact as follows:

Section 1. Public lands, in area —— acres (taken from the lands of the State of California, or obtained from the public lands of the United States in California by the petition of the State to the United States for the said appropriation), shall be set apart, applied, and surveyed for the aforesaid objects of public utility and philanthropy.

Sec. 2. Said lands shall not be necessarily limited to one continuous tract; but to obtain the benefit of the different zones of climate and the different soils, altitudes, and thermal waters of the State, they may be located in four different nearly equally divided sections, and four differently selected districts.

Sec. 3. Five Trustees, to consist, first, of the Governor; second, a member of the State Medical Society to be appointed by the Governor; third, the State Geologist; fourth, the Secretary of the State Board of Health; and fifth, the Superintendent of Public Instruction, shall carry out the object of this Act, take charge of the lands appropriated, appoint managers and superintendents, and lease to such farming families as will agree to promote the general plan.

Sec. 4. Said five Trustees shall hold their commissions for four years, and their acts shall be subject to legislative confirmation.

Extract from the Transactions of the Medical Society of the State of California, in October, 1872:

Report *of Committee on Cultivation of the Cinchona-tree, and the appropriation of Public Lands for Botanical Farms, Zoological Collections, and the use of Thermal and other Mineral Springs in Chronic Diseases.*

The interest the committee takes in the subject committed to its care, is unabated. This important and interesting question now depends upon the action of Congress upon the bill introduced by Senator Morrill, of Vermont, proposing to donate large tracts of lands for these purposes in every State. We have, therefore, to endure the delays dependent upon this action, which it is proposed to urge with new vigor when Congress shall again convene. As further evidence of the great value of this enterprise, we submit the following essay of Robert E. C. Stearns, member of the California Academy of Sciences, on the cultivation of certain Australian forest trees in California.

A. B. Stout, M. D.,
Thos. M. Logan, M. D.

[The essay of Prof. Stearns, on the Australian forest trees, has appeared in previous numbers of this magazine.]

The preamble of this bill, introduced by Mr. Comte, gives an ample explana-

tion, and shows the phases through which the general idea has passed, and is in full way, we hope, to obtain ultimate success.

The bill of Senator Morrill, of Vermont—a bill whose scope is so truly national and philanthropic—has already passed the Senate, and only awaits the confirmation of the House of Representatives.

The plan of the bill, if we mistake not, is to sell 1,000,000 acres of United States lands at the Government price, and supply, from the accruing funds in the United States Treasury, the sums necessary to inaugurate the agricultural colleges. The interest on the balance to be divided *pro rata* among the States for the further support of the colleges.

Now is the moment for the friends of agricultural science and natural history to extend their influence and persuasion to obtain the final passage of this admirable bill. The name of Morrill will be gratefully associated in the mind of every land-holder in the nation. Education in agriculture has now become as indispensable to the farmer, as it is in all other departments of industry. Hereditary experience and oral instruction no longer suffice, important as they may be to success in farming. The evening discussions around the big stove in the country inns, are the principal lectures heard on husbandry, and the town hotels are our agricultural colleges; that is, when the politicians give the farmers a chance to talk—and then the fermented product of the grain crop is the chief inducement to the exchange of opinions.

The question will naturally arise, Should all this fine endowment be granted to one agricultural college—the present existing institution? The great extent, and the variety of soils, climate, and altitudes in California, render this State exceedingly favorable for the introduction and cultivation of all the great commercial products; and this circumstance favors the division of the land into at least four great farms, each with its college, board of trustees, and general organization. The more cultivated minds can be induced to devote their energy to the work, the more will the students, and practical young farmers flock to their schools and fields. And a generous rivalry will stimulate them all.

How grand the picture on the mind of all these model farms, in their various details and departments, in full operation; and when each graduate may write "What I know about Farming," with honor to himself, and benefit to his State.

DRYING OF FRUITS.

The following valuable remarks relative to the drying of fruits, etc., were communicated by Mr. Wm. M. Haynie and others at a meeting of the Sacramento Farmers' Club:

Mr. Haynie gave an account of his experience in curing Raisins and Figs in his hop-house:

The hop-house is provided with a set of boxes with wire-cloth bottoms, and some twelve or fifteen feet below these boxes are a couple of large stoves or furnaces so arranged that the smoke passes off by pipes outside of the building, while the cool air passes in at openings at the bottom of the building, and being heated by the furnaces, passes up through the wire-cloth and Grapes, and out at ventilators at the top of the building, the walls of the building being battened and caulked very close. The fire was kept up during the daytime and allowed to cease during the night, so that the Grapes had been sub-

jected to the heating process about twenty hours. The committee exhibited some samples of dried Grapes of each variety, and some of the Figs. The Los Angeles Grapes were, some of them, dried about right, and others were still soft or green, the curing being somewhat uneven. The White Muscat Grapes were still quite soft and more imperfectly dried, while the Figs were pretty fairly cured. But the heat had evidently been raised too high, the Grapes having the taste of being somewhat cooked.

The committee were entirely satisfied from the experiment that making Raisins by artificial heat could be made successful, practically and financially, but wire-cloth to lay them on was objectionable. A better way would be to suspend them, or lay them on some material which was a non-conductor of heat. Wherever the fruit came in contact with the wire it was cooked. They also thought the heat should be generated outside the building, and forced through the fruit in the form of heated air.

Mr. Johnston said: You can't force the drying of Grapes ; there was no reason for constructing houses in which to cure Grapes when they could be successfully cured on the vines and gathered in the form of Raisins.

Mr. Aiken said: Grapes do not dry evenly on the vine. While some of the berries on the same bunch dry to a crisp, others remain green.

Mr. Rutter agreed with Mr. Aiken. He has White Muscat Grapes of the first crop still hanging on the vines, and still as green as ever.

Mr. Manlove: It is easy to account for the opinions of Aiken and Rutter. Aiken's vineyard is on the river bottom, low land, and is covered with sand, which causes some of the Grapes exposed to the reflection of the rays of the sun to scald and crisp, while those not so exposed are, by the natural dampness of the surrounding atmosphere, kept from drying at all; while Rutter irrigates his vineyard, and keeps the sap running in the vines and to the Grapes. He (Mr. Manlove) has 100 vines of White Muscat Grapes evenly and successfully converted into Raisins, and now hanging on the vines and ready for picking and packing. His vineyard is on clay or adobe soil, which, when not irrigated, absorbs the heat of the sun in the daytime and retains it in the night, thus keeping up the drying process of the Grape. He had formerly dried all his fruit on scaffolds, but he had been taught by a Greek who had worked for him that the ground was better, as it is certainly much cheaper. When gathering his Muscat Grapes for the market, he made a practice of assorting them, throwing the unmarketable bunches on the ground between the rows. Here they are allowed to remain until cured, when they are gathered up and packed as Raisins, and he sells them at from 13c. to 15c. per lb. The expense of curing being nothing, he had found this practice to pay. Grapes, or any other fruit, will dry one-third faster on the ground than on boards, and better. A clay or adobe soil is the best, because it does not become so hot under the rays of the sun as to scald the fruit, while it retains the heat longer when the sun disappears.

Mr. Johnston said: This is the mode of drying Figs and Grapes on the Mediterranean, and is undoubtedly the cheapest, and perhaps the best. It is sometimes practiced to send heat through under dirt scaffolds by means of furnaces constructed something after the style of the furnaces under brick kilns. This secures the continuance of the heat during the night, and takes advantage of all the heat of the sun in the day, at

the same time; and he thinks it questionable whether any drying-house can be made that will be as economical and effective in this country as the method suggested.

Fruit-growers in California in general say that drying fruit will not pay. The reasons they give are that they have no convenient way to facilitate the work of drying, and the labor is too high to dry fruits in the ordinary way of sun-drying. He recommended the erection of drying-houses heated by pipes, from an ordinary furnace or stove constructed for the purpose, or otherwise by kilns with a surface constructed, say twelve feet by twenty, and the furnace draft underneath. This kind of kiln can be constructed of brick or stone, and is well adapted for the quick drying of all kinds of fruits. Such kilns are used for drying fruits in the States of Pennsylvania and Ohio.

The advantages of kiln-drying are apparent from the fact that the acid of the fruit is retained, and the saccharine properties of the fruit undergo no fermentation; only the vegetable and water substances are evaporated, leaving the fruit with all the solids and excellent flavor belonging to the juices of their several kinds. Such drying-kilns can be constructed to last any length of time by being covered from the weather, and would be more convenient and economical than drying-houses—they turn out better dried fruit. To make a good quality of dried Apples, they must be cut or sliced when in the ripening state, but not fully ripe. The same will apply to the Peach, Plum, Pear, and the smaller fruits. When dried sufficiently for keeping they should be immediately and compactly packed in boxes of suitable size, especially in California, in order that the fruit may not undergo the changes in our climate from humid to dry, which tend to mold and change the flavor.

In drying Figs, he believed the out-door surface-drying kiln would be the best. The Smyrna and Sicily Figs are dried upon a smooth surface of hard clay, as also under glass in houses constructed for the purpose. So are the beautiful layers of white Malaga and blue Portugal Raisins. The Zante Currants are dried upon fire-kilns and in ovens constructed for the purpose, at a temperature of heat not exceeding eighty degrees. The German and French Prunes are dried in clay ovens similarly constructed. All of the imported fruits are similarly dried, and the condition and appearance they come in prove conclusively that they are cured by fire heat. This should teach us all to abandon the lazy system of sun-drying, and stimulate us all to adopt the fire system. There is no country upon the face of the globe that produces better qualities or varieties of fruit for drying than California, and this business can be made a great source of wealth and one of the leading economies of the farmer.

THE HARD AND ORNAMENTAL WOODS OF THE PACIFIC COAST.

BY C. A. STIVERS, M. D.

Living in a new country as we are, and surrounded to a certain extent by new conditions of life, it is our duty to foster and develop all that shall make us prosperous and wealthy. Not alone are we to unfold the hidden treasures of our own State, but also those of adjoining States and countries.

It can be truly said, that to us belongs the general prosperity of the entire Pacific Coast, and, if we wish to erect an empire of commercial greatness for ourselves, and for those who are to

follow us, it must be done by reaching out on all sides, and drawing to us the materials of wealth, which are at present lying unnoticed and unutilized.

California stands in the current-way of (we may almost say) the world's commerce, and it is only necessary to so direct the streams, as that they shall flow through her; receiving, as they must, an increased impetus from her aid and knowledge.

With these facts before me, and also with a view of bringing into notice a branch of commerce which is but developing itself on this coast—that in *hard and ornamental woods*—I have thought a few remarks in your journal would not be out of place. In using the title of "Hard and Ornamental Woods of the Pacific Coast," I have done so for the purpose of including all woods of that description found growing adjacent to the coast, and reaching from Behring's Strait on the north, to the Bay of Panama on the south. Commencing at the southern point of this timber belt, and passing north through Central America and Mexico, we meet with a large number of valuable woods already known to commerce; while there is every reason to believe that there are many others equally valuable, which have as yet been unutilized.

The most common hard woods received from this southern part of the timber belt, are those known to commerce under the general name of "Spanish Cedar" (natural order, *Cedrelaceæ*). While all these belong to the same general class, they are still divided into many varieties, marked by differences in color, texture, and grain. Those growing in Nicaragua (small lots of which have, at various times, been imported), like the Cedars in general of Central America, are finer in texture, and more beautiful than those in Mexico—a variety from Tiger Island (a small island in the Gulf of Fonseca), being as hard and fine as the best Mahogany. Unfortunately, this island has been almost stripped of these valuable trees.

Central America also furnishes an exceedingly hard wood called "*Amapa prieta*" (local name), which resembles the Black Walnut in some degree, but is of much greater density, and somewhat lighter in color. Small lots have been imported, and used in cabinet work, for which it is well fitted on account of its great hardness.

Nicaragua, more especially, grows the "*Carretta*" (another local name), which seems to be but a variety of the preceding, and has often been mistaken for Walnut. Its principal use has been in small carvings, and for ship purposes; small quantities having at times been imported for use at the Navy Yard.

Another valuable wood also comes to this port, chiefly from Nicaragua, called "Fustic" (*Morus tinctoria*). At present its principle use is that of a dye-wood, producing a clear, fine, yellow stain. The wood is of a light and exceedingly handsome yellow color, close grained, and capable of receiving a high polish.

As we advance north into Mexico, the Cedars are more plentiful, but are somewhat softer than those found growing further south; this quality is, however, a gain rather than otherwise; as the soft Cedars of the west coast of Mexico are highly esteemed in the Eastern States; prices having advanced to such a rate as to allow of a number of shipments being made from this port to New York by steamer, at a fair margin of profit. Their principal use is for cigar boxes, stair and cabinet work. Mexico has also the pencil Cedar growing on the west coast, but

the exact locality is at present unknown to me.

Besides the Cedars, Mexico furnishes a great variety of other hard and ornamental woods, small shipments of which have, from time to time, been received at this port.

The "*Haba*," a dense, hard wood, is spoken very highly of by ship-carpenters, as being well adapted for their work.

The "*Primavera*," or white Mahogany, is an exceedingly fine cabinet wood; hard and dense, of great durability, and susceptible of a fine polish. It is also well fitted for ship-work. Of Rosewoods, there are two varieties; the red and black. The red Rosewood is a kind of bastard wood, somewhat like the true Rosewood, but lighter in color, and much softer in texture, while the black is in all respects equal to the Rosewood of South America.

"*Linole*" (natural order, *Aurantiaceæ*,) (?) is rather a soft wood, but with a very pretty and curious figure. Its principal value is in its perfume, resembling somewhat that of Bergamot. It is used in the manufacture of fancy boxes and caskets.

"Lignumvitæ" (*Guaiacum officinale*) is also found growing in large quantities in Mexico, and is in all respects a valuable and desirable wood. Its hardness and durability are well known. It is used in ship-building where a very hard wood is required, as in the case of block and pulley wheels. It is also employed in medicine, in the form of tincture, infusion, etc.

In addition to the woods already mentioned, there are Oaks of various kinds and qualities to be found along this Pacific timber-belt; the *Quercus Skinnerii* being one of the most valuable. At present, the country is so undeveloped and in such a condition, that there are no great facilities for getting these woods to points of shipment. But if their value is only demonstrated, there will soon be such a demand, as to induce an active interest to be taken in this branch of commerce, by both the people and the government.

I shall, at a future time, continue this article by enumerating and describing the hard and ornamental woods of the northern portion of this timber belt, reaching from Mexico through California, Oregon, Washington Territory, British Columbia, and Alaska.

SELECT PLANTS

(Exclusive of Timber Trees) readily eligible for Victorian Industrial Culture, with Indications of their Native Countries and some of their Uses—an Enumeration offered

BY BARON FRED. VON MUELLER.

[Continued from page 10 of January number.]

CALAMUS MONTANUS, *T. Anderson.* — Himalaya, up to 6,000 feet. A hardy climbing palm. The aged canes are naked. "The light but strong suspension-bridges, by which the large rivers of Sikkim are crossed, are constructed of this palm. It supplies material for the strongest ropes for dragging logs of wood from the forests. The most durable baskets and the cane-work of chairs are manufactured from the slit stems. Walking-sticks and riding-canes made of this species are exported from Sikkim in considerable quantity." Many other Calami serve similar purposes, but probably few or perhaps none are equally hardy.

CAMELINA SATIVA, *Crantz.*—Middle and South Europe, temperate Asia. An annual herb, cultivated for the sake of its fibre and the oil of its seeds. It is readily grown after corn crops, yields richly even on poor soil, and is not attacked by aphis. Mr. W. Taylor obtained 32 bushels of seeds from an acre,

and from these 540 lbs. of oil. The return is within a few months.

Canna Achiras, *Gillies.* — Mendoza. One of the few extra-tropical of Cannas, eligible for Arrow-root culture.

Canna coccinea, *Roscoe.*—West India. Yields with some other Cannas the particular Arrow-root, called "Tous les mois."

Canna edulis, *Edwards.*—The Adeira of Peru. One of the hardiest of Arrow-root plants, and thus well adapted for our clime. Seeds, even if many years old, will germinate. This species has yielded excellent starch at Melbourne, Western Port, Lake Wellington, Ballarat and other localities, from plants supplied at the Botanic Garden. The Rev. Mr. Hagenauer, of the Gipps Land Aboriginal Mission station, obtained 220 lbs. of Arrow-root from one-eighth of an acre of this Canna. The gathering of the roots is effected about April. The plants can be set out in ordinary ploughed land. Captain James Hall, of Hastings, prepared also largely the starch from this root. Starch grains remarkably large.

Canna flaccida, *Roscoe.* — Carolina. Probably also available for Arrow-root, though in first instance, like many congeners, chosen only for ornamental culture.

Canna glauca, *Linne.* — One of the West Indian Arrow-root Cannas.

Cannabis sativa, *L.* * — The Hemp-plant; indigenous to various parts of Asia, as far west as Turkey, and as far east as Japan. Cultivated for its fibre, since ancient times. Particularly in hot climes it exudes the "Churras," a resinous substance of narcotic intoxicating property. The foliage contains also a volatile oil, which the seeds yield by pressure—the well-known fixed Hemp-oil. The staminiferous plant is pulled for obtaining the fibre in its best state immediately after flowering; the seeding plant is gathered for fibre at a later stage of growth. Good soil, well drained, never absolute dry, is needed for successful Hemp culture. Hemp is one of the plants yielding a full and quick return within the season. The summer temperature of St. Petersburg (67° F.) and of Moscow (62° F.) admit yet of the cultivation of this plant.

Capparis spinosa, *L.* — South Europe and North Africa. A somewhat shrubby and trailing plant, deserving even for the sake of its handsome flower a place in any garden. It sustains its life in the most arid deserts. The frosts of our lowlands do not destroy this plant. The flower-buds and young berries preserved in vinegar with some salt form the Capers of commerce. Samples of Capers, prepared from plants of the Botanic Garden, are placed in our Industrial Museum, together with many other industrial products emanating from the writer's laboratory. A closely allied and probably equally useful plant, Capparis nummularia, is indigenous to Northern Australia. The Caper-plant is propagated either from seeds or suckers; it is well able to withstand either heat or drought. The buds after their first immersion into slightly salted vinegar are strained and afterwards preserved in bottles with fresh vinegar. Chemical principle: Glycosid.

Capsicum annuum, *L.*—Central America. An annual herb, which yields the Chillies and thus also the material for Cayenne Pepper. Chemical principle: Capsicin, an acrid soft-resinous substance.

Capsicum baccatum, *L.* — The Cherry-Capsicum. A perennial plant. From Brazil brought to tropical Africa and Asia, where now other Pepper-Capsicums are likewise naturalized.

Capsicum frutescens, *L.* — Tropical America. The berries of this shrubby species are likewise converted into Cayenne Pepper.

Capsicum longum, *Candolle.*—Some of the hottest parts of America. An annual herb, also yielding Cayenne Pepper. Our summers admit of the successful growth of at least the annual species of Capsicum in all the lowlands.

Carthamus tinctorius, *L.* — From Egypt to India. The safflower. A tall, annual, rather handsome herb. The florets produce yellow, rosy, ponceau and other red shades of dye, according to various admixtures. Pigment principles: Carthamin and Carthamus-yellow. For domestic purposes it yields a dye ready at hand from any garden. In India the Carthamus is also cultivated for the sake of the oil, which can be pressed from the seeds.

Carum Ajowan, *Benthan.* (Ptychotis Ajowan, *Candolle.*) India. The fruits of this annual herb form an excellent culinary condiment with the flavor of thyme. Its peculiar oil is accompanied by Cymol and Thymol.

Carum Carui, *L.*—The Caraway-plant. Perennial. Europe, North and Middle Asia. It might be naturalized in our Alps and also along our sea shores. The Caraway-oil is accompanied by two chemical principles: Barvon and Carvol.

Carum ferulifolium, *Koch.* (Bunium ferulifolium, *Desfont.*) A perennial herb of the Mediterranean regions. The small tubers are edible.

Carum Petroselinum, *Bentham.* (Apium Petroselinum, *L.*) The Parsley. The biennial well-known herb, indigenous to South Europe and the Orient. Essential oil peculiar with Stearopten.

Caryota urens. *L.* —India. One of the hardier Palms, ascending, according to Dr. Thomas Anderson, the Himalayas to an altitude of 5,000 feet, yet even there attaining a considerable height, though the temperature sinks in the cooler season to forty degrees Fahrenheit. The trunk furnishes a sago-like starch. This Palm flowers only at an advanced age, and, after having produced a succession of flowers, dies away. From the sap of the flowers toddy and palm-sugar are prepared, as from the Cocos and Borassus Palm, occasionally as much as twelve gallons of toddy being obtained from one tree in a day. The fibre of the leaf-stalks can be manufactured into very strong ropes, also into baskets, brushes, and brooms. The outer wood of the stem serves for turnery.

American Plants in Great Britain. —An English journal says: "The beautiful *Asclepias tuberosa* is, this season, producing freely its showy, bright, orange-colored flowers in several collections round London. This fine perennial thrives perfectly well almost anywhere, if planted in sandy peat." In the same journal we find the following notice: "One of the best hardy aquatic plants, in flower at the present time, is the North American Pickerel Weed, *Pontederia cordata*, a plant by no means so often met with as it deserves to be. It produces a stout spike of handsome sky-blue flowers from one and a half to two feet high. No ornamental water should be without this charming aquatic, which should, however, have a place near its margin."

Again: "The American Pitcher Plant, *Sarracenia purpurea*, is thriving as well as any native plant in the bog-garden in Messrs. Backhouse's nurseries at York, and by its side a healthy little specimen of the still more curious *Darlingtonia Californica* is beginning to grow freely."

The above extracts will show that many of our native plants find a better appreciation in foreign cultivation than they do in their own country. It is to be hoped that our gardeners and florists will give more attention to the introduction of native plants, whose merits have been overlooked because of their commonness.

CAMPHOR-WOOD.

The Camphor-wood boxes brought from China and the East are well known for their strong preservative odor, and are found useful in keeping away moths from woolens and furs. The China and Japan Camphor-tree belongs to the Laurel family, but that of Sumatra and Borneo is the *Dryobalanops camphora*. Even the leaves and fruit smell of camphor. In Sumatra this tree is abundantly met with on the west coast, chiefly in the extensive bush, but seldom in places more than 1,000 feet above the level of the sea. The tree is straight, extraordinarily tall, and has a gigantic crown, which often overtops the other woody giants by 100 feet or so. The stem is sometimes twenty feet thick. The Barus camphor of this island is the most esteemed of any, and it is for this drug, obtained in but small quantities —seldom more than half a pound to a tree—that it is ruthlessly destroyed. The tree, when felled, is divided into small pieces, and these are afterward split; upon which the camphor, which is found in hollows or crevices in the body of the tree—and above all, in knots or swellings of branches from the trunks—becomes visible in the form of granules or grains. An essential oil also exudes from the tree in cutting, which is sometimes collected, but is scarcely remunerative. On the west coast of Formosa there are forests of Camphor-wood, and a great deal of crude camphor is shipped thence to Amoy and other Chinese ports. Large quantities of the wood are sawn into planks. Tables and cabinets are then made of it, and it is also turned into platters and washing-basins. Only a small portion of the vast camphor forest of Formosa has been reclaimed from its wild inhabitants, and this consists of fine tall trees, the growth of ages. When a tree is felled, the finest part of the wood is sawn into planks, the rest chopped small and boiled down for the camphor.—*The Garden.*

HOW TO COOK MUSHROOMS.

Robert Morris Copeland contributes to the February *Atlantic* an article on "Edible Fungi," from which we take the following:

The treatises on fungi give many methods for cooking them to make them palatable, and most of the processes are so compound, and require so many additions of condiments, or spices, butter, etc., that a piece of sole-leather so cooked would probably be very good. The simplest method is the best for relish, and is an easy way of ascertaining whether any fungus which seems safe is flavorous enough to be worth eating. Peel off the outer skin, break out the stem, and set the cap top down on a hot stove. In the spot where the stem formerly stood put a little salt, and, if desired, a small bit of butter. Scatter some salt over the gills. When the butter or salt melts, the cooking is done; and as soon as it is cool enough the fungus should be eaten, carefully saving the juice. *Agaricus Campestris* cooked in this way, and eaten hot, will make one wish that he was all mouth and palate, and that his mouth might never be in want of a Mushroom.

This is the simple Irish way of cooking the Mushroom, and all its allies can be treated in that way. Some fungi which do not seem particularly delicious when thus cooked, will, when slowly stewed with a little butter, and flour dredged in, with salt and pepper, make most delicious stews.

The mushrooms *Cantharellus*, *Marasimus*, *Boletus*, indeed all of the fungi named, will stew together, and form a dish that, alone or as an *entree*, can not be surpassed in delicacy of flavor and gastronomic satisfaction.

Editorial Portfolio.

In another column will be found an announcement from the Secretary of the Bay District Horticultural Society, that a Floral Exhibition will be held at the Horticultural Hall, in the coming May. We hope that every endeavor will be used both by professional nurserymen and by our rapidly increasing community of amateurs, to render this a pleasing success. Spring is indeed the most appropriate season for such enjoyments.

Much care is necessary to make such fitting arrangements, that, while every exhibitor may have fair opportunity for display and contrast with his competitors, and a due protection for his property, yet that a general harmony of outline may be preserved; and that, while an artistic contrasting of color is effected, at the same time, that general blending and softening of tints which is so pleasing and refreshing to the eye, may pervade the whole exhibition.

In view of these requirements, we extract the following remarks from the *Gardeners' Chronicle* of the 4th of last January:

"We have always held, and we still hold, that no flower show will ever be what it ought to be, until some plan, by which the materials can be placed independent of their ownership, has been brought into working order; and then, as the adjudication must precede the arrangement, and the arrangement must precede the admission of the public, it becomes a necessity either that they should be judged over-night, or very early on the morning of the exhibition day. There are, of course, difficulties in the way of this, but they are scarcely insurmountable; for it would not be necessary to move all the objects which may be brought in. The first and second prize lots might very well remain intact, as groups of the particular objects of which they are composed; while third prize lots, and such as do not get prizes, together with some of the minor classes, might be broken up, and their component parts placed where they were most required. All that would be necessary to carry this out would be to devise a simple and practicable plan of marking the plants, so that there might be no disputes about ownership, and then to secure general acquiescence in the plan.

"What is wanted, and which we never get now, is a sort of continuity in the thread of arrangement—not the abrupt transitions we so often see: as, for example, a group of tall plants set down beside a group of dwarf plants, the two lots not harmonizing one whit more in character of leaves and flowers than they do in stature. The surface should form an easy flowing line, and, where possible, the outline of the plan of the groups also should be a graceful curve; but even in straight tents, and on linear stages, it would be an immense improvement if the objects could be graduated in size. Any marked subjects, such as the best grown Roses, or Pelargoniums, or stove and greenhouse plants, would form distinct and characteristic objects as prominent groups, and so would such things as Aloes and Agaves, or even the lowly alpines, if they were set at proper intervals, and the intermediate spaces were so filled out as to connect the one with the other. We are fully aware of the difficulties of carrying out all these suggestions, and also of the difficulties of working up a picture at all presentable

under present arrangements, for in the former case there must be a revolution of the whole system of staging; and in the latter case the unfulfilled engagements made in the shape of entries, and not complied with, coupled with the limited time which is available, utterly prevent anything but an arrangement of chance, which may or may not prove to be effective at certain spots, and which can never hope to reach to any high degree of effectiveness as a whole. To remedy this state of things, all that can be done at present is to keep the matter well before the horticultural public, with the hope that governing bodies may in time see their way to strike out a bolder policy, and that those who bring together the materials of which the shows have to be composed, may not prove obstructive as to the mode of carrying it out."

We have had many communications from friends, seeking information on the rudimentary steps necessary to initiate a garden, in a locality either not previously cultivated, or in a neglected condition, by an entirely inexperienced hand. Complaints are made that all books and codes of instructions in magazines, evidently presuppose some amount of knowledge and some previous preparation. Our friends seem to want their A B C. To gratify them, we have made arrangements for a series of short and concise articles on this subject; but they must learn to ask for what they want, and not be too lazy to do it. Write; and, if possible, answers will follow.

It is not generally known that the leaves of the coffee-plant are coming to be used like the berries, and in some coffee-growing lands, Java for instance, are preferred by the natives to the choicest berry for making the favorite decoction.

INFLUENCE OF FORESTS ON CLIMATE.

Meteorology is yet in a crude and undeveloped state, but experiment and research in that direction are constantly bringing out facts of permanent value. In Europe, where the denudation of forests has rendered these changes more apparent, investigations have been carried forward in the most careful manner. The following observations made by M. Mathieu, Professor in the School of Forestry, at Nancy, France, while they do not establish the theory of the effect of forests on climate, are valuable in that direction. They were reported by him to the Agricultural College at Nancy, in 1869, and include the first eight months of the year given, being made with reference to the points named, as follows:

1. Does the wooded condition of a country exercise an influence upon the amount of rain it receives?

The answer to this question was attempted by taking two stations at equal height above the sea, but separated between fifteen and twenty miles, the one situated in a wooded, and the other in a cultivated country, and observing the rain-fall. The result, reduced to inches, was, that at the agricultural station the rain-fall for the three seasons was 82.02 inches, and at the forest station, 93.13 inches; difference in favor of the forest station, 11.11 inches.

2. Does the covert of the forest, by intercepting the rain falling from the atmosphere, diminish to a considerable extent the amount of rain that reached the ground?

This was answered by placing rain-gauges beneath the trees, and in the open ground close at hand, and comparing results, which were as follows: In the open ground, 92.09 inches; under the trees, 87.74—excess in open ground, 4.35.

This shows that while some of the rain-fall in the forest does not reach the ground, still, by comparing what did reach it with the result at the agricultural station, we have 87.74 inches for the rain-fall under the trees, and 82.02 inches for the fall at the agricultural station, an excess of 5.72 inches in the forest.

3. What is the effect of a wooded country on the conservation of the moisture received by the soil?

The answer was sought from a comparison of the evaporation from two equal vessels, one placed in the forest, the other in the open ground. Evaporation went on five times as rapidly, taking the whole year into consideration, in the open ground as in the forest, ranging from three to six times between April and July. Eighty-five per cent. of the rain falling from the open field evaporated, while only 22 per cent. of that falling in the forest was lost.

4. What is the influence of forests upon temperature?

The experiments in this direction had been conducted but a short time, but go to show that the mean annual temperature in the woods is lower than in the open country, and that the difference is least in winter and greatest in summer. In 1868 the mean temperature of the forest was lower than that of the open fields by 4 deg. 35 min. in the morning, and 9 deg. 33 min. at night in July; which difference fell in December to 48 min. in the morning, and 49 min. at night. Again, the average variation in temperature was much greater in the open country than under cover of the forest, between day and night. It ranged from 05 min. to 8 deg. 57 min. in the open air, but only from 04 min. to 1 deg. 22 min. in the forest. —*Western Rural.*

REPORTS OF SOCIETIES.

Bay District Agricultural Society.—The Annual Fair of this Society will be held in this city at Agricultural Park, in September, commencing on Monday, 8th, and continuing six days, including Saturday, 13th. The Society are making extensive arrangements to make it one of the most attractive exhibitions ever held in the State.

FAIRS AND EXHIBITIONS.

Bay District Horticultural Society. The Horticultural Society has arranged to hold a Spring Exhibition, which will open on May 1st, 1873. This will be a novel feature, and has many excellent points in its favor. Although this will be chiefly a floral show, as announced by the advertisement on another page, it will be superior in many respects to an autumn exhibition. The foliage of plants and trees present a much fresher appearance when exhibited early in the season, and many varieties of flowering plants will be in full bloom by the 1st of May, which are a thing of the past in autumn. We anticipate a grand show; and if the florists, the nurserymen, and the amateur gardeners will participate more generally than has been the case at former exhibitions, it will prove the most attractive display of the kind we have ever had here.

An extensive list of premiums will be awarded to those children who received plants from the Horticultural Society during the exhibition of last autumn, and who shall exhibit them at the coming fair. Over two thousand plants have been given away, and if only one-fourth of them are in good healthy condition, they will form a very interesting feature in the exhibition.

Every one who feels any interest,

either direct or indirect, in the progress of Floriculture and Horticulture, should endeavor, by every means in his or her power, to make the enterprise a complete success, and an honor to the community. F. A. Miller, *Secretary.*

OUR EXCHANGE TABLE.

We have before us Nos. 1 and 2 of Volume II of what appears to us to be a very excellent serial, exclusively devoted to poultry. The illustrations are of more than ordinary merit, and the various articles, both original and selected, are replete with solid information on the specialty of this magazine, which should be in the hands of every poultry keeper. We wish we had the first volume on our own book-shelves. The *Poultry World* is published by H. H. Stodard, Hartford, Conn. Price, $1.25 per year.

The *Boston Journal of Chemistry*, devoted to the science of Home Life, etc., is evidently a very useful magazine, containing much valuable information. Published by Billings, Clapp & Co., 34 Oliver Street, Boston. $1 per annum.

The *Milwaukee Monthly*, is a very readable serial. Price, $1 per annum. Published by T. J. Gilmore, Milwaukee, Wisconsin.

American Farmer's Advocate, published at Jackson, Tenn. $1 per annum. National in its character, and worthy of support.

Live Stock Journal, a very excellent work on its specialty. Published by Haas, Kelley & Co., 191 Water Street, New York. Subscription, $2 per year.

The West, a very valuable monthly, devoted to the development of the region which its name typifies. Published by John H. Carmany & Co., San Francisco. $1 per annum. Replete with useful information.

Journal of the Farm. This is an illustrated rural and family monthly. Published by Daniel Baugh, Philadelphia. Terms, $1 per annum. Agricultural and horticultural intelligence, and also much useful and scientific information.

Gardener's Monthly. Published by Chas. H. Brinkloe, 314 Chestnut Street, Philadelphia. Subscription, $2.00 per annum. This is one of our most esteemed horticultural magazines, full of information and valuable suggestions.

Central Union Agriculturist. Published by Jeremiah Behm, Omaha, Nebraska. Price, $1.50 per annum. An excellent agricultural journal, full of useful matter, with less of the irrelevant than nine-tenths of its compeers.

CATALOGUES RECEIVED.

We are in receipt of *Wholesale Price List* of the Bloomington Nursery, F. K. Phœnix, Proprietor.

Also, *Wholesale Price List* of "Bryant's Nurseries," Princeton, Ill. A. Bryant, Jr., Proprietor.

We have to hand *Semi-Annual Trade List*, for Spring of 1873, of Hoopes Brother & Thomas, Cherry Hill Nurseries, West Chester, Pa.

We have received from Briggs & Brother, nurserymen, florists, and seedsmen, of Rochester, N. Y., their beautifully illustrated *Quarterly Catalogue.* This is a most interesting work, containing three finely colored plates and upward of 400 cuts of flowers, plants, etc. It is a most comprehensive catalogue, containing much valuable information, and got up in a truly artistic style on tinted paper. The quarterly series is offered for 25 cents a year,

with several other most enticing offers regarding seeds, etc., which can be studied out on obtaining the catalogue.

Vick's Illustrated Floral Guide, for 1873. This, also, is a very superior and highly decorated catalogue of plants, seeds, and bulbs, profusely illustrated, and accompanied with copious instructions and descriptions. This, too, is a quarterly, offered at 25 cents per annum for the four numbers, and suggests advantageous modes of arranging for the supply of seeds, etc.

FAVORS RECEIVED.

We have received two works on Bee Culture: *Annals of Bee Culture*, for 1872, price 50 cents, and *Progressive Bee Culture*, price 25 cents, which appear to contain much valuable information on the subject. We recommend them to the attention of all aparians. They can be obtained from the author and editor, D. L. Adair, of Hawesville, Illinois.

Also, *American Bee Journal*, for January, 1873, a monthly journal. Subscription, $2 per annum in advance. Published by the editor and proprietor, W. F. Clarke, Chicago, Ill.

Our thanks are due to the Commissioner of Agriculture for the monthly report for January, 1873. Much valuable information and interesting statistics contained.

We are in receipt of the March number of the *Overland*. It contains more than its usual average of excellent and entertaining articles.

ALWAYS keep a supply of lime or finely broken bone within convenient reach of your poultry.

NEW AND RARE PLANTS.

New Lily—*Lilium Leichtlinii*. The origin of this Lily is unknown. Messrs. Veitch & Sons, the well known English nurserymen, found a bulb of it among some *L. auratums*, which they received from Japan a few years since, and J. D. Hooker, Curator of the Kew Gardens, named it after Max Leichtlin, of Carlsruhe, a gentleman who has paid especial attention to the introduction and culture of Lilies. This new Lily resembles, in some respects, the common Tiger Lily in the form of the flower, but differs from it not only in the color but graceful habit of the plant. The flowers are solitary but numerous, four inches in diameter, nodding; bright, light golden or lemon yellow, spotted or blotched with maroon. The bulbs appear to be perfectly hardy, and the plant altogether a vigorous grower and profuse bloomer. This Lily bloomed for the first time in this country last summer, on the grounds of Mr. C. L. Alen, near Brooklyn, N. Y.—*Rural Carolinian*.

Juniperus Chinensis aurea—*Young's New Golden Chinese Juniper*. The *Gardener's Chronicle* says: "Certainly one of the foremost places among golden-leaved Conifers must be accorded to Mr. Maurice Young's *Juniperus Chinensis aureus*. The Chinese Juniper is well known as one of the hardiest and handsomest of coniferous shrubs, and when we state that the novelty just referred to is the exact counterpart of its parent, in all but its color, and that color is equal at least in richness of hue to any golden Conifer hitherto known, but little further mention of it is needed. We may however add, from a recent personal inspection of the stock, that it is thoroughly constant. Not a plant among the entire stock shows the least tendency to run back, but all, whether

infants of six inches or adolescents of three feet high, appear in the same aristocratic 'cloth-of-gold' array. * * * Our notes indicate that the propagated plants take on a close pyramidal habit, and have moreover the two-fold character of foliage which is seen in the parent, and that the color of the more prominent portions of the plants is as bright as the tint of a Golden Holly. Taking these various points into account, and coupling with them the free-growing, hardy character of the plant, there is no exaggeration in pronouncing this novelty to be one of the best and most desirable of ornamental Conifers."

Crocus Scharojani — *Iridacæ*. A pretty, hardy, autumn-flower bulb, related to C. *Suwarowianus*, and producing its blossoms before the leaves appear. The flowers are of a deep saffron color, and are developed in the early autumn months. It is found in the western Caucasus, and has been introduced to the St. Petersburg Botanic Garden.—*Gardener's Monthly.*

New Japan Cockscomb — *Celosia Japonica.* This is a very elegant variety imported from Japan last year. The plant from the root to the smallest leaf-vein, with the exception of the green blade of the leaf, is of brilliant scarlet crimson; the combs are exceedingly rich, bright and elegant. James Vick, of Rochester, N. Y., seems to possess the stock of this desirable plant.

Dicentranthera macrophylla—*Acanthacæ*. An ornamental stove shrub, with very large obovate lanceolate leaves, and terminal erect spikes a foot long, of handsome bilabiate bell-shaped flowers, which are rosy purple externally, and almost pure white within. It comes from tropical Africa, and has been raised and flowered in the Glasnevin Botanic Garden.—*Gardener's Monthly.*

Ampelosis Dissecta—*Vitacæ*. A slender and very elegant free-growing hardy climbing shrub, furnished with long reddish branches, which bear palmisected leaves having pinnatifid segments, so that the leaves closely resemble in form the fronds of *Litobrochia pedata*. It bears small, roundish, bluish, glaucescent fruits. Two or three varieties of the plant have been introduced from China to the Jardin du Museum at Paris.—*Gardener's Monthly.*

New Variegated Cockscomb—*Celosia aristata variegata*. This is an exceedingly beautiful novelty, originating at Erfurt, Prussia. The contrast of rich, deep crimson and golden yellow with lacings and fringings of light crimson is very brilliant and attractive. We are assured that the plant is perfectly constant in character. Briggs & Brother, of Rochester, N. Y., appear to have the exclusive sale of this superb novelty.

Thujopsis Standishii. — Introduced from Japan in 1861, by Mr. Fortune, who discovered it growing near Yeddo. it somewhat resembles the *T. dolabrata* in its general appearance. Its leaves are smaller, of a bright glossy green above, and a dull glaucous color below; its branches are slender and pendulous. It is quite hardy, and, like its congener, of slow growth, at least when young, requiring apparently similar treatment to *T. dolabrata.*—*A. Fowler, Castle Kennedy, in Gardener's Chronicle.*

Primula Japonica—(*Queen of the Primroses*). This hardy new Japan Primrose is one of those genuine acquisitions to our floral wealth that occurs only at rare intervals, and in the hands of hybridizers it will probably become the parent of a series of new varieties that will play an important part in the spring decoration of the flower garden. A Primrose growing to the height of 18

inches, and producing whorl above whorl of flowers of a rich magenta color, each flower measuring from half an inch to an inch in diameter, is likely to reverse all our previous notions of Primroses. The sentiment of humble beauty universally attached to the common Primrose can not be applied to this variety, which may be said to assume magnificent proportions. It is, *par excellence*, a plant for the amateur, for its great beauty, its hardiness, and its free-seeding qualities, while its culture is of the easiest kind. Strong plants should be at once planted in any deep, rich, garden soil; and, although it is believed to be perfectly hardy, it might be well, until a stock is in hand, to plant it where some slight natural protection is afforded. By mid-winter the whole of the large handsome leaves will have decayed, and a few only of the smallest will be left to mark the heart of the plant. This being its habit, no uneasiness need be felt; but when in this state, should the weather be unusually severe, it may be well to invert a pot or pan filled with dry leaves over the crown: immediately the weather moderates, this must be removed. A plant treated in this manner last winter, threw up a very strong flower-stem in the spring, and was altogether the finest we have yet seen.

It produced eight whorls of its lovely flowers in succession, one above the other, and from it was gathered nearly a quarter of an ounce of good seed. Coddling should be strictly avoided, for the only failure of a good bloom we have noted resulted from over carefulness in the matter of protection. The most effective way of propagation is by division of plants after blooming, as it secures strong blooming plants for the next season. In most cases every bloom spike will cause the plant to multiply by two. When these offshoots are of a good size the plant should be taken up and divided, each crown with its own portion of roots. Replant in good soil in a half shady border, from whence, when the plants are well established, they should be removed with large balls to the situation in which it is desired they should bloom.—*Gardener's Monthly.*

Perpetual Flowering Tree Carnation, La Belle.—The forerunner of a new race of varieties. The flowers, of the purest white, are very large and smooth, perfectly double, and delightfully fragrant, and are produced, all the year round, in such profusion, that one or more plants should be grown wherever cut blooms are in request.—*Gardener's Magazine.*

White Calycanthus.—Mr. Berckmans reports in the *Farmer and Gardener* that a white flowered variety of the Calycanthus has been discovered in middle Georgia. It blooms continuously till frost. This sweet shrub will be in great demand by the cut-flower folk, as we should judge it would force easily through winter.

A Purple-leaved Birch has been found by some one connected with the firm of Transon Bros., Orleans, France, and is now under propagation. It is a variety of *Betula alba.*

NEW FRUITS AND VEGETABLES.

New Early Peach.—Among the many new and valuable Peaches originated by that well known fruit-grower, Thomas Rivers, of Sawbridgeworth, England, is one known as the *Early Beatrice.* It has been fruited by S. G. Bilgen, of North Carolina, who says it does not rot, is of good size and color, and of superior quality—ripening two weeks earlier than Hale's Early. It can be

obtained from Ellwanger & Barry in the coming autumn.—*Ohio Farmer.*

The "Pond Pear."—This is the name given to a new Pear by Dr. S. A. Shurtleff, of Brookline, Mass. The Doctor has been introducing new Pears for many years, some of which are valuable acquisitions to the list of American varieties. The "Pond" is of medium size, has a rich, sugary flavor, and would be highly esteemed by persons who prefer sweet Pears to those of a sub-acid, or vinous flavor.—*New England Farmer.*

Gardeners should not forget that some of their choicest flowers are borne by plants that are virulently poisonous, and that all necessary operations connected with these should be carried out with much care and caution. There is a warning illustration, from the *Kentish Gazette* of February 4th. Mr. Stephen Maple, under-gardener to F. Phillips, Esq., Lee Priory, Wingham, has met his death under singular circumstances. He was training a creeping plant of a poisonous nature (probably a Euphorbia), when he was pricked in the hand by one of the thorns. Mortification set in, and he died in great agony four days afterward. He was 77 years of age.—*Gardener's Chronicle.*

Zanthoxylon fœineum for Hedges. We see the Prickly Ash named as a hedge plant. It is thorny enough, but surely it can not everywhere be as troublesome in the way of suckers as it is wherever we have known it, or no one would be found to say a word in its favor.—*Gardeners' Monthly.*

There have been 27,000 distinct species of insects catalogued in Europe that pray upon wheat.

CULTURE OF VERBENAS.

To grow Verbenas well it requires a good bed in the right place. But it should be where there is plenty of sunshine, as they will not succeed in the shade. Any good, sufficiently deep, rich and friable soil will grow them. A lawn, too, is a fine place for them. Cut out a round bed, or any other shape desirable, on a lawn or grass-plat; invert the sods and place them in the bottom of the bed; put six or eight inches of good soil on the surface; set a good plant of double Zinnia, or a Geranium, in the centre. Buy or beg a dozen or more of good, strong growing plants, not high-spindling affairs (particularly if you have to buy them); set them two feet apart in the bed. If they are not pot plants, set them so that the bottom of the Verbena will be six inches deep. If the plant is branching as it should be, bend off the branches in a slanting position, and fill in the centre with soil nearly to the surface; water freely to settle the soil around the roots, and then fill up the space with dry soil to prevent baking. Peg down the plants as they spread, and keep the soil well cultivated, and, of course, free from weeds. You will then have a fine bed of Verbenas. If you should want to grow good seedlings, get good plants to begin with. The best Verbenas produce the best seed, especially the scented and red colors, just as the best Peaches do, but you can not entirely rely on either. The probability is you will be satisfied with the finest that have been already raised, without troubling yourself about your own seedlings. This is more the province of the professional florist. When you are tired of your Verbenas, or they should perish, or grow too rusty and black, you can spade them in, and this process will enrich

the soil sufficiently, especially if done yearly. The plants that have blue, purple, and white colors have the most seed, and the flowers of most of them are sweet-scented. A few years past a fragrant Verbena was a novelty. We have now quite a variety of them. Gather your seeds early in the morning when the dew is on, or after a shower. Do not use heating manure, as it will make the plants rusty-black. The bright and showy flowers of the Verbena, make it the most popular bedding plant in cultivation. We here give the names of a few of the best: Verbena Hybrida, Auricular Flowered, New Striped Italian, Pure Blue, Pure Scarlet, Montana, Blue Bonnet, Gail Hamilton, President, Queen of Stripes, King of Scarlets, Grand Victor, King of Purples, Snow Flake, Scarlet Circle; with endless others, old and new.—*Pacific Rural Press.*

WORK FOR THE MONTH.

BY F. A. MILLER.

Spring time is upon us, and the rainy season will soon draw to a close. Much work remains to be done yet, before the dry season commences.

The present season has been one of the most favorable for the planting of trees and shrubs, and for outdoor improvements. Farmers have had ample time to get in their seeds, and from all accounts, the fields and the gardens never looked better. This condition is most encouraging for every one who has a direct or indirect interest in the welfare of California, and would warrant some attention to the improving and adorning of country homes. I am sorry to say that the planting of trees, and shrubs, and flowers for ornament, has not been carried on upon so extensive a scale, as was anticipated; our people seem to move slowly in all enterprises not calculated for immediate returns.

There is yet time to plant a few trees. They can be obtained cheaply, and our nurserymen have plenty of them. Those who desire to plant during March and April, should take the precaution of mulching, unless water can be had for irrigation during summer.

I call attention again to the various trees mentioned in my communication of last month, all of which are well adapted to our climate. Under all circumstances, I would insist upon planting young trees instead of old ones; in three years from now, the difference in size between these young and older trees will hardly be noticed.

In transplanting trees, I would call attention to the condition in which the roots of trees should be to insure their growing. Nurserymen understand all this, but many of our farmers and amateur gardeners do not. The general rule is, that evergreen trees and shrubs should be transplanted with the ball of earth in which they have grown, while a deciduous tree or shrub (*i. e.* trees and shrubs which shed their leaves in autumn; as the Apple, the Elm, the Maple, etc.), can be safely transplanted without having any earth attached to the roots. An evergreen tree, therefore, may be transplanted at any time, provided that all the earth penetrated by its roots is moved with it. But inasmuch as this is not easily accomplished, as it would require too much arduous labor to do it, and as some soil will not adhere well to the roots, particularly in summer time, the most favorable time for transplanting is during the early winter season, when most of the evergreen trees are at rest, and new fibres may be formed during the latter part of our rainy season. If

evergreens, therefore, are transplanted early in the rainy season, a comparatively small amount of soil attached to their roots will make the removal safe. However, there are some evergreens, such as Eucalyptus (Gum tree), and the Acacia, which are not apt to grow and do well, if any of their roots are disturbed by the removal; and our nurserymen, therefore, are in the habit of cultivating them in pots or boxes, which is really the only safe, and certainly the best method. I was not a little surprised that the *Pacific Rural Press*, some time since, published an article in favor of raising Eucalyptus in the open ground, and denouncing the practice of raising them in pots or boxes, their theory being illustrated by one representation showing the action of the roots if grown in pots; and another representing the roots of a tree grown in the open ground. The fact is, that the representation of the spiral root shows that that particular tree had been retained in entirely *too small* a pot for its size. Any plant or tree which is for too long a time confined in a very small-sized pot, is unfit for transplanting. The practice of raising Eucalyptus and Acacias in pots or boxes is the only correct one, provided they are shifted into larger pots or boxes when the size of the tree and the condition of the roots require it. The Cypress, the Pine, the Juniper, and other coniferous trees, can suffer the loss of some small roots in transplanting, and, if very young, they may be transplanted with safety into the open ground without any earth around their roots; but the Eucalyptus or Acacias will perish unless they are protected from the sun for some days.

This is the proper time for sowing seeds of all kinds of trees and shrubs. They should be sown in pots or boxes, covered with glass, and placed in a warm situation. Hardly any evergreen tree or shrub seed will germinate in the open air in this climate.

In the vegetable garden, no time should be lost to sow all kinds of vegetable seeds which are desirable. The present time is also favorable to the planting of Asparagus roots, Rhubarb, Horseradish, etc. If a few plants of early Cabbage can be obtainable, they should be planted in freshly prepared soil. Asparagus and Rhubarb beds require a careful overhauling. They are about to make their appearance.

Planting of spring bulbs is still in order; I have also planted some Gladiolus for early flowering. Look after the Pæonies and Lilies, which are now beginning to show their foliage; their young and tender shoots are apt to be broken off by inexperienced or careless hands. The place where they are planted should always be marked by a proper stake or label.

Many plants of the greenhouse will soon show rapid growth and development; examine them, and if the roots are spreading around the outside of the ball of earth in which they grow, it is a strong indication of the necessity for shifting them into larger pots.

If the weather be warm and pleasant, all plants will require more water than they have had during winter time, and frequent airing.

Cork Oak.—A correspondent, dating at Alhambra, California, reports that the acorns of the Cork Oak, distributed by this Department a few years since, have done well, and expresses the opinion that a new supply would be carefully improved, in view of prospective profitable results.—*Monthly Report of Department of Agriculture.*

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

The value of good fruit, as an article of food, can not be overrated. It is now beginning to be justly appreciated, and is not considered, as it once was, an almost superfluous luxury, and only eaten very sparingly between meals, or after a hearty meal of meat, vegetables, and pastry; and then, only, because there was room for a little more. It is now pretty well understood, that fruit is best eaten freely between meals; either before, or an hour or two after breakfast, and even frequently at other times, provided it is not just before going to bed, as it does not then agree with many persons. Formerly, also, it was too frequently supposed that fruit should be chiefly stewed, and a quantity of sugar and spices added, instead of being, as now, mostly consumed in its natural state.

The sun is really the best cook for most, if not for all kinds of fruit. Nature understands her business, and the appetites and instincts of children are almost universally pure, and they always choose uncooked fruits, as do those nations whom we—in our self-assumed superiority and pride, perhaps, call uncivilized. The inhabitants of the tropic isles subsist almost entirely upon fruits, eating them just as they are plucked from the trees or vines. And where beneath the sun (if they do not get hold of alcoholic drinks from us), do we find such healthy persons as they?

During our civil war, when our soldiers ate all the peaches, apples, pears, grapes, berries, and melons they could lay their eager hands upon, they were speedily cured of fevers, dysenteries, and even chronic diarrhœa, the surgeons to the contrary notwithstanding.

There is still a considerable prejudice in the minds of many persons against the free use of fruit, supposing it to be a fruitful source of worms and summer complaints in children. To be convinced of their unfortunate error, they have only to see children in the country, where they have generally an abundance of fruit. They eat it before breakfast and after breakfast, before dinner and after dinner, at all hours of the day, and not unfrequently munch Apples or Pears after they are in bed. City children often suffer from eating unripe fruit (and there is too often, unfortunately, too much of that in the market, and it is too frequently not fresh enough), in large quantities, or from eating an excess at one time one day, and having none for many days at other times.

What a blessing it is that all our markets in California possess such a profuse plenty and great variety of fruits and vegetables; but, like all things free to our possession, our plenty is hardly appreciated or improved. Those of our readers who can not go to the country to reside, can welcome the country to their larders and their kitchens. Good housekeepers, of whatever length or weight their purses may be, can find in the early morning markets, indeed, at almost at any time, the equivalent of a country excursion, adapted precisely to their means, be they greater or less. Fresh, nice fruits and vegetables, carefully selected, properly prepared, and judiciously served, are better than medical remedies for disease, inasmuch as they are preventives, when used in moderation. By a proper and systematic mode of living, good housekeepers can and do improve the best advantages of the country, without the toil of moving, or the expense of traveling. Of course, for

those whom leisure and other circumstances permit, a country residence in the spring or summer months is a great privilege. Those who can not enjoy the green fields or the sea-beach, may adopt the philosophy of Charles Lamb and "Tim Linkinwater," and maintain the superiority of a city residence against all opponents; and this they can do by a rational use of the bounties of Nature, which our country friends are quite ready to exchange for the bounties of the specie currency. Every grade of income in California should be able to command its proportion of the delicacies of each season. Ranking with cleanliness and temperance, a proper regard to Nature's bill of fare is a good preservative of health, and a great promoter of bodily comfort.

But having pretty nearly exhausted our favorite subject of good fruits and vegetables for the promotion of health, and made it, we think, pretty clear, we will now discuss the more practical merits of those articles in our markets, for the present month.

This is naturally the dullest and least interesting season of the year with respect to fruits. As to vegetables, the incoming new sorts have a greater tendency to excite the palates of our citizens; but with regard to them, the recent (for California) hard frosts and very cool weather have operated to diminish much the supply of Asparagus, Green Peas, and Rhubarb, and caused an advance in price.

Fresh supplies of Los Angeles Oranges and Lemons have lately arrived, and are still of rather unusually good quality this year, and lower in price. Limes are quite scarce; but, no doubt, fresh and plentiful supplies will soon reach us. Oregon Apples meet with ready purchasers, and this fruit, generally, is in active request; also some of the best winter Pears, but at rather high prices, although the latter are much less tempting in appearance than the Apples; most of them being blotched and rusty-looking. The prices remain much the same as last month, with an upward tendency. Those fine and large varieties of the best dried pitted Plums form a very delicious-looking picture in Clay Street Market, and their price is moderate, considering their very luscious qualities. These fruits are in fair demand.

One among the numerous advantages which our superior climate affords us is, that we can preserve our Pumpkins and sweet Potatoes without the extra great trouble they have to use in the East for their preservation in winter; and so with all our other vegetables as well as fruits. Mushrooms, also, that peculiar flavored, and generally admired of the fungi tribe, can be enjoyed here for a long time. Potatoes continue in excessive supply, and new ones are appearing.

Pineapples and Bananas are yet rather scarce, the former somewhat poor specimens. The finest exhibit we observed, was one, at present, the property of Mr. S. M. Brooks—the artist—in a picture; and this is cruelly tempting to the eye and appetite, so natural-looking is it. Cocoanuts are in plenty. Nuts in variety are in good supply and at reasonable rates.

Green Cucumbers, the first of the season, have made their appearance from Laguna Valley, near Vacaville, Solano County, and sold at $4 per dozen. They were raised in a hothouse, and are a month earlier in market than they were last year. They are small, but deliciously flavored.

Rhubarb, or Pie Plant, is now, also, in the markets, of good size and fine quality.

Correspondence.

To the Editor of the California Horticulturist:

Dear Sir:—Permit me to call your attention to what appears to me to be a serious defect in horticultural literature—the absence of any *rudimentary* instruction book, which will enable the inexperienced cultivator to make a correct start in his gardening operations. For example, the usual formula, "Let the soil be properly prepared," is the very stumbling-block of the beginner, who needs to know just what that means.

Amateur.

To the Editor of the California Horticulturist.

Dear Sir:—In the *Pacific Rural Press* for the 15th of February, I notice a few appropriate remarks, addressed to the Horticultural Societies of this State, in general, and to the Bay District Horticultural Society in particular, respecting their self-imposed duties, and the manner in which they perform them. The writer's suggestions are very good and friendly, and they are also critical. I hope they will have the effect of arousing the slumberers, and stimulating the Secretaries to report something more of their transactions than that they meet, read the minutes, and adjourn, which is about all we hear of them through your Magazine, which appears to be their medium of intercourse with the outer world. The practical experience of such a body of men ought to be of great value to the floricultural community of California, if they are public-spirited enough to give it; if not, of what use are they?

In the same number of the *Rural Press* is an article on flowers, very good in its way; but what vile spelling, and how absurd to assume the position of a floricultural serial without a botanical dictionary in stock.

I wish you would be a little more explicit in your information respecting the management of the smaller bedding plants. The Verbena, for instance; should it be pegged down to the soil? How and when should it be pruned, or should it be cut at all? Is it necessary to renew the plants every season?

Your early reply will greatly oblige

Philoflora.

San Francisco, February, 1873.

Editorial Gleanings.

Rough Cork for Rustic Work.—Some few years since, a company, owning large Cork forests in Portugal, introduced for rustic work, and other horticultural purposes, a quantity of Virgin Cork. This first crop of the bark of the Cork Oak (*Quercus suber*) is very rugged and uneven upon its outer surface; it is, moreover, of a dusky grey color, is frequently covered with Lichens, and has altogether a weather-worn aspect—all which appearances recommend it for the purposes for which it was introduced. Besides its uses, however for growing Ferns and Orchids upon, it is much used for imitation rock-work in aquariums, and its latest application was for a similar purpose, but on a much more gigantic scale, for in the pantomime which has been played at the Crystal Palace, we understand the rock-work was formed of this Virgin Cork. The more general utilization of this Cork in Europe must be a great advantage to the owners of the Spanish and Portuguese cork forests, as, from the fact of the cork being uneven, comparatively hard, and full of holes, it is useless for bottle corks. This virgin or original bark is usually taken from the tree when it is about twenty-five or thirty years old, and it is removed with much care, so as not to injure the

inner bark, which, of course, would interfere with the formation of the second crop, besides injuring the tree itself. After the removal of the first crop, the following crops are taken off about every eight or ten years, but the third and succeeding crops are of the best quality, and consequently the most valuable. A remarkably fine specimen of cork, stripped in one piece from a tree which grew in the Sierra Morena, Estremadura, has lately been presented to the Kew Museum. When we state that it is five feet nine inches high, and eight feet eight inches in circumference, it will be seen that the tree from which it has been taken was of no mean size. —*Gardener's Chronicle.*

Preserving Action of Boracic Acid.—It has been found that boracic acid has a preservative action upon milk and beer, and it is stated that one gramme added to a quart of milk keeps it sweet and fresh in hot summer weather for one hundred and twenty hours, while milk not treated in this way will become sour in thirty-six hours. The addition of boracic acid to milk does not injure it for use, but the cream is separated far more slowly.

The Apple Worm in California.—A few specimens of the *Corpacopsa pomana* have at length been captured in California. It is believed that the present comparative immunity from eastern insects will not last long in the Golden State.—*Gardeners' Monthly.*

Wisteria versus Flies.—A New York housekeeper has discovered that the Wisteria creeping plant will keep out house-flies. The pestiferous insect will not enter a window where one of these creepers is growing.

Camellia Culture—use of Lime Water.—Mrs. G. W. Carpenter, in the *Gardener's Monthly*, says: "In regard to the watering of Camellias with lime water, the facts are as follows: The plants are grown in large pots, and have been in them undisturbed for several years. A large reservoir on the place, containing 500 gallons of water, receives annually about three bushels of lime; before watering the plants, the lime is usually well stirred up with the water, allowing it to settle before use. Lime water was first used to kill worms in the soil, which it effectually did. It has since been continued regularly; the thriving, healthy appearance of both roots and branches seeming to warrant its use."

Germination of Primula Japonica.—The following is the result from my experience in sowing seed of this noble flower: Of seed harvested here, from two plants in pots, completely ripe on July 15th, I sowed half on July 19th, the young plants appearing on August 30th. The rest of the seed was sown on September 25th, but no plants are as yet visible. The pans were placed in a cold frame, and the soil kept moderately moist. Of the first sowing, I have now a pan with twenty-five or thirty nice little plants, pricked out a month ago. F. Gloede Eppendorf, *Hamburg.*

Bulb Culture in Holland.—Although one-fifth of the entire land in the Netherlands is worthless for cultivation, and another fifth is meadow-land, yet 47,500 acres of the remainder are devoted to tobacco, 35,000 to hemp, and 500 acres to raising Tulips, Hyacinths, and other flowering bulbs. Holland has ever excelled in this sort of horticulture.—*Popular Science Monthly.*

NAPA SODA SPRINGS, NAPA COUNTY, CAL.

Country Residence of Colonel J. P. JACKSON, of San Francisco.

Watkins, Photo.

For Cal. Horticulturist.

THE

California Horticulturist

AND FLORAL MAGAZINE.

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THE RURAL HOMES OF CALIFORNIA.

BY THE EDITOR.

NAPA SODA SPRINGS, *the Country Residence of Col. J. P. Jackson.*

In previous numbers of the Magazine examples have been given of our more southern homes, located upon the level lands. We propose in the present number to present the conspicuous contrast of a residence on the mountain side in a northerly county, and in that favored valley, which, by the brush of the painter and the pen of the tourist, has been rendered almost classic.

Our frontispiece represents a view at the head of a cañon in the mountains which form the eastern boundary of the Napa Valley, six miles northward from Napa City. From this point, and about six hundred feet above the level of the valley beneath, the artists Keith and Virgil Williams transferred to their canvas the natural beauties of a landscape so rich in towering peak and green-enameled vale, sinuous creek and open bay, russet-brown hill-side and grain-veneered field, that their pictures form the most pleasing gems in some of our best art collections. The valley below, for twenty-five miles, with its rectangular fields of varicolored crops, looking like an elongated chess-board; the bay, reflecting from its sunlit waters the white-winged sails of the world's commerce; and the mountains in Contra Costa County, with Tamalpais, king of the Coast Range, presenting in contrast his graceful outline to Diablo's heavier front, form together a series of contrasting beauties which may well claim to be unmatched for sublimity. And, as if to leave no doubt upon this point, there arises over and beyond all these the great sea view, which gives the final and a kingly grace to this country-seat, thus ocean bound. Such daily sights as these made Alexander Smith a poet, and tend to dispel all narrowness from the soul of the spectator. This illimitable stretch of vision, which allows no earthly object to stay it, but at the horizon blends with the spacious heavens, where the setting sun seems to bathe himself in the deep ere he rainbows the orient with his pathway of fire, truly "lends enchantment to the view," and gives additional zest to rural enjoyment and the life Arcadian.

Looking to the local pictures which make the place attractive, we find groves of patriarchal trees — the Live Oak (*Quercus agrifolia*) and the Black Oak (*Quercus Sonomensis*), with boughs

gracefully festooned with the gray Spanish Moss or the "dark, druidical Mistletoe," and which command respect for their stately pre-eminence, dignity of strength, and inviting fullness of shade, constituting them elders amid the modern growths—a barrier to the tempest, and a solace from the sunburst.

"Not a prince
In all that proud old world beyond the deep
E'er wore his crown as loftily as these
Wear the green coronal of leaves with which
His grace has crowned them."

Other trees of lesser growth, with tops as wide-spread as those that grace the English lawns—some having arms gnarled and shaggy, and others with boughs that droop as gracefully as Willows, or the Eastern Elm—adorn the open grounds.

The *Eucalyptus* (Australian Gum) towers high above its neighbor, the Mountain Pine, in its graceful aspiring. The Italian Cypress adds an exotic charm to the natural scenery, and the Palm-tree, the Almond, the Olive, and the Orange (growing from seeds here sown), give variety to the view, and testify at once to the semi-tropical mildness of the climate and the generous fertility of the soil.

Along the ravines and gulches, and overshadowing the walks, are the Buckeye (*Æsculus Californica*), redolent of perfume; the brilliant Laurel (*Areodaphne Californica*), a fine evergreen with fragrant leaves; the Ash (*Fraxinus Oregana*); the large-leaved Maple (*Acer macrophylla*); and, most magnificent of all, the Madroña (*Arbutus Menziesii*), with bright green waxen leaves; these, with the flesh-tinted Manzanita, constitute the forest scenery of these mountain sides.

Of the beautiful flowering shrubs, are: the *Ceanothus* (California Lilac); the *Spiræa*; the sweet-scented and favorite *Calycanthus*, with color of a deep claret; the Dog-wood (*Cornus*), conspicuous for its snowy-white flowers; the Snowberry (*Symphoricarpus*); the *Azalea occidentalis*, having deliciously sweet-scented white and yellow flowers in profuse abundance; the Chestnut (*Castanea chrysophylla*) and the wild Rose.

Of Climbers, among many others, we only name the wild California Grape (*Vitis Californica*) forming natural and most graceful bowers, as continuous and shady as those of the far-famed Banyan-tree; the Virgin's Bower (*Clematis*), and the Honeysuckle.

California Bulbs grow here in great abundance and rich variety. Of the finest, are the *Cyclobothra*, the *Calochortus*, the Lily, the *Brodiäs*, the Iris, and others of truly charming colors.

Most attractive of all the flowering plants are the Columbine (*Aquilegia*); the ever-pleasing red Larkspur (*Delphinium nudicaule*); the California Poppy (*Eschscholtzia*); the Lupin, the Evening Primrose (*Œnothera*), and the Monkey Flower (*Mimulus glutinosus.*

Along the shady hill-sides the ground is literally covered with our fine California ferns, such as the *Polypodium*, the *Adiantum*, the *Pellœa*, the *Gymnogramme*, the graceful *Woodwardia*, and the *Aspidium*. Over a wide extent of wall, on fences and house-sides, the slow-growing Ivy and climbing Roses extend themselves. The Lemon Verbena, not a flower-pot plant as in the East, but here a bush six feet high, emits the fullness of its grateful fragrance; the Loquat invites by the immaculate purity of its white blossoms; and the scarlet berries of the Madroña, dotting hill and roadside, engage the sight by the conspicuous brilliancy of their coloring.

Numerous living springs of fresh water burst from the mountain sides at

such an elevation as to send the natural flow over the entire 640 acres which constitute the Springs property; and throughout the year this water is as cold as though it flowed over subterranean beds of ice. Indian relics found here in abundance indicate that these were chosen spots by the aborigines; and, doubtless, countless times the western Leather Stocking has here brushed aside the leaves, and quaffed the sparkling current at its fountain.

Along one side of the property a mountain brook gathers the hill-side offerings of congenial springs, as it curvets and frets itself through cañon passes — now loitering to gather fresh strength against a temporary embargo, and then dashing away in a white gush of water-fall — now with swift current dancing about the bends and eddies of sycamore-guarded banks, and again filling the deep rock-encircled pool (where the speckled trout coyly display their beauties, and anon hide themselves away), whose crystal waters temptingly invite to a grateful bath. On the other boundary a rocky gorge resounds with the ripple of numerous streamlets, until the swelling torrent of winter's rain sends the combined waters raging over a perpendicular fall ninety feet in height —a miniature Niagara.

Inviting paths—miles in extent—laid out under the personal supervision of F. A. Miller, Esq., landscape gardener, lead, with gentle grade, to the various points of interest — now to a grottoed cave, and anon to a mountain grove — here to a vine-covered bower, and there across a rustic bridge, beneath which living waters leap and sparkle—and terminate at last at the summit of Castle Peak, beneath whose outlook rolls the whole broad panorama of Napa Valley. Reservoirs, dug from their rocky beds, holding each 200,000 gallons, gather the waters for domestic use; and the stone quarried from the spot supplied the material for the buildings that adorn the premises. An orchard in full bearing furnishes varied and abundant fruit; and the vineyard, of choicest selection, has proved its merit by the numerous premiums from our State fairs that already indorse its wine.

But the feature which most peculiarly distinguishes this favored spot, and makes it, therefore, specially attractive, is its Mineral Springs, which have been famous for their curative powers. From the hidden treasury of Nature's chemistry, in her subterranean laboratories, a perennial flow of about four thousand gallons daily is developed — mingling iron, soda, magnesia, lime, and muriate of soda with free carbonic acid gas, in such happy combination as to impart pleasure, health, and physical improvement as the result of their use. From one of these springs is poured forth the article well known in the commercial world as "Napa Soda. The water is bottled and sold just as it flows, pure from Nature's laboratory, with all her sparkling freshness still upon it. No adulteration mars its native health-giving and tonic properties, and its long and continuous use in the market attests its merit. The same elements are held in solution which give to the Carlsbad Springs in Bohemia their rank as the first in the world.

A hotel is now projected for these springs, in place of one destroyed some years since by fire; and in addition to the natural beauty of the situation, the genial, even mildness of the climate, and the attractions of artful ornamentation, one of the greatest, if, indeed, not the first consideration in the minds of visitors, will be the medicinal qualities of these waters, that strengthen for active life the hand, the heart, and the mind.

We can not better close this article, although still too short to more than note generally the features of this lovely place, than by a quotation from the golden letters engraved by Imperial decree above the Springs at Carlsbad :

"To suffering man from nature's genial breast
A boon transcendent ever mayst thou flow.
Blest holy fount, still bid old age to know
Reviving vigor; and if health repressed
Fade in the virgin's cheek, renew its glow
For love and joy; and they that in thy wave
Confiding trust and thankful lave,
Propitious aid, and speed the stranger band,
With health and life renewed, unto their native land.

VASES AND VASE PLANTS.

Vases are generally of worked iron or stone, or various imitations of them, and are especially appropriate for gardens laid out in the geometric style; but they have a good effect in many other modes of laying out gardens. In all cases they should be large enough to hold sufficient soil to keep the plant in health. We prefer vases rather large than the reverse; for we must enter our protest against the miserable, dished-up plants which are often seen struggling for existence for want of water and earth to grow in. These are all the more necessary in our long dry summers. In natural scenery, either real or imitated, vases should be placed in immediate connection with gravel or other walks, or roads, which will form a kind of base for them, or at no great distance therefrom; or they may be placed on pedestals on low walls, or stone terraces. It does not require expensive plants to create a beautiful combination of form or color, and make them harmonize with the situation they are to fill. A vase filled with common California Ferns produces a most charming effect; and those who grow exotic Ferns will readily perceive what elegant groups they would make, if transferred to a vase. But these Fern vases should be kept mostly in the shade. Some African or Japanese Lilies, supplied well with water, form fine objects. Their sword-like leaves bend gracefully over the rim of the vase, and crowned with their variously-colored bright flowers, render them as conspicuous as they are graceful. Phormium tenax, New Zealand Flax, is another suitable plant for its foliage, as are some of the Yuccas, but these latter must be showing bloom, before they are transferred, when they are really fine objects. There are many other sword-leaved plants, including Gladioluses and Irises, well adapted for the purpose. Nor should we forget the Acanthus.

We will conclude by naming a few creeping plants adapted for planting round the principal: these will creep over the rim, and may then be left eitheir to grow in their own way, or be trained so as to form festoons round the base. Lophospermums, two or three kinds; Maurandyas, blue, red and white; Tropœolum pentaphyllum and speciosum; Calystegia pubescens; Lysimachia nummularia (White Loosestrife); Campanula fragilis; Lobelias erinus and unidenta, and some others, although they do not grow so tall as the former, are useful for the smaller vases. But all the above effects can not be accomplished well, without water being convenient to supply them copiously daily, with it, in dry weather.

The Odors of Plants.—It may be laid down as a general principle that a larger proportion of white flowers are fragrant than those of any other color ; yellow comes next, then red, and lastly blue; after which, and in the same order, may be reckoned violet, green, orange, brown and black.

FLOWER-TALK.—THE POND LILY.

BY NORA BECK.

I float on the breast of a dreamy lake,
Rocked by the ripples, but always awake.
I can not greet the earth-flowers bright,
That I know are yonder, out of sight,
But I lie content, on the glassy brim,
While my sister lilies nod and swim;
And so I will float, till I fade and die,
Under the blue midsummer sky.

I can not greet the flowers of earth,
But I know the secret of their birth.
Bird-song, and night-wind, and wandering bee,
Bring all the news of the woods to me,
And the red deer stoops his thirst to slake,
By the pebbly marge of this quiet lake.
My lover, the sun, in his daily race,
Drops kisses of light on my pallid face;
While *I* fling my perfumed incense high,
Live and love, then droop and die,
Under the blue midsummer sky.

GERANIUMS.

BY F. A. MILLER.

There is no other class of plants which recommends itself so strongly to the lover of flowers, as that which comprises the various kinds of Geraniums (as they are popularly named), and it seems, indeed, strange that there should exist a strong prejudice at the present time, in California, against their cultivation. I am often told, "They are too common;" "they grow in every yard," etc. I believe, there is some little misunderstanding about these Geraniums, or they would certainly figure as the most desirable plants for very many purposes.

In Europe and in the East, Geraniums are becoming the universal favorities, and they should be still more in favor with us, when we take into consideration that in all mild districts they will continue in flower through summer and winter. The different classes of Geraniums have been so wonderfully improved by art and science, that the old nickname, "Fish Geranium," is entirely out of place now.

Geraniums, now-a-days, are divided into a number of classes, well defined by very distinct peculiarities. It will not do for me to go too deeply into this classification, but I will mention:

1st. *Zonale Geraniums*, sometimes called Scarlet Geraniums. These are well adapted to our California climate, particularly on dry soils. Their flowers are of brilliant colors, and continue in bloom throughout the year. For grouping and in masses they are most effective flowering plants, and should be used for that purpose extensively. Of late years really magnificent flowers have been produced. Some of the very best varieties are Black Prince, Charmer, Cufford Rose, Waltham Seedling, Dr. Lindley, Warrior, Ruby, Transparent, White Perfection, Conqueror, Maid of Kent, La Dame Blanche, Rose Queen, etc. All of these varieties I have now under cultivation, and they have proved their excellent qualities in this climate.

2nd. *Double Zonale Geraniums*. When about three years ago the first specimens of these really exquisite flowering plants made their appearance here, they were admired by every one, and high prices were obtained for them. They are a great improvement on the single varieties in many respects. The flowers of the double Geraniums keep well in bouquets, and are valuable as cut-flowers; they are produced in large trusses, which continue in bloom for many days. Our florists propagated them extensively, and are now prepared to sell them at very low prices. It is annoying that their efforts do not meet with more encouragement from our lovers of flowers, the sale of them being very limited, indeed. They flower well in the open air; are well adapted for the green-

house and conservatory, and are very useful for cut-flowers; they are easily cultivated, and are strong growers. Why they are not introduced into every garden, is a mystery to me. I am satisfied, however, that they will grow more in favor every year. Any of the following varieties are very desirable: Andrew Henderson, dark crimson flowers, one of the best; Emile Lemoin, scarlet; Gloire de Nancy, carmine; Rose Charmaux, scarlet; Triomphe de Lorraine, cherry and carmine, a beautiful variety; William Pfitzer, bright scarlet, very effective. All of these may be obtained of our florists, and I have found them doing well everywhere; like all Geraniums, they thrive best in a sunny exposure with a moderate amount of moisture.

3d. *Show Geraniums* (Pelargoniums), popularly known as Lady Washington Geraniums. These produce large flowers, the upper petals of which are marked with dark blotches. They produce an abundance of very showy flowers throughout the year, except where heavy frosts occur; but even there the roots will not suffer, and will throw up stems again. Although the climate of California varies considerably in different localities, Geraniums will not entirely die out, even in the most northern and the coldest districts, if a very simple protection is given by throwing a few shovelfuls of fresh manure or straw around the plants during winter. The number of very excellent varieties is considerable. I will mention a few of the best: Madame Rezant, white and lilac; Reine Hortense, white and crimson; Snowflake, pure white and maroon; Eugene Cavaignac, carmine; Splendor, dark crimson, margined white; Spotted Gem, rosy lilac, dark-spotted; James Odier, carmine and rose; King of Scarlets, bright scarlet; Medaille d'Or, amaranth and white; Wilmer's Surprise, rosy purple, etc., etc.

4th. *Variegated-leaf Geraniums.* There are few plants which are better adapted to the climate of California, than these Variegated-leaf Geraniums, provided that they are not exposed too much to the heavy winds, which prevail near San Francisco during summer. But inasmuch as most of our flower-gardens are sheltered in some way, they may be cultivated here as well as anywhere else. So far, they have been treated as greenhouse plants, but it is evident that their colors display to much better advantage, if cultivated in the open air. The California climate is just what they want. I can assure those who take an interest in flowers, that a good collection of these variegated Geraniums is a most pleasing feature of the garden. They require no particular care, no better treatment than the common "Fish Geranium," but they are of much slower growth. They delight in a deep light sandy loam and a sunny exposure, and require very little moisture. On account of their slow growth, there are but a small number of them at our floral establishments. I cultivate the following, and have good success with them: Sophia Cussack, foliage bright-green, with a zone of gold and black; Mrs. Pollack, bright-red zone, belted crimson and golden yellow edge; Golden Beauty, foliage very rich yellowish green; Mountain of Snow, beautifully margined silvery white; Beauty of Caulderdale, rich red zone, on golden-green foliage; Sophia Dumaresque, broad golden margin, very dark zone, shaded scarlet; Sunset, the same as Mrs. Pollack, but brighter; Attraction, bronzed zone, silver edged, very fine; *Italia unita*, carmine zone, margined white, one of the very best.

5th. *Ivy-leaf Geranium*, of a climbing

habit. In this class, also, wonderful improvements have been made within the last few years, in regard to the colors of flowers as well as in the coloring of the foliage. They are fast growers, and abundant bloomers, always producing a cheerful and pleasing effect. Excellent varieties are: Holly Wreath, *Wilsii grandiflora* (producing charming flowers), Bridal Wreath; *Aurea variegata*, and *L' Elegante*.

6th. *Sweet-scented Geraniums*, which are almost exclusively cultivated on account of their fragrant foliage; as such, they are most desirable, and useful for bouquets, etc. The best are: *Asperum* (pennyroyal scented), *Tomentosum* (peppermint scented), *Balsameum* (balm scented), *Capitatum* (rose scented), *Citriodorum* (lemon scented), *Fragrans* (nutmeg scented).

I have said more, perhaps, about the Geraniums than many of the readers of the HORTICULTURIST may think justifiable, but the subject is a most important one, and should be followed up. Our lawns, our parks, and our public squares, should be adorned with extensive groups of the various Geraniums. Nothing will give a more pleasing and brighter effect, and their cultivation is most simple.

ANCIENT FARMS. — The farm of the celebrated Roman Cincinnatus, consisted of only four acres, the other three having been lost by becoming security for a friend. Curius, who was celebrated for his frugality, and who was three times chosen consul, and thrice honored with a triumph on returning from a campaign, refused from the people a grant of fifty acres, declaring that he was a bad citizen who would not be contented with the old allowance of seven.—*Exchange.*

PREPARATION OF FLOWER-BORDERS—TEMPERATURE.

BY E. J. HOOPER.

It is a far too prevalent, and, at the same time, quite an erroneous idea, that the soil in which flowers are intended to be grown need not be very rich. This is, indeed, a grave error. It is necessary to have healthy leaves as accessories to the production of fine flowers. These can not be had, unless the soil is made deep and very fertile, with fine decomposed manures. Plants in a flower garden should be each one perfect, individually, whether presenting itself by contrast separately, or when grouped with others in masses. But plants in an incomplete and unhealthy condition are far too prevalent in most gardens. No real beauty can exist where a deficiency of vigor is apparent in any part, nor can fine flowers be produced by insufficiently nourished plants. In fact, the very principles of a gardener's art should teach him the necessity of storing sufficient strength in the primary portion of the cultivated plant, its leaves, ere it will be reasonable to expect that blossoms in their greatest beauty can be produced. We may, it is true, also err in the opposite direction, and induce an over-luxuriance or plethora, equally antagonistic to the production of flowers; but, as in all probability ninety-nine cases under the starving system occur to one of its opposite, we may regard the latter as not requiring special notice; and, besides, the too richly made soil will very speedily find its level.

But that flower-borders require at least an annual renewal of composts of some kind, we think, no one will dispute — particularly if these beds or borders, as is frequently the case, are filled through the summer pretty thick-

ly with plants, and not uncommonly by a succession of these floral crops. Can a continued reproduction be reasonably expected under such an exhausting system, unless assisted with manure in a liberal manner?

Asters, Larkspurs, Stocks, Zinnias, and many other similar plants, all give a decided preference to rich soil; growing in it much larger, producing more flowers, and these of infinitely superior character.

Let us advise all who love their gardens, and desire to see the occupants in the best possible condition, to thoroughly manure at the present time. Every vacant piece should have a heavy coat turned in at once; and, also, in the summer, let an application of wood-ash, or vegetable soil, be made at every opportunity; and, if these are not procurable, the same kind of manure as used in the spring may be applied. The result will fully repay the little extra trouble.

The extremes of temperature, between which cultivated plants will flourish, is stated, by experiments, as 32° and 90°; below the former, no vegetation, except of Alpine regions, can grow. The highest point at which terrestrial plants have been found in a state of nature is 140°, but, of course, with such cases we have nothing to do, those immediately inviting our attention being within the more limited range first mentioned. We, in California, are particularly favored in respect to temperature, having a sufficiently numerous class of plants which flourish luxuriantly, both for utility and ornament, to satisfy any reasonable wishes. In San Francisco, we hardly ever have enough frost to do much more than nip severely some of our tender flowers, and the temperature is never so excessively high as to create a debility similar to that induced by intemperate living on the animal frame, and to cause an extension of the tissue, beyond the vital energies of the plant to solidify; or the ducts to be so gorged with crude sap, as to remain unassimilated, and the powers of action deranged, enfeebled, and finally stopped; debility, disease and death ensuing, as a finish and natural end to the immoderate supply of what, whether of heat or moisture, under proper regulations, would have been the source of life, health, and fruitfulness. It seems to be a singular fact, that the effects of excessive cold resemble those already described as resulting from heat, and with the exception that the tissue is not elongated in an unnaturally low temperature, the analogy holds good through each gradation. The action of very cold winds is equally enervating with that of a hot sun; the juices of the plant are extracted in either case by evaporation, and, if continued for any length of time, must prove alike the cause of death.

When the temperature of the day is excessive, the evaporation goes on so rapidly as to cause a vacuum in the vessels, and the plant droops or "flags," as it is called; a condition which, if not corrected, either by reducing the light, or by an extra supply of water, is very injurious, and debilitating in its effects. How fortunate for the recovery of plants from this exhaustion is that natural period for their resuscitation—night—the reviving action going on uninterruptedly, so that the excitability of the plant remains undisturbed; a rule of the most vital consequence, as we may be assured from its occurrence in every region of the universe, and yet more frequently overlooked than perhaps any other law of nature.

The Sunflower was brought from Peru.

VICTORIAN TREES.

The variations of Eucalyptus, in size as well as in habit, are very remarkable; for while some species are mere shrubs, and form dense brushes on the mountains, there are others which rise to an almost fabulous height in the deep gullies of Victoria and Western Australia. In Baron F. von Mueller's essay on Australian vegetation, that eminent botanist remarks: "The marvelous height of some of the Australian, and especially Victorian trees, has become the subject of closer investigation, since of late, particularly through the miners' tracks, easier access has been afforded to the back gullies of our mountain system. Some astounding *data*, supported by *actual* measurements, are now on record. The highest tree previously known was a Karri-eucalyptus (*E. colossea*), measured by Mr. Pemberton Walcott, in one of the delightful glens of the Warren River of Western Australia, where it rises to approximately 400 feet high. Into the hollow trunk of this Karri, three riders, with an additional pack-horse, could enter and turn in it without dismounting." On the desire of Baron Mueller, "Mr. D. Boyle measured a fallen tree of Eucalyptus amygdalina, in the deep recesses of Dandenong, and obtained for it the length of 420 feet, with proportions of width indicated in a design of a monumental structure placed in the exhibition of 1866; while Mr. G. Klein took the measurement of a Eucalyptus on the Black Spur, ten miles distant from Healesville, 480 feet high. Mr. E. B. Hayne obtained at Dandenong the following measurements of a tree of E. amygdalina: length of stem from the base to the first branch, 295 feet; diameter of the stem at the first branch 4 feet; length of stem from first branch to where its top portion was broken off, 70 feet; diameter of the stem where broken off, 3 feet; total length of stem up to place of fracture, 365 feet; girth of stem 3 feet from the surface, 41 feet. A still thicker tree measured, 3 feet from the base, 53 feet in circumference. Mr. George W. Robinson ascertained, in the back ranges of Berwick, the circumference of a tree of E. amygdalina to be 81 feet at a distance of 4 feet from the ground, and supposed this Eucalypt, toward the source of the Yarra and Latrobe Rivers, to attain a height of 500 feet. . . . It is not at all likely that, in these isolated inquiries, chance has led to the really highest trees, which the most secluded and the least accessible spots may yet conceal. It seems, however, almost beyond dispute that the trees of Australia rival in length, though evidently not in thickness, even the renowned forest-giants of California, Sequoia Wellingtonia, the highest of which, as far as has been ascertained, rise in their favorite haunts at the Sierra Nevada to about 450 feet. Still, one of the mammoth trees measured, it is said, at an estimated height of 300 feet, 18 feet in diameter. Thus, to Victorian trees, for elevation, the palm must apparently be conceded. A standard of comparison we possess in the spire of the Minster of Strasburg, the highest of any cathedral of the globe, which sends its lofty pinnacle to the height of 466 feet; or in the great pyramid of Cheops, 480 feet high, which if raised in our ranges would be overshadowed probably by Eucalyptus trees." Since the publication of these remarks, the report lately furnished by the Victorian Inspector of State Forests, fully confirms all that Baron Mueller has asserted respecting the extraordinary dimensions of Australian trees: "On penetrating into many of the secluded spots

near the source of the Watts, and on the spurs of the ranges in the vicinity, I met with large tracts of valuable timber, enough to supply all ordinary demands for many years, if carefully preserved. In many places, I observed large areas, where the axe of the splitter is yet unknown, and where the timber averages from 100 to 150 trees per acre, with a diameter of from 2 feet to 6 feet, and from 250 feet to 300 feet in height, the most of which are as straight as an arrow, with very few branches. In some places, where the trees are fewer and at a lower altitude, the timber is much larger in diameter, averaging from 6 feet to 10 feet, and frequently trees of 15 feet in diameter are met with on alluvial flats near the river. Many of the trees which have fallen, through decay and the bush fires, measure 350 feet in length, and with girth in proportion. In one instance I measured with the tape line a huge specimen that lay prostrate across a tributary of the Watts, and found it to be 435 feet from the roots to the top of its trunk. At 5 feet from the ground it measured 18 feet in diameter, and at the extreme end, where it was broken in its fall, it is 3 feet in diameter. This tree has been much burnt by fire, and I fully believe that before it fell it must have been more than 500 feet high. As it now lies it forms a complete bridge across a deep ravine."

The gigantic trees of Victoria and Western Australia are certainly to be regarded as curiosities in our Flora, and by some geologists are considered to be the last vestiges of primeval vegetation, which, after having served the purposes of creation in other regions of the globe, have found a resting-place in Australasia. Though no longer indigenous in Europe, however, our Eucalypti are likely to regain a footing in the warmer parts of that continent, for quantities of their seeds are being exported monthly from our shores for the purpose of cultivation in the old world, as many of the species have already obtained an honorable reputation in medicines and the arts, and bid fair to rival the forest trees of other lands.

Our Blue Gum flourishes in the West Indies, and accommodates itself to the climate of New Zealand. Kingsley, in his work "At Last," mentions the circumstance of having passed "the great Australian Blue Gum," which overhangs the road toward Port-of-Spain, in Trinidad.—*From Paper by W. Wools, F. L. S.*

DR. JOHN TORREY, THE BOTANIST.

BY D. C. GILMAN,

President of the University of California.

Dr. John Torrey, the Nestor of American botanists, the peer of the most eminent students of science in this and other countries, "the guide, philosopher, and friend" of hundreds of young naturalists in different parts of the United States, died in New York, the city of his residence, March 10th, 1873, at the age of very nearly 75 years.

In August last, accompanied by one of his three daughters, he visited California, and entered with all the freshness of a young man into the enjoyment of the natural beauties and wonders of this State. He examined its vegetation—natural and cultivated—its big trees, and geysers, its beautiful hills and valleys, its institutions of education and science. His visit was a little later than that of his botanical associate and co-laborer, Dr. Asa Gray, of Cambridge, and was in part coincident with that of Prof. Agassiz, whom he accompanied to a meeting of the California Academy

of Sciences on the first Monday of September.

The main incidents of Dr. Torrey's life are already well known. Born in 1798, he graduated as M.D. in the College of Physicians and Surgeons, and early devoted his intellectual powers to the study of Chemistry and Botany. As early as 1817, he published his first botanical essay—a Catalogue of Plants growing in the vicinity of New York. It has sometimes seemed as if Botany was his chosen pursuit, Chemistry his necessary occupation—or, as if Chemistry was his vocation, Botany his avocation; for in the early part of this century, the position was almost unknown in which a botanist could earn a livelihood from his botanical pursuits. Chemistry was a much more certain dependence for support. Even now, as far as we remember, there are but two endowed professorships of Botany alone: those at Cambridge and New Haven, held by Dr. Gray and Professor Eaton.

Dr. Torrey was successfully connected with several institutions: the Military Academy at West Point, the College of Physicians and Surgeons in New York, the College of New Jersey at Princeton, and Columbia College in New York. During the last twenty years of his life, he was at the head of the Government Assay Office in the city of New York.

He commenced with Dr. Gray the publication of an American Flora, which, on account of the rapid advance of botanical science and the limited number of workers, has not been completed; and he published the two quarto volumes of Botany in the "Natural History of New York." He has contributed in various ways to the advancement of his favorite science, especially by correspondence and counsel with botanists, far and near. His own herbarium is very full, having been enriched with many contributions from governmental expeditions sent to him for identification or description. It is probably surpassed by only two herbariums in the country —those of Cambridge and Washington. Columbia College has been for several years its depository.

Dr. Torrey, in manner and spirit, was a charming example of the true scholar; modest, retiring, co-operative, truth-loving, and devoted to science and not to himself. He was the friend and helper of young students, imparting to them of his own enthusiasm and knowledge. His religious nature was devout and reverent. His patriotism was glowing in the trying times of civil war. His name was above all reproach.

A letter from a New Haven friend, dated March 14th, gives the following particulars respecting Dr. Torrey's closing hours:

"Yesterday I went down to New York to attend the funeral of dear and good old Dr. Torrey, who passed away quietly on Monday. He had been confined to his house for a few weeks, I think some five or six, but did not seem very sick. On Monday he did not seem much worse. The assay reports had been carried to him daily for examination and signature, up to last Saturday, when they were omitted. He wanted them on Monday; he examined them and signed them; at noon his mind began to wander, and later in the afternoon he quietly passed away—his last few hours of life being mentally occupied in some chemical matters which he thought curious and interesting, but which eluded him in his half conscious fancies."

Dr. Johnson says that the chains of habit are generally too small to be felt, till they become too strong to be easily broken.

CULTIVATION OF HEATHS, OR ERICAS.

The genus Erica boasts in Europe of hundreds of varieties and species, all more or less interesting. Here our florists have at present cultivated only a few of them; but they are increasing their lists; and these shrubs deserve to grow, from their beauty and elegance, into the liberal favor of the public. We observe some of this handsome family of evergreen plants, chiefly the white and pink flowered, doing very well in our gardens in the open air, and thickly set with their small but strikingly effective blooms. Their habit of growth is very dense, which adds much to the glowing display of their comparatively minute bell-shaped flowers. They are well adapted for bouquets. In our favored clime they do not require to be removed to greenhouses for winter quarters.

Heaths may be placed in two classes; the soft-wooded or free-growing kinds, and the hard-wooded or comparatively slow-growing kinds. The former require some pruning; the latter none at all—neither leaves nor branches. The best soil for them is our richest garden mould, incorporated with a great portion of fine sand. Water should be freely used, but with discriminating care, as excessive watering is injurious to them; but the soil should be well soaked, and not too often. The essential points in their management are, first, a proper selection of the most showy kinds, which are distinct white, red, pink, purple, or rose color, with dark green foliage; secondly, a careful preparation of ground in which they are to be grown; and thirdly, a location where there is an abundant supply of pure fresh air. We strongly recommend this flowering shrub for general cultivation, supported as we are by the favorable opinions of some of our first-rate florists.

HOW TO MAKE A GARDEN.

BY F. A. MILLER.

It is of frequent occurrence that I am asked for information in regard to the first work in making a garden, or as some say, for making plants grow; and, however uninteresting this subject may be to some, who know, or profess to know all about it, it seems that there are many who really lack this most necessary knowledge, in this particular. I will instance "Amateur," in his late communication to the CALIFORNIA HORTICULTURIST, and I will endeavor to help him out, with what little I know about it.

The first thing to be taken into consideration is, the *actual condition* of the soil, intended for the garden. This may be the common drift-sand so extensively found in San Francisco; it may be sandy loam (no matter of what color); it may be friable clay, or stiff clay; it may be gravelly or rocky soil; and, in the larger cities, it may consist of filled-in material of every description, and oftentimes even of rubbish.

Our common drift-sand is not as bad as some imagine; it contains some fertile and nourishing material. It will sustain vegetation, but that is about all it will do. To produce a luxuriant growth of trees, shrubs, and flowers, it requires some additions. With a good supply of old horse-manure, which is the easiest obtained, I have seen Pinks, Roses, Dahlias, Hyacinths, Gladiolus, and many other flowering plants do very well in our drift-sands; and if the application of manure is renewed every year, plants may be kept in a thriving condition for many years. If economy and limited expense are the main consideration, this may do. The way to proceed

is this: Clear up all the rubbish, including weeds, and during the rainy season (it matters little when) procure a sufficient quantity of old manure (horse-manure is the best), and cover the ground to be cultivated to the depth of about four inches with it. Then dig over the ground to the depth of not less than ten inches, incorporating the manure thoroughly with the sand, and you will have a soil fit at least to cultivate Hyacinths, Dahlias, Gladiolus, Roses, Pinks, Pansies, Mignonette, Fuchsias, Heliotrope, Primulas, Ageratums, Eupatoriums, Stevias, Wallflowers, etc., etc.; but if some additional outlay can be tolerated, such a soil may be very much improved, and in every respect be made better, by the addition of something more substantial; this will consist of good loam to the depth of four inches. But this, in most localities, will triple the expense, where loam has to be carted from a great distance. If this is decided upon, have the four inches of manure spread over the sand first, and then add the four inches of loam. Then proceed to dig over the ground to the depth of at least twelve to fifteen inches, mixing and incorporating sand, manure, and loam thoroughly. A soil prepared in this way will grow most flowering plants and shrubs. But it must be borne in mind that in planting Roses, shrubs, or trees in such soil, holes should be dug of at least two feet in depth, and the bottom should be filled up, to the depth of one foot, with soil consisting of one-third manure and two-thirds of loam, into which the roots may expand in the course of a year or two, and from which they must draw their nourishment after penetrating the surface soil. I will add here, that if the manure obtained is in a dry condition, it should be thoroughly wetted before it is dug into the ground; and in reference to loam, I mean clay which contains a sufficient quantity of sand and porous matter to pulverize nicely with your hand when in a moist condition. There is black loam and yellow loam; both are good, but if yellow loam can be had easily, I would prefer it; however, there is none around San Francisco. Frequently I see black sand sold as black loam; everyone knowing what sand is, it may easily be detected in crumbling it up with the hand. Black sand is not a particle better, and perhaps not so good, as our common drift-sand, and therefore of no value in improving sandy soil.

Although soil prepared in this way will answer for plants and shrubs, and —if some good manure is applied every year (best in autumn)—all of the more suitable and popular varieties will thrive well, if they are taken care of after planting; yet the work of preparing soil may be done still more completely, if a few dollars of extra expense are not a great consideration. Trees and robust-growing shrubs spread their roots rapidly horizontally, as well as perpendicularly into greater depth; and in course of a few years, they will have reached beyond the soil prepared in the manner described above, to where the sand is in its natural condition, and affords little nourishment compared with their advanced growth and development. To avoid this evil, the formation of a suitable subsoil, underlying the surface soil, would prove an excellent remedy. To accomplish this, some of the sand should be removed from the surface, say, to the depth of twelve to fifteen inches, and replaced by a heavy clay, not altogether too stiff, to the depth of about twelve inches, over which sand may be thrown again, say, about six inches thick, which, mixed with the amount of loam and manure as indicated before, will

bring the surface to its proper level. This would make the prepared soil as follows: a clay subsoil of twelve to fifteen inches, with a surface soil or garden mold, consisting of one-third sand, one-third loam, and one-third manure.

Where we have a sandy loam, all that is required to prepare the soil properly is an application of about four inches of old stable manure, which should be thoroughly incorporated with the soil by trenching (or spading) it to the depth of fifteen to eighteen inches.

I will, for fear of getting too lengthy on the subject, continue my suggestions in the next number of the HORTICULTURIST; but will say before closing, that, although the proper time for preparing ground is during our rainy season, and if possible in the autumn, after the early rains, yet it may be done at any time, if the necessary water is at hand to moisten the soil; but manure well before commencing operations, and also water the plants sufficiently during the summer season. The making of gardens in summer time should only be undertaken under unavoidable circumstances. One month of our winter rains is more beneficial to soil and plants, than the artificial irrigation of six months during our dry season.

INFLUENCE OF FISHING ON CHARACTER.

Fishing teaches perseverance. The man in *Punch* who on Friday did not know whether he had had good sport, because he only began on Wednesday morning, is a caricature; but this, like all caricatures, has an element of truth in it. To succeed as a fisher, whether of the kingly salmon or the diminutive gudgeon, an ardor is necessary which is not damped by repeated want of success; and he who is hopeless because he has no sport at first will never fully appreciate fishing. So, too, the tyro, who catches the line in a rock, or twists it in an apparently inextricable manner in a tree, soon finds that steady patience will set him free far sooner than an impetuous vigor or ruthless strength. The skilled angler does not abuse the weather or the water in impotent despair, but makes the most of the resources which he has, and patiently hopes an improvement therein.

Delicacy and gentleness is also taught by fishing. Look at the thin link of gut and slight rod with which the huge trout or "never-ending monster of salmon" is to be caught. No brute force will do there; every struggle of the prey must be met by judicious yielding on the part of the captor, who watches carefully every motion, and treats its weight by giving line, knowing at the same time—none better—when the full force of the butt is to be unflinchingly applied. Does not this sort of training have an effect on character? Will not a man educated in fly-fishing find developed in him the tendency to be patient, to be persevering, and to know how to adapt himself to circumstances? Whatever be the fish he is playing, whatever be his line, will he not know when to yield and when to hold fast?

But fishing, like hunting, is solitary. The zealot among fishermen will generally prefer his own company to the society of lookers-on, whose advice may worry him, and whose presence may spoil his sport. The salmon-fisher does not make much of a companion of the gillie who goes with him, and the trouter does best when absolutely alone; and nothing is so apt to prove a tyrant, and an evil one, as the love of solitude.

On the other hand, the fisher is always under the influence, and able to admire the beauties of Nature. Wheth-

er he is on the cragbound loch or by the side of the laughing burn of highland countries, or prefers the green banks of southern rivers, he can enjoy to the full the many pleasures which existence gives to those who admire Nature. And all this exercises a softening influence on his character. Read the works of those who write on fishing —Scrope, Walton, Dawsy, as instances. Is there not a very gentle spirit breathing through them? What is there rude, or coarse, or harsh, in the true fisher? Is he not light and delicate, and do not his words and actions fall as softly as his flies?—*Spirit of the Times.*

THE HARD AND ORNAMENTAL WOODS OF THE PACIFIC COAST.

BY C. A. STIVERS, M. D.

[Continued from page 81 of March number.]

Before passing to the consideration of the more northern part of the west coast timber-belt, I wish to call attention to a number of other hard woods found growing in Mexico, and which were not mentioned in my previous article. At present, they are but little known (only specimen lots as yet having been received here), and, therefore, my descriptions will, necessarily, be brief.

Cacaguananchi (Palm). This tree is called by some, the "Chocolate Palm," on account of the rich deep chocolate color of its wood. It is straight grained, hard, dense, and from appearances well adapted for small turnings and cabinet work.

Mora (Mulberry). Wood somewhat like the Cedars in grain, but of a much darker color; hard, close, and capable of a fine finish, in which state it resembles Walnut. Cabinet work and turnings.

Caoba (Mahogany). Wood light-colored, grain plain; useful for small trimmings and cabinet work.

Guayacan (Palm). Light, almost a white wood; close grained, dense and hard. It would make good panel work.

Zorillo (Fox-wood). Wood of a light color, fine texture; well suited for panel work.

Arrellano. A light cherry-colored wood, and having somewhat the texture and grain of the true Cherry-wood. Cabinet work, etc.

Palo pricto. Wood light-brown, in some respects similar to the *Amapa prieta* in hardness and texture.

Palo muelo. Light cherry-colored wood, striped with a yellowish tinge, which gives it a very handsome appearance. Hard and close grained, being susceptible of a fine polish. Cabinet and panel work.

Palo fierro (Iron-wood). A very dense, heavy wood, as its name implies. It is extremely durable, resembling in many respects Lignumvitæ; color dark, almost black; useful for ship work, and also where a very hard wood is required; as, in blocks, wheels, pulleys, etc.

Arrallan. A light-brown wood, somewhat like Ash, but lighter in color. Good for wagon work, and for other purposes, where a strong tough wood is required.

Laurelillo (Bay-tree). Wood like Walnut in color and texture. It has also the same finish, and can be used in all cases where the latter named wood is needed.

Tuscate (Pencil Cedar). A soft wood, used mainly as pencil casings, for which it is invaluable.

Cabo de Hacha (Handle-wood). Evidently, from appearance, a species of Hickory; strong fine wood, makes good axe-handles, and I should judge, also valuable as a wagon material.

Tepezapote. Wood dark cherry color, resembling very much in character Cherry-wood.

Espina del Mar. Wood of a reddish chocolate color; compact in texture and takes a fine finish. Cabinet work.

Tapinseran listarde and *negro.* Dark ebony-like in color, resembling the true Ebony also in grain and texture, but not in density, being much lighter. Rather dark for cabinet woods, but well adapted for trimmings, frame work, etc.

Amapa blanca. Light, almost a white wood, somewhat resembling Hickory.

Guilochi. Hickory-like wood, apparently of small growth.

Cuate. Like the preceding, but darker in color.

The last three are much of the same character, and are adapted to the same uses.

The next section of this subject will be devoted to the Hard and Ornamental Woods of California.

INSECTS ON HOUSE PLANTS.

The *New York Tribune* gives the following simple plans for the eradication of plant lice, which sometimes seriously trouble house plants in winter. It says:

There are at least twenty different specifics much vaunted for destroying the insects that infest house plants, especially as regards the green Aphides, or plant lice, which, like the poor, are ever with us. In England, the article most in favor at present among florists seems to be what is known as "Gishurst's Compound." Here, we have not got much beyond the tobacco smoke remedy. To make this effectual, the plants should be kept an hour or more in a concentrated smoke, obtained by burning tobacco on red-hot coals. Failure usually proceeds from too brief immersion in the smoke. In air-tight greenhouses, it is practicable to fill an entire room with the smoke, and leave the plants in it all night. A similar result can be effected in a small way in a barrel. An ingenious friend, an amateur "rosarian," covers each of his Roses successively with a sort of paper balloon, which is so constructed as to be capable of more or less expansion, according to the size of the plant, and contains a tin cup, in which he puts hot coals and tobacco. There are people who meet with success in applying certain powders to the Aphis; but the majority of experimenters find difficulty in keeping him long enough under the influence of the application, to say nothing of the trouble of washing the powder off the foliage afterward. The "Persian insect powder," carbolate of lime, and some of the stronger snuffs, have, however, their advocates, who blow them at the Aphides with bellows. Washing with strong soapsuds is a good practice, with plants as well as people, and tolerably safe; for this purpose, in the former case, whale oil soap has a high repute. Suds can be applied, of course, with a syringe; for that matter, a baby might be washed in that way, but it would not be the most advisable method; the better way is, to plunge the thing to be washed into the suds; but in the case of plants, there is this difference—they do better if put in head foremost, and a piece of paper should be tied over the earth of each pot, to keep it from falling out while the plant is soaking. Most people know enough to cut a hole in the paper for the stalk to pass through. Various soaps and solutions are sold for this purpose, containing different proportions of carbolic and cresylic acids, some being so effectual that vegetable as well as animal life succumbs to their influence; and folks who love their plants, as a rule,

prefer to try chemical experiments of this kind upon the plants of other people.

There is a remedy for the Aphis not freely advertised in the newspapers, nor highly recommended in horticultural books, which is not open to certain objections that apply to all the foregoing. It consists in using the eyes sharply and the thumb and forefinger dexterously. On the first trials, especially if plants have been much neglected, this process will seem very much like work, and it may be necessary to hold the left hand so as to catch the insects, while stripping them from the foliage with the right. After being once thoroughly cleaned, the plants can be kept in order if a few minutes are thus employed every day. Within a week the morning's review should not discover a half dozen insects even of the smallest kind. But it will not do to skip a day or two and give a new colony a chance to breed. Occasionally a knowing old Aphis fixes himself in the axil of the leaf or the fold of a bud, where, to get at him, it is necessary to wet the end of a match, the point of a pencil, or even the head of a pin, and touch his back gently with it; you will find him adhering when the instrument is withdrawn. Is it quite certain that it would take too much time to clean your plants with thumb and forefinger? Then, depend upon it, you are trying to keep too many.

OLIVE CULTURE.

Years ago, Mr. Robert Chisholm, of Beaufort, S. C., planted a large number of Olive-trees, which produced most abundantly, and from which a very delicate oil was made. Several trees stood, until quite recently, near the city, upon land formerly owned by Mr. Mauge, of Augusta, and which also produced a large yield of fruit. This demonstrates the adaptation of our section to the culture of this fruit. The great olive-growing regions of France, Provence, Languedoc, and the coast of the Mediterranean, differ but little in their climate from ours, and contain, moreover, a good deal of land of a texture similar with our light soils of Middle Georgia. Light soils of a rocky nature are preferred in France for planting the Olive; as being less liable to damage from frost, and producing the best quality of fruits.

Olives are propagated by seed, which must be prepared before planting, by the removal of the skin, otherwise the oil contained therein will prevent germination. The best method is to feed fresh Olives to fowls which have been placed in coops, the seed being divested by them of all the cuticle. Many varieties will be found in a batch of seedlings, some producing fruit of excellent oil-bearing quality, others very small, fit only for pickling. Hence, reference to the use of the product must be had when setting out the plants. Seedling Olives can be grafted, and thus a uniform quality of fruit secured. Other methods of propagation are often resorted to, such as by cuttings, layers, or suckers, as in all other fruit trees. Seedling trees will attain to greater proportions and longevity than those produced by other means. Olives commence to flower here in April, and are seldom injured by late frosts. The fruit matures from November until January, and can be left upon the trees until March. When the fruit is needed for pickling, it must be gathered before maturity; but if for oil of best quality, they must remain until within one-fifth of being ripe. If left longer, the quality of the oil deteriorates. We will close by giving a list of the differ-

ent varieties commonly cultivated in the south of France, for the different purposes of commerce:

Olea subrotunda.—Very small; very bitter; excellent oil.

Olea amygdalina.—Good for oil and pickling.

Olea racemosa.—Very hardy and robust; product varies as to soil.

Olea Hispanica.—The Spanish Olive; very large; oil very bitter; used only for pickling. This is the variety which is imported here in immense quantities.

Olea præcox—Excellent for oil.

Olea oblonga.—Considered best of all for pickling, but smaller than the Spanish.

Olea regia.—Oil of inferior quality; fruit large, and used only for salting.

Olea atrarubeus.—Tree of low growth; liable to be injured by cold; needs rocky soil; fruit violet black; produces the very finest oil.

Olea viridula.—The Fruit retains its greenish color late; of very good quality for oil or pickling.

SILICA AND THE VEGETABLE KINGDOM.

Silica gives harshness and stiffness to the straw and leaves of cereal grain. When Wheat or Rye is sown where a brush-heap or a pile of logs has been burned to ashes, the straw will be unusually stiff, and the leaves much harsher than other straw which grew in close proximity to the place where the ashes of the brush or wood was left to fertilize the soil. The potash of the ashes and the silica found in the soil are taken up by the growing plants, and form a coating of liquid glass, which is spread evenly over the straw and leaves of the growing grain, as a metallic coat of arms was used in olden times to cover the body of a soldier. When the growing straw of Wheat is inclosed in a thin tube of elastic glass, the innumerable spores which frequently fill the entire atmosphere like flakes of snow, and which produce rust, do not find a congenial place for their lodgement and complete development. But, when the plants do not have access to a generous supply of silica and potash, the stems are so limber that they are easily prostrated by driving storms, so that the ears of grain will be developed only in part. When silica is available only in small quantities, the spores from which *fungi* spring adhere to the leaves and stems, where they find a congenial place for their development, and thus the productiveness of the plants is seriously impaired.

The practical value of silica is further perceived in the production of excellent fruit. If the soil near an Apple or Pear tree that has hitherto yielded knotty and rusty fruit receives a liberal dressing of sand, which supplies silica, and of wood-ashes, which furnishes potash—the substances required to make glass—Nature will employ those ingredients to a great extent in covering the leaves with an elastic glass, and the fruit with a thick, transparent varnish, produced from the silica and potash, which will protect the leaves from blight, and the fruit from rust, scales, and cracks. This fact has been demonstrated repeatedly in some fruit-producing localities, where wood-ashes or coal ashes have been scattered around about Pear-trees and Apple-trees so liberally that all grass and weeds were destroyed.

Flint, sharp sand, and quartz, are composed, for the most part, of silica. Hence the propriety of mingling scouring sand with the soil in which flowers are cultivated. Divest the soil of all silica and alkali where useful plants and beautiful flowers are to be grown, and

not one would attain to perfect development, simply because silica and potash are eminently essential to impart stiffness to the stems, and elasticity and tenacity to the leaves. When Grapevines, for example, which are growing in a sandy soil, have access to potash in abundance, the leaves will appear as tough as leather, and no mildew or rust will ever affect the foliage, or injure the fruit.

In the philosophic world, silica and the alkaline earths have given us the microscopic and the telescopic lenses, which have unfolded to our limited vision the matchless wonders of the planetary universe, and the transcendent beauties of insect life, which can never be appreciated when viewed with the naked eye.—*Industrial Monthly.*

Editorial Portfolio.

In fulfillment of the promise we made to those of our readers who desired initiatory information in gardening on a small scale, we have enlisted the able pen of F. A. Miller in their behalf. The present number contains the first of a series of articles on the A B C of small-plot gardening, and we hope he will be repaid for the trouble he is taking in this work, by a visible improvement in general appearance, a greater display of taste and selection, and of more thriving and luxuriant growth in the small garden plots and front courts in and around the suburbs of the city, when he casts a critical eye over them in his frequent early morning walks. We expect he will be able to define the extent of our city list by these improvements, and we shall by like measure criticise the virtue of his essays. Several other practical gentlemen will from time to time contribute papers on the same subject, and we anticipate much increased interest and pleasure on the part of our readers; but we must reiterate our request, "*Write*"—how else can we know what you want?

We note the following well timed and judicious remarks in our friend, *The Gardener's Monthly*, for March: "There is possibly not so exclusive a regard for mere masses of plants for the effects of their color as there was. Flowers are more loved for their own sakes than formerly; and this will bring up again the Hollyhocks, Chrysanthemums, Dahlias, Pansies, Pinks, Phloxes, Polyanthuses, and other old-fashioned things which the rage for massing nearly drove out of sight. Still the beautiful effects on the garden landscape produced by the newly introduced colored leaves which continue to come, will keep the massing style popular for many years yet. It is found that a very slight variation in colors of a leaf make a remarkable difference in the effect when massed. Thus we may have two plants of two kinds of Coleus together, and we see little difference between them; but when there are a few dozen of each kind in a mass together, we take in the aggregate of the difference, and the effect seems very striking. As these plants vary very much from seed, there will be room for many unique effects in this way from them for many years to come.

"There have been some interesting and novel features introduced into European flower gardens the past year in the employment of dwarf hardy shrubs as permanent borders for flower-beds. The little dwarf variegated Japan Euonymus, *E. radicans variegata*, for instance, makes a charming border for Coleus, Achyranthus, and such other things. Then the Golden Arborvitæs

Golden Yews, and so forth, by a little shearing, such as we give box-edgings, come nicely into play with many brilliant colored leaf plants. There is an additional merit in this style, that the beds do not look so naked in winter as they do when annual plants alone are employed. The Ivy is very much employed for this purpose, and there are now so many varieties of Ivy that a set of a score or more of beds may be given a very varied appearance by the means of Ivy borders alone."

Weigela Rosea.—This beautiful, hardy shrub is a native of China. Mr. Fortune, the celebrated collector, met with it growing in the garden of a mandarin, about the year 1837. This lovely plant thrives in the most desirable manner in any ordinary garden soil, which has the proper degree of porosity necessary to admit of the spread of roots. It is clothed with neat, bright green foliage, of medium size, and extends its branches on all sides, so as to form a round headed specimen, which, for pleasing neatness, may vie with any other shrub we have. In winter the leaves fall off, the plant being deciduous; but they re-appear very early in spring, and are speedily followed by the very handsome, rich, part rose and part white-colored flowers, a good deal resembling the prettiest apple-blossoms, large and abundantly produced, and of surpassing loveliness.

Its cultivation is by no means difficult in any respect. It is very much planted in eastern grounds and gardens generally. It strikes readily from cuttings. As to the position it should occupy, when finally settled, we can hardly conceive one in which it may not be ornamental. As single specimens on grass, in small groups of choice subjects, or the front of shrubbery borders, the Weigela will be equally beautiful. The handsome and numerous large pink bells make the plant desirable in all situations, even amongst such fine and almost constant bearing shrubs and flowers for which California is so deservedly famous.

The genus *Weigela* is included in the beautiful order, *Caprifoliacea*, a group of plants found only in the temperate regions. Its nearest ally is the genus *Diervilla*, composed for the most part of Japanese plants, distinguished by their handsome rose-colored or white flowers. The honeysuckle is the type of the order, but is the only one of the number possessing an agreeable odor. Weigela in the Linnæan arrangement is included in class *Pentandria*, order *Monogynia*.

WOODWARD'S GARDENS.

These attractive gardens are in a continually progressive state; important alterations are the order of the day. A large pool has been constructed for the reception of some huge amphibious mammals, of what particular species we do not know. The aquarium is still in an unfinished state, owing to the want of knowledge and skill on the part of those who *profess* to construct pumping-gear in this part of the world. Great alterations and improvements are being made in the fountain arrangements, and some exceedingly beautiful effects will be produced in this department. The tunnel-way beneath Fourteenth Street has been much increased in width, which will add considerably to the comfort of visitors, as, owing to the steadily increasing popularity of these gardens, the tunnel has lately at times been an uncomfortably tight place. Owing to the backwardness of the spring, the horticultural display

has been unusually retarded, even here, notwithstanding all necessary appliances; but the last few warm days have had a most invigorating effect, and will add considerably to the already attractive appearance of the conservatories, etc.

REPORTS OF SOCIETIES.

Bay District Horticultural Society. The regular monthly meeting of this Society was held on Saturday, March 29th, and was fairly attended.

The members present unanimously resolved to establish a Herbarium of California Plants, under the supervision of Dr. A. Kellogg, the President of the Society; and, in order to make a good beginning with the work, it was agreed that the members should make excursions from time to time, for the purpose of gathering plants. The first of these expeditions to take place on Sunday, April 6th, to Marin County.

Mr. R. Michelsen announced his intention of reading an Essay on the Culture of Camellias at the next regular meeting of the Society.

An interesting discussion followed upon the cause of mildew on Roses, and of the remedies to be applied. It was the general opinion that the disease must be attributed to the sudden changes of temperature; the days being frequently hot, and the nights very cold. The following remedies were suggested:

By Mr. Kidwell: One pound of black sulphur, with a small portion of common yellow soap, dissolved in about sixteen gallons of water, with which the infected parts of the plants should be syringed in the evening after the sun has gone down. Mr. Kidwell said that one application was sufficient.

By Mr. Reimer: Soak ten pounds of tobacco stems in about twenty gallons of water, dissolve in the infusion one pound of carbolic soap, and with this solution syringe the plants every other day for about one week.

Dr. Kellogg suggested a remedy which might prove successful, and was certainly worthy of a trial. He proposed to use sulphurous acid diluted with twenty to thirty times its volume of water, with which the plants should be syringed.

There was a motion made to postpone the Horticultural Spring Exhibition for two or three weeks on account of the backward condition of plants in general. The motion to postpone, however, was lost.

The Missouri State Horticultural Society met at Jefferson City, January 7th, 8th, and 9th, when matters of much interest were discussed.

It will hold its next session in Hannibal, in January, 1874.

FAIRS AND EXHIBITIONS.

At the Annual Rose Show of the Massachusetts Horticultural Society, at Boston, June 17th, special prizes for Hybrid Perpetual Roses were offered by H. H. Hunnewell, Esq. Open to all.

For the best six new varieties, never before exhibited, $40.
For the best six named varieties, $20.
For the next best, $10.
For best twelve of any one variety, $20.
For the next best, $10.

All the roses competing for these prizes, to be exhibited in boxes the same size as those competing for the Society's prizes; the size of the boxes for the six new varieties and the named varieties, one foot six inches long, one foot six inches broad, six inches high at the back, and four inches high at the front.

Special Prizes for Roses, offered by C. S. Sargent, Esq. Open to all.

For the best twenty-four distinct named varieties, three flowers of each, $60. For the next best, $40.

All Roses to compete for this prize to be exhibited in wooden boxes to be four feet long, one foot six inches broad, six and one-half inches high at the back, and four and one-half inches high at the front. The Roses to be placed on a neatly arranged carpet of moss. Regard will be had to the manner in which the Roses are exhibited.

OUR EXCHANGE TABLE.

We perceive that in noticing the *Gardener's Monthly*, in our last issue, we erred in the name and address of the publisher, and we take this opportunity to correct it. This excellent magazine is published by Charles H. Marot, 814 Chestnut Street, Philadelphia.

San Francisco Weekly Visitor, edited by Carlos White, 409 Washington St., San Francisco. $2 per annum. Published every Saturday. A very excellent family newspaper, with abundance of interesting and useful information.

The Evergreen and Forest Tree Grower. Published by Pinney & Co., Sturgeon Bay, Wis. Monthly. Fifty cents per annum. An exceedingly cheap publication, containing a large amount of very useful information on its specialty.

American Agriculturist, published by Orange Judd & Co., 245 Broadway, New York. Monthly. $1.50 per annum. A good magazine, affording abundant information.

Western Agriculturist, an illustrated monthly magazine—plenty of information. Published by T. Butterworth, 430 Main Street, Quincy, Ill. $1 per annum.

Western Planter, a weekly journal, devoted to Agriculture and Horticulture, Stock Raising, and home reading—useful and instructive. Published by R. H. Stowe & Co., Kansas City, Mo. $1.50 per annum.

NOTICES OF BOOKS.

We notice that *The Gardener's Monthly* very strongly recommends "Purdy's Fruit Instructor," by A. M. Purdy, of Palmyra, N. Y. Price, 25 cents. We have not yet seen the book.

The same authority, speaking of the *Garden*, a London (England) publication, by Mr. W. Robinson, says: "England already has at least three, if not more garden papers, that seem as near perfection as anything in this line can be. The *Gardener's Chronicle*, the *Gardener's Magazine* and the *Journal of Horticulture*, seem to cover all the ground. But a perusal of the *Garden* shows that Mr. Robinson has found a large unoccupied tract, and he is cultivating it so well, that in speaking of the superior English papers on gardening, the four must go together."

The April number of the *Overland* is to hand, and affords an unusual amount of excellent reading. "Agricultural Capacity of California" is a highly instructive article, well worthy of general perusal. "The California Indians" maintains its interest. "Pectens," also, are replete with information on this branch of Natural History. "A Geologist's Winter Walk" is highly interesting, and a fine piece of word painting. "Etc." good as usual. In "Current Literature," the "Life of Charles Dickens" is a critique keen and satirical, but Forster deserves it.

Spinach was first cultivated in Arabia.

CATALOGUES RECEIVED.

We have received a very well illustrated and carefully prepared Catalogue of Seeds, Bulbs, etc., from R. J. Trumbull, of the New York Seed Warehouse, 427 Sansome Street, San Francisco. It contains very much useful information applicable to this coast. The prices are evidently very moderate, and the list of *native California shrubs, bulbs, and flower-seeds* is highly interesting.

We wonder if any other of our nurserymen and seedsmen have enterprised so far as to publish a catalogue? If so, we shall be pleased to notice it.

We are in receipt of a set of the Illustrated Catalogues of Messrs Ellwanger & Barry, Mount Hope Nurseries, Rochester, N. Y.

1. Descriptive Catalogue of Fruits.
2. Descriptive and Illustrated Catalogue of Trees, etc.
3. Catalogue of Dahlias, Verbenas, etc., etc.
4. Wholesale Price List.
5. Catalogue of Bulbous Flower Roots.

They are a very valuable accession to our catalogue shelf, and from the established character of the firm, their very extensive and flourishing bnsiness, and the quality of the stock sent from their grounds, we feel satisfied that those of our readers who find it convenient to supply themselves from these nurseries, will have every reason to congratulate themselves.

Received, Price List of J. W. Coburn & Co., East Chester Nurseries, East Chester, N. Y.

NEW FRUITS AND VEGETABLES.

Apple—Illinois Pippin.—*The Horticulturist*, for February, figures and describes an Apple under this name, which promises to be a good thing. It is rather large, flattened, yellow, striped with carmine, with a white, sub-acid flesh. In season in January.

NEW AND RARE PLANTS.

Campanula turbinata.—For upward of two months this gem has been producing its charming flowers in the greatest profusion in my London garden, and although now on the wane, it is still very handsome, and the delight of all beholders. It forms a dense compact tuft, never exceeding eight or nine inches in height, blooms included. The flowers are large, erect, bell-shaped, and rich dark purple. There is also a white form, which resembles that described in every respect saving color. I would ask why these are not more grown, for they are perfect jewels in the flower border? They come from the mountain regions of Transylvania. —*Journal of Horticulture.*

Delphinium nudicaule.—This species is a new introduction from California, and to all my readers who have not yet purchased the plant my advice is, do so at once. It is dwarf in habit, seldom exceeding eighteen inches in height; the leaves are somewhat small, palmately lobed, and of a dark green. The flowers are large and freely produced both in terminal and axillary spikes; the sepals and spurs are bright orange, and the petals bright red. This plant, I think, can not fail to please every one when it becomes established, its dwarf habit and brilliant color being great recommendations; but I can not endorse the views I have heard respecting its becoming a good bedding plant.—*Journal of Horticulture.*

Lilium Bloomerianum.—This is another of our native Californians, and we

introduce it here to remark how very rarely our native productions are estimated at home at their true value; this, with several other Californian Lilies, is much in demand in the East and in Europe.

Dr. Kellogg, President of the Bay District Horticultural Society, its discoverer, describes it thus: "This is the most magnificent Lily of the Pacific Coast. Flowers large, nodding, of a beautiful orange hue, and studded with rich, dark spots. It grows from six to ten feet high, and under high culture four to six stems are produced from a single bulb." We notice in an Eastern catalogue that some of the bulbs are valued at $5.00 each.

Graphalium lanatum variegatum.—This is a variety of the old *G. lanatum*, with leaves distinctly variegated with green and white. It is said to be a strong and vigorous grower, and will no doubt become a favorite with those who are seeking for novelties among handsome foliage plants.

Campanula Vidalii is recommended as a perfect gem for the greenhouse. It is a low-growing plant, with racemes of pure white bell-shaped flowers.

Flora of California.—Dr. Brewer is engaged on this good work. It is in such a state of forwardness as to be probably ready for the press by the end of the year. Professor Gray and Mr. Serens Watson are lending a hand, so as to hurry on the work to an early completion.—*Gardener's Monthly.*

Lilium Washingtonianum.—This Lily, not many years ago named and described by Prof. Alphonso Wood, is becoming rapidly popular in Europe. Large consignments of bulbs from California are being sold at high prices in England.

Preserving Flowers in Alcohol.—An excellent way to preserve the form and color of flowers that it is desirable to transport long distances, is to immerse them in a jar of alcohol. A sea captain, who makes frequent voyages to tropical countries, gratifies his friends by bringing them specimens of tropical flowers in this way. It does not answer, however, to remove them from the alcohol; if this is done, they lose color and form at once.

WORK FOR THE MONTH.

BY F. A. MILLER.

This is the last month of the rainy season in California; the showers which may occur occasionally during the beginning of May can not be depended upon. Wherever planting is contemplated, be it in the field, in the garden, or in the pleasure-ground, the month of April gives us the last practical chance to do the work well. The weather being rather uncertain, every precaution should be taken in the transplanting of trees, shrubs, and plants of every kind. All deciduous trees and shrubs should be cut back considerably before planting to insure a thrifty growth. Evergreen-trees and shrubs which are removed and transplanted with the earth around their roots, should receive a very thorough watering immediately after planting, or else there is danger of loss. We must bear in mind that, for some time after transplanting the evergreens, the tree or shrub draws its subsistence from the ball of earth surrounding the roots when transplanted, which frequently form one mass of roots and rootlets, and becomes very soon exhausted and destitute of all moisture; if it rains sparing-

ly, the surrounding soil can not replace the necessary moisture to keep the tree or shrub alive, and, nine cases out of ten, the plant will perish, or suffer severely. By thoroughly saturating the ball of earth as well as the surrounding soil, this difficulty is overcome.

Much moisture is lost in newly prepared ground, from evaporation during warm weather. This is easily remedied by mulching after planting; which is done by covering the surface to the depth of three to four inches with straw or litter of some suitable kind, for, say, two feet around the tree.

In transplanting young seedling-trees, which are usually removed without any soil around their roots, very often great mistakes are made. So-called gardeners pull up the young trees in quantities, and leave them exposed to the sun while planting them out. To avoid this, dissolve some loam in a bucketful of water so as to make a thin mud, into which the roots of the young trees should be plunged, in order to give them a coating, which will preserve the roots in a good condition until they are planted. This rule may be applied to nearly all trees, shrubs, and flowering plants.

Another important item is the properly supporting of trees and shrubs with suitable stakes. Our summer winds are very strong, and blow continually from one direction, giving trees a rather one-sided appearance. This may be obviated to a great extent by proper pruning, which tends to produce a stouter and more compact growth. However, good, strong stakes are necessary; and in setting them, I would advise always to let them lean a trifle toward the direction whence the wind blows.

In spite of all we can do, the wind may, in course of time, give a tree a one-sided and crippled appearance; trees in such condition I have frequently saved by digging around them, at a proper distance, leaving the earth around the roots undisturbed, and then twisting them with the earth half way around, so as to expose the strong and compact growth to the wind. In the course of a year they assumed the original good shape and form. With deciduous trees or shrubs this operation is very easily performed during the earlier part of the winter season.

April is an excellent month to do the chief planting in the vegetable garden. The soil is warm enough to start the seeds into growth, and whatever need transplanting, such as Cabbages, Cauliflowers, Tomatoes, etc., will be greatly advanced by our warm April showers. For early Cabbage, the plants should now be large enough to be transplanted. Some late Cabbage may be sown at this time, in a cold frame. Early Cauliflowers may also be transplanted, and some of the later kinds may be sown again in a frame. Tomatoes should all be transplanted. All tender vegetables must now be sown, such as Beans, Corn, Cucumbers, Melons, Squashes, Peppers, Egg-plants, etc. Sow again some early Radishes and Lettuce to succeed in May. In transplanting young plants or vegetables, such as I have mentioned above, it is well to select a cloudy day, or if these are not of frequent occurrence, the best time of the day is after three o'clock in the afternoon; immediately after transplanting, water carefully each plant with the watering-pot. Young Tomato plants should be shaded for a few days after transplanting.

In the flower garden things begin to look more cheerful. Roses and Pinks are beginning to be plentiful. Pansies are excellent at this time. Violets and Hyacinths are breathing their last; Tulips are in their glory. Some Migno-

nette, Nemophila, Phlox Drummondii, Portulacca, or Lobelia, sown between these early flowering bulbs, will make a very desirable substitute by and by, and will not in any way hurt the bulbs.

Plant out your Dahlias, some of your Gladiolus, Amaryllis, Tuberoses, and other tender bulbs.

Lilies are coming forward now; keep the ground loose around them, and if it is convenient to give them some strong manure water, or a little guano in solution, it will make them thrive as well again.

Do not fail to sow some of the best annuals in groups or masses, wherever there is room for them. They give variety, contrast, and effect. The German Asters, the Larkspurs, Petunias, Primulas, Stocks, Phlox Drummondii, Candytuft, Snap Dragon, Zinnia, and the various kinds of Immortelles, are all most desirable to have.

The plants in the greenhouse and conservatory are greatly stimulated by the warm spring days. On this coast, nine-tenths of the nursery establishments are carried on without artificial heat during winter, and consequently the plants cultivated there show the approach of spring and summer as much as the outdoor plants. In colder countries the temperature is kept up throughout the winter to such an extent as to produce continual growth and development. To accomplish the same thing here, artificial heat is indispensable, although very little of it is required, during the nights and some rainy days even, from which tender plants suffer here the most. Begonias, Cacti, Cinerarias, Chinese Primroses, and Azaleas are now the chief attractions under glass. The Clematis, Torrenya Asiatica, Eranthemum tuberculatum, and the double Geraniums are flowering well with us at this time.

Give plenty of air and a greater abundance of water to all plants which seem to advance well. For most greenhouse plants an occasional and moderate application of guano water is very beneficial.

This is a favorable time to propagate most of the tender greenhouse plants; in fact, for nearly all of such plants as have to be raised under glass. Cuttings of Coleus will now push ahead rapidly, and will soon make better plants than the old ones, which should be thrown away as soon as the young plants are rooted.

If any seeds of tender or hardy plants are on hand, or are expected, do not delay planting them as soon as they come into your possession.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

Soon we shall be visited by some warm weather. The early spring fruits will, in a short time, be present to our imaginations, if not upon our tables. At any rate, the vernal weather will induce us, in lieu of fresh ones, to eat more plentifully of those fruits which the producers, canners and fruiterers have been able to preserve, lay over, and prolong from last year's crops. If it be true that in cold weather we need, and the appetite demands, concentrated carbonaceous food, it is also true, as might be expected, and as many of us know, that the appetite demands, in warm weather, a very different class of articles of food, and the reason is obvious. To be sure our climate is very different from that of the Eastern States, especially in San Francisco, and it is comparatively cool here nearly all the year round. Much hot weather is quite uncommon, and we rarely have in spring or summer more than half a

dozen very hot days together. Still, the thermometer is often high enough at nearly all seasons to make it desirable that a pretty large part of our diet should consist of fruit and vegetables. Oranges then come in to help us in this case considerably. Also Rhubarb, or the Pie-plant, with a much larger accession of vegetables than even we, in this region, could have during our winter months. In the spring, our desire for butter and buckwheat is lessened, and we begin to crave for more acid fruits and green vegetables; yet, how many thoughtless housekeepers go through the same routine of cooking in summer as in winter, with just about as much butter, and lard, and fat beef, and even pork, and rich gravy, and flour-puddings with sauce; not because they like it as well, or think it is wholesome, but only because "their mothers did so before them."

We need, in summer or winter, whether using muscles or brains, or neither, every-day food containing carbonates for the lungs, nitrates for the muscles and tissues, and phosphates for the vital powers; but we need them in very different proportions, according to the state of the temperature in which we live, and our habits of life. But man, who has intellect, is expected to understand the laws of his being, and to adapt his food to the wants of his nature, varying it according to circumstances. This we should learn to do even in the moderate, cool, and equable climate of San Francisco, and still more so in the much more generally warm climates of our coasts and valleys, differing so much as they do as to locations.

But we must not, in our divergence from our main subject—fruits—and touching upon kindred subjects, forget our leading theme, the market; yet, a few words more, as to the time for eating fruit; we think, the morning is the best; but we are not quite sure, though. The afternoon is good. But we do not recommend fruit with the dew upon it. Let the fruit get its own breakfast before you eat it yourself. It breakfasts on early sunshine and dew. It takes these things in, and smiles upon itself and the world, just as you do about half an hour after a pleasant breakfast. Eat it, then, while it is in this humor—by no means in the raw and early morning; thus you have the young freshness and virgin flavor of the fruit. It has another character later in the day, when it is filled with sunshine; then we think it is sweeter.

We must really not delay any longer, however, in treating on our more practical, matter of fact, and more tangible subject—our markets. Behold, then, our readers, what we can set before you this month, for your judicious and doubtless well discriminating palates.

There are some changes in the fruit and vegetable markets since last month, but they are not very important. The most notable fact is the advent of Strawberries (the Longworth Prolific, as usual), on the 12th of March. Their appearance is a week earlier than last year. The consignment of that fruit was light, of course, and, when so early, their quality denotes plainly, both in complexion and taste, that they have not yet had a sufficient bathing in the solar beams. The price may be supposed to be rather on the fancy order—one dollar and fifty cents per pound—but by the time this number of our monthly reaches the public, they will be enjoying this fruit at a more moderate price.

The first cargo of this year's crop of Tahiti Oranges arrived about the 9th ult., and though nearly always inferior

to those of our southern, and some favored spots in our middle and even more northern counties, they meet with a tolerably ready sale at satisfactory prices.

Lemons can be obtained a little lower than last month, owing to the arrival of a considerable quantity of Limes, which also are cheaper.

Cocoanuts are coming in large loads.

Apples are not plentiful, and the best command $3.00 per box, while inferior fruit will bring $1.50 to $2.00 a box.

Pears are about exhausted, and nominally quotable at $2.50 to $3.50 a box.

Bananas have come in lately in a pretty large quantity, and are of fine quality, at 75 cents per dozen.

Asparagus is abundant, and now sells at moderate prices.

We observed new Cucumbers, fresh and crisp, for the first time on the 11th ult. They, probably, have never been much earlier than this in any former season. They were selling at $2.50 per dozen. It would not answer, at this price to cut up, and, with salt, pepper, and vinegar, prepare these nicely, and then, according to the recipe of some over-careful sanitary-protective folks, cast them to the porcines, so as to inflict no injury on the human family. This would be rather too extravagant an idea in every point of view. We ourselves think Cucumbers have been rather overrated as to their terribly deleterious effects on man's digestive organs. At the present prices for these esculents, however, it would seem to be unnecessary for us to preach moderation in their use; the consideration of the depleting effects on the pocket will preclude the necessity for this.

Rhubarb is in good supply, and the price is speedily becoming more moderate.

Correspondence.

To the Editor of the California Horticulturist:

Dear Sir:—In the March number of the California Horticulturist, I notice a communication signed by *Philoflora*, who seems to expect more work from our Agricultural and Horticultural Societies, for the public good; and would like to see more extensive reports from the Secretaries of these Societies. The suggestions are timely and valuable. Unluckily our practical men will neither spare the time, nor take the trouble to put their knowledge and experience to public use. Our scientific men consider the subject of Horticulture beneath their dignity, and our rich men can not *afford* to expend a dollar unless they see the prospect of two in return.

The consequence is that the Secretaries of these Societies, with the aid of but one or two other members, have to carry on all the work which is done, and for which they receive the valuable consideration of re-election, if they choose to accept it.

However, here is a suggestion for Mr. "Philoflora." If he is a member of the Horticultural Society, let him bring the "Pegging down of Verbenas" question before the monthly meeting; and if he is not a member, then let him join immediately, for the very fact of *his* becoming a member would, undoubtedly, increase the usefulness of the Bay District Horticultural Society.

So long as a society has to struggle for its mere existence, but little progress can be expected in public usefulness. Our Horticultural Society ought to number 1,000 members instead of only sixty; then the gatherings would doubtless be more numerous, and necessarily more interesting and beneficial. By degrees, I suppose, this more desirable *status* will be attained. Horticulturist.

Editorial Gleanings.

WATER RIGHTS.

From the new Code, we copy the following provisions, relating to water rights:

Sec. 1410. The right to the use of running water flowing in a river or stream, or down a cañon or ravine, may be acquired by appropriation.

Sec. 1411. The appropriation must be for some useful or beneficial purpose, and when the appropriator or successor in interest ceases to use it for such purpose, the right ceases.

Sec. 1412. The person entitled to the use may change the place of diversion, if others are not injured by such change, and may extend the ditch, flume, pipe or aqueduct by which the diversion is made to places beyond that where the first use was made.

Sec. 1413. The water appropriated may be turned into the channel of another stream and mingled with its water, and then reclaimed, but, in reclaiming it, the water already appropriated by another must not be diminished.

Sec. 1414. As between appropriators, the one first in time is the first in right.

Sec. 1415. A person desiring to appropriate water must post a notice, in writing, in a conspicuous place at the point of intended diversion, stating therein:

1. That he claims the water there flowing to the extent of (giving the number) inches, measured under a four-inch pressure;

2. The purpose for which he claims it, and the place of intended use;

3. The means by which he intends to divert it, and the size of the flume, ditch, pipe, or aqueduct, in which he intends to divert it.

A copy of the notice, within ten days after it is posted, must be recorded in the office of the recorder of the county in which it is posted.

Sec. 1416. Within sixty days after the notice is posted, the claimant must commence the excavation or construction of the works in which he intends to divert the water, and must prosecute the work diligently and uninterruptedly to completion, unless temporarily interrupted by snow or rain.

Sec. 1417. By "completion" is meant conducting the waters to the place of intended use.

Sec. 1418. By a compliance with the above rules, the claimant's right to the water relates back to the time the notice was posted.

Sec. 1419. A failure to comply with such rules deprives the claimant of the right to the use of the water, as against a subsequent claimant who complies therewith.

Sec. 1420. Persons who have heretofore claimed the right to water, and who have not constructed works in which to divert it; and who have not diverted nor applied it to some useful purpose, must, after this title takes effect, and within twenty days thereafter, proceed as in this title provided, or their right ceases.

Sec. 1421. The recorder of each county must keep a book in which he must record the notices provided for in this title.

Sec. 1422. The rights of riparian proprietors are not affected by the provisions of this title.

The Season of Flowers. — Nothing in Nature is so entrancing to the senses, so inspiriting to the mind, as a well planned garden, dotted with brilliant flowers. Our fields are now decked in vernal green, gaily sprinkled with bou-

quets of choicest wild flowers, while the gardens show a refinement of taste in Floriculture that merits and receives the admiration of our numerous city visitors. Flowers, says Chambers, are the ornament of vegetable existence, and have in all ages been cultivated by persons of leisure and taste, for the beauty and variety of their forms, colors and fragrance. While generally healthful and exhilarating, from being pursued in the open air, flower culture is justly reckoned a pure and harmless recreation, which, by leading to the tranquil contemplation of natural beauty, and diverting the mind from gross worldly occupations, has a positive moral, and, therefore, highly beneficial tendency. It has also the advantage of being alike open to the pursuit of high and low, the peasant and the peer, the overtoiled man of business, and the industrious artisan. It may be followed with equal enjoyment by both sexes, and on every imaginable scale, from the tiny front plot to the princely greenhouse, and exquisitely varied parterre. The natural grace, simplicity, and attractive coloring of flowers have afforded endless themes to moralists and poets, and volumes have been written to show how many associations of feeling, simple and sublime, these beauteous subjects are calculated to excite. Few natural objects are more poetical, or more calculated to refine the taste, than flowers. Therefore, all should cultivate them, in greater or less proportion, as their time and means permit.—*Alameda Encinal.*

A Simple Method of Warming Greenhouses.—The London *Grocer* suggests that greenhouses, containing half-hardy plants, and in which no regular method of heating exists, may be warmed even during a hard frost by lighting and distributing a dozen or so common oil lamps, at convenient localities. In selecting these lamps they should be chosen with vases large in proportion to the size of the flat wick, in order that they may continue burning all night without refilling or other attention. It will be readily understood that, whether one or many lamps are used, the total amount of heat given off is proportionate to the quantity of oil burned, provided the combustion is complete. And in using a lamp, all the heat of combustion is utilized; none goes up the flue as with stoves or fire places.

The same journal, we notice, refers to good kerosene oil as a very carefully and skillfully refined petroleum product. As this material, in addition to other advantages, possesses that of safety, it would be especially suitable for use as above described.

Treating Hyacinths after Flowering. In replying to a lady querist on the above subject, the *Gardener's Monthly* says: "Hyacinths, as we get them from Holland, have not been allowed to flower, and hence have much concentrated strength in them, which they never regain after once flowering. But they will produce some flowers another year, if well cared for. As soon as the flower fades cut away the stem, and give the plants all the benefit of light possible, and keep the soil rich by a light top-dressing of manure, and as soon as possible after the ground opens and frost is certainly gone, plant them in the open ground. The offsets will, however, make the best bulbs. Plant these in spring in very rich ground, and in the fall replant again in rich earth, picking out the flower-buds which it makes the succeeding year. The season following they will approach the

foreign bulb in excellence. We have not so far been able to equal the Hollanders in raising bulbs, but Mr. Such was experimenting some years ago with some hope of success."

Floriculture.—All lovers of flowers must remember that one blossom allowed to mature or "go to seed" injures the plant more than a dozen new buds. Cut your flowers then, all of them, before they begin to fade. Adorn your rooms with them; put them on your tables; send bouquets to your friends who have no flowers; or exchange favors with those who have. You will surely find, the more you cut off the more you will have. All Roses after they have ceased to bloom should be cut back, that the strength of the root may go to forming new roots for next year. On bushes not a seed should be allowed to mature.—*Scribner's for March.*

Shade Trees for Nothing.—Colonel Henry S. Fitch has offered to the Board of Supervisors from two to four thousand young Gum-trees, provided the Board will have them taken up and transplanted on the county road. He is also disposed to be equally liberal with the town authorities of Alameda. It is not too late to plant the Eucalyptus, and we should be pleased to hear that the Boards of both county and town, had accepted the Colonel's liberal offer. The trees are on the Fitchburg property.—*Alameda Encinal.*

Pampas Grass.—A French gardener recommends that the tufts of Pampas Grass should be burned in autumn and left alone; in spring they will push up earlier and better than if protected with mats, or otherwise.

Leguminous crops, as Peas, Beans, Vetches, Saintfoin, Clover, etc., all partake of the character of the Pea, which may be accepted as the type of this family of plants. The prevalent mineral constituent of these plants is lime; for this reason they are sometimes called "lime plants." As we might for this reason expect, these plants flourish most luxuriantly on lime soils, and are cultivated most successfully in limestone districts. For the same reason, the addition of lime to soils containing but little of this substance greatly favors the growth of these crops. Another mineral constituent required by these plants is sulphur; hence, the addition of some combination of sulphur is generally attended with benefit to a crop of this description. A substance well fitted for this purpose is gypsum, or plaster of Paris. This compound, as already noticed, contains sulphuric acid and lime, and on this account may be regarded as a special manure for leguminous plants.

In one of our exchanges we find the following definition of an inch of rain: An English acre consists of 6,272,640 square inches; and an inch deep of rain on an acre yields 6,272,640 cubic inches of water, which, at 277,274 cubic inches to the gallon makes 22,622.5 gallons; and, as a gallon of distilled water weighs 10 pounds, the rain-fall on an acre is 226,225 pounds, avoirdupois; as 2,240 pounds are a ton, an inch deep of rain weighs 100.993 tons, or nearly 101 tons, per acre. For every 100th of an inch a ton of water falls per acre.

The Rose gardens of Adrianople cover 14,000 acres, from which the Paris perfumers distil their sweets. They are soon to be greatly extended.

Restoring Waste Places. — In the Departments of the Hautes-Alpes, in France, an interesting experiment has been made for the restoration of lands that were desolated by the removal of forests. As the years rolled by, village after village was deserted, until the department had lost 11,000 of its population. The peasantry opposed with the greatest violence any attempt at the replacement of the forests, and the government was obliged at last to force them to returf the barren districts. The result is said to be most satisfactory: the covering of sod has retained the rain, instead of allowing it to run off in torrents, and the desolate, barren districts of the last few years are resuming the luxuriant vegetation with which they were clothed in olden times.—*Scribner's for March.*

The Way the Forests Go.—Some idea of the vast extent of the lumber trade, and the rapidity with which our great forest trees are being consumed, may be had if we notice the product of a single saw-mill in Michigan, that of A. W. Sage & Co., in the Saginaw Valley. This firm does business in Brooklyn, N. Y., and in several other cities. The mill alluded to cuts and turns out as high as 370,000 feet of lumber in a single day. Five engines and eight boilers, yielding six hundred horses' power, together with the services of three hundred men, are required. The buildings are very extensive, lighted with gas, and supplied with every convenience for work that ingenuity can suggest.

The *Gardener's Monthly* calls attention to the fact, that where the Cucumber grows wild, it spreads over bushes and trees, and the growth and product are enormous. All plants with tendrils prefer to ramble in this way. He adds, "No one who has not tried can have any idea of the luxuriant growth of a Cucumber when trained to a stake which has a set of stubby side branches left along its length. Some which the writer saw, might be taken at a distance for some vigorous kind of ornamental gourd—and the crop was enormous."

Importance of Leaves. — McIntosh says: "In plants the leaves act as lungs in animals; that the preservation of the leaves of vines, as indeed of all other trees and plants, is of vast importance —indeed so much so that the removal of a single leaf tends to lessen the vigor and energy of the tree."—*Exchange.*

Twelve quarts of soot in a hogshead of water, will make a powerful liquid manure, which will improve the growth of flowers, vegetables or root crops. In either a liquid or solid state, it makes an excellent top-dressing for grass or other cereal crops.

The *Economista d'Italia* says, there are in the Italian Kingdom 80,000 acres of turf applicable for fuel, which, when compressed, will be found from twenty-five to thirty per cent. cheaper than coal at the present price.

Experiments often repeated have shown that a plant may be raised in a flower-pot from a seed, and receive no nourishment but pure water, yet shall far exceed in weight all the soil in which it grew.

Half a million gallons of wine and brandy were exported from California in 1872.

NURSERY AND RESIDENCE OF W. F. KELSEY.

OAKLAND, CALIFORNIA.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. MAY, 1873. No. 5.

SUMMER FLOWERING BULBS.

BY F. A. MILLER.

It is gratifying to notice that during this season the inquiry and demand for early flowering bulbs, such as Hyacinths and Tulips, has been on the increase, and that our amateur gardeners, particularly the ladies, are progressing in their appreciation of these early gems of the garden. But how about the "summer flowering" bulbs? These seem to be very much neglected; here and there I see a few of the old varieties, which were introduced here some ten years since. With the exception of a very few of our most attentive amateur florists, no one seems to care for them; and why? Are they less beautiful? are they more difficult of culture? No, certainly not. In our exhibitions the florists have made very brilliant shows with Gladioli and Dahlias, and hundreds, nay, thousands, admired them as most attractive features; but this was as far as their appreciation advanced.

I know that some of our florists imported extensive collections of Gladioli, and after cultivating them for a year, have offered them for less money than they could be purchased for in the East; yet, notwithstanding the depreciation in the price, nine-tenths of the bulbs offered are on hand. The same may be said of Pæonies and Dahlias, all of which are really indispensable as hardy summer flowering bulbs; a garden without them is indeed incomplete.

There is, however, yet time to plant some of these bulbs. In fact, Dahlias should not be planted until the first part of May, and Gladioli may be planted out during every month of the year, so as to have them in bloom at all times. This is one of the advantages we possess in our California climate. If any of the readers of the CALIFORNIA HORTICULTURIST have not yet devoted any space to the cultivation of these bulbs, I would suggest a trial of them. For a small garden ten or twelve different varieties of Gladiolus will be sufficient. Select distinct varieties, *i. e.*, of distinct and varied colors. The following varieties will do very well for a collection of this kind:

Dr. Lindley.—Delicate rose color, blazed with carmine and cherry.

El Dorado.—Fine, pure yellow, striped with purple.

Adonis.—Light cherry, marbled with white.

Louis Van Houtte.—Velvety carmine, flowers for a long time.

Mazeppa.—Rosy orange, large yellow stains, striped red.

Rebecca.—White, shaded with lilac.

Lord Byron.—Brilliant scarlet, lined with pure white, very fine.

Goliah.—Light rosy red, striped with carmine, fine.

Daphne.—Light cherry, red stripes, stained with crimson.

Duc de Malakoff.—Brilliant light scarlet, base and throat white.

Brenchleyensis.—Vermilion scarlet.

All of the above may be obtained here at moderate prices. I would advise to plant such a collection in groups of three or four at intervals of about one month, in order to have them in bloom throughout the whole summer. The bulbs should be covered about three inches, and the distance between the bulbs should not be less than nine inches. The flower-stem of the Gladiolus is top-heavy, and a neat stake for its support is necessary, particularly in our climate, where heavy winds prevail. Bulbs, which are kept on hand for future planting, are best preserved in an airy and dry place without any covering. Such is my experience on this coast.

In extensive grounds the Gladiolus should be planted in groups of from twenty to thirty, and there is no class of flowering plants which presents a more brilliant effect.

It is unnecessary for me to say here that the ground should be kept in a mellow and clean condition, by frequent hoeing; every one who cultivates plants knows this to be indispensable. Bulbs planted during the months of March and April do not need any artificial irrigation; but, if planted during the month of May, and later, a thorough watering once a week is indispensable, until the first flowers begin to open; after they have done flowering, the watering may be discontinued. Cut off the flower stalks immediately after flowering, in order to throw the entire vigor of the plant into the formation of new bulbs. The most of the Gladioli form several bulbs during the summer season, which will flower in the following year.

Another very important class of summer flowering bulbs are the well-known "Dahlias," which deserve a place in every garden, however small or large. The Dahlia, as a flower, is perfection in form and rich in color, and produces its exquisite blooms from July until November in great abundance. There is still time to plant them. In fact I prefer to set them out during the month of May. The varieties of color, and the different shades and tints, are perhaps the most numerous and distinct of all the flowering plants under cultivation.

The Dahlias are generally divided into three classes, the Show Dahlias, Fancy Dahlias, and Bouquet or Pompone Dahlias.

The *Show Dahlias* are those of one color, and include mostly the varieties in which a certain color is largely predominant. The flowers are large, and the plants of robust growth, varying in height from four to six feet. The leading colors are pure white, deep yellow, purple maroon, scarlet, buff, amber, rose, and crimson in all the various shades. At some future time I will give the names of the most approved varieties on this coast.

The *Fancy Dahlias* are those which produce variegated flowers of two or more colors; striped, flaked, spotted, dashed or tipped. The markings of these are really exquisitely pleasing to the eye. Of those which have for several years been cultivated here, the best are, *Striata formosissima*, purple

and white; *Remembrance*, pink, white stripes; *Bride*, white, shaded with lilac; *Gem*, scarlet, tipped with white; *Jessie Atkins*, yellow, edged with red; *Splendens*, blush striped, and spotted with red; *Queen of Beauties*, white, edged and striped with lilac.

The *Bouquet* or *Pompone Dahlias* are of a more dwarfish growth, and their flowers are small in comparison with the foregoing varieties. They are very useful for bouquets and floral decorations. Some of the best varieties are, *Little Mistress, Little Minnie, Alba floribunda, German Youth, Jeannette, Little Gem, Little Fireball, Little Madonna*, etc.

The treatment of Dahlias is very simple; almost any kind of light soil will suit them. I have seen very fine flowers from plants grown on our poor drift-sands, to which good old manure was added. In autumn the roots should be taken up, and after leaving them exposed for two or three days to the atmosphere, they ought to be stored away in a dry, cool place, where they can remain until the following spring. Before planting, the ground should be well worked over to a depth of at least fifteen or eighteen inches. Divide up the old roots in such a way as to leave an eye; or, if the eyes are not yet visible, a portion of the woody crown to every piece of root which is intended to be planted. If several stalks spring up from the root, it is well to remove all but one, in order to throw more vigor into the plant, and produce more perfect flowers. As soon as the flowers begin to fade, they should be cut off, as old and decaying flowers exhaust the plant. If you want first-class flowers, do not allow too many to develop themselves at one time.

In small gardens a few of the best varieties ought to be planted in or near the centre of the larger beds. In extensive grounds I am decidedly in favor of planting them in rows along certain walks, or in groups. Dahlias must be provided with strong stakes as soon as the stalks are eighteen inches high, and a still better way is to stake them when the roots are planted.

There are many other summer flowering bulbs which deserve a place in our gardens, and which are altogether too much neglected. As such let me name the Lilies, the Amaryllis, the Tuberoses, and the Pæonies, all of which are very popular in the gardens of Europe and the East.

Of Lilies we have the magnificent *Lilium auratum;* the old but ever favorite *Lilium candidum*, of a pure white color; the elegant *Lilium tigrinum*, popularly called Tiger Lily, yellow with brown dots; *Lilium lancifolium*, of various colors; *Lilium atrosanguinium*, dark red, marbled with orange. Let me add to these our native California Lilies: *Lilium Washingtonianum*, a most graceful and fragrant white Lily of the Sierra Nevada; *Lilium Humboldtii*, of a fine orange red color, with dark spots, very graceful; *Lilium pardalinum*, one of the prettiest Lilies under cultivation, petals well reflexed, color orange yellow with dark spots, and the end of each petal distinctly scarlet; *Lilium parvum*, a small and very graceful cup-shaped Lily, of a delicate bright orange yellow.

Lilies, unlike Dahlias, should remain in the ground for several years, as not until the second year can fine flowers be expected. In this respect *Lilium auratum* makes an exception, as I have seen very fine trusses of flowers produced from the first year's planting.

The Amaryllis family is as yet very meagerly represented in our gardens; in fact they are very little known here. These, as well as the Pæonies, should have been planted ere this. I will,

therefore, not now say much about them, but reserve more extended remarks on their cultivation and varieties for a future time.

THE AURICULA—(PRIMULA AURICULA.)

"See, when arranged in sparkling dust and velvet pride,
Like brilliant stars arranged in splendid row,
The proud Auriculas their lustre show."

This beautiful gem of Flora is a native of the Swiss Alpine Mountains, and is supposed to be a variety with *Primula Helveticus*, *Nevis*, and *Viscosa*. Its original color is orange yellow, not much unlike the English cowslip, and not over prepossessing in appearance, unless in its pristine state. The Auricula was imported into England in the sixteenth century, and was found susceptible of much improvement by cultivation. Since that time much care has been bestowed upon it by florists, and the perfection it has attained is astonishing—so much so that it has become one of the leading florist flowers in both Europe and America; and instead of the original color, is now one of the most beautiful imaginable.

In visiting Miller & Sievers' floral establishment a few days since, we found some very handsome seedling Auriculas. They were of large size and beautifully centered and bordered. Our climate in California seems to suit it well—much better than England's, but this will not surprise anybody. In the summer this plant delights in the shade, and must be very regularly watered. The best soil for it is from the woods, more particularly in the ravines, where rotten wood and leaves are washed, with a mixture of sand or fine stone. This plant can be extensively cultivated by seed, by most gardeners and amateurs, and is well calculated for exhibition and for prizes.

There is some difficulty in getting the seed to germinate if not fresh, as it may occur sometimes that seeds will be one or two years before they come up unless forced in a hot bed.

When the seedlings have formed four leaves they should be transplanted into thumb pots, and be kept in the shade and never suffered to become dry, nor be placed where the rain falls, or they will be washed out of the soil. Seedlings will flower the second season. The soil recommended for full-grown plants will also do for seed and seedlings. We have seen one hundred kinds of the finest Auriculas at one time on a stage in a garden in England. Such a sight never before met our eyes, but we hope to see it again some day in California. It can be done as easily here as in England. Indeed everything is more suitable for it here than in England, with irrigation.—*Pacific Rural Press.*

VENETIAN SUMACH—(RHUS COTINUS.)

BY DR. A. KELLOGG.

This very ornamental shrub, so far as we know, is considered an exotic, indigenous to Siberia, Austria, Lombardy, etc. The writer, in early days of the organization of the California Academy of Sciences, presented a specimen (in fruit only) to the old Herbarium, obtained from Bexar Pass, Texas, found native on the arid mountains of that section. This is probably the same as the *Smoke Tree* of our gardeners and ornamental nurserymen. It is, however, to its commercial importance that we desire to invite a moment's attention. Prof. Carr and many others, who desire to render practical service to our agricultural and industrial interests, continue to urge a more varied and independent culture. These hints are being

executed, relative to new industries, with unparalleled vigor by our enterprising agriculturists.

The modern Athenians use this wood (Fustic) for dyeing wool a most beautiful rich yellow, and the whole plant is used in Italy for tanning sheep and goat skins into morocco. We import annually about 60,000 to 75,000 bales of 180 lbs. each. The price here by the ton has been from $75 to $125 per ton; at retail much higher. No adequate substitute has ever been found for the life-giving vigor, soft, velvety, and elastic properties, it communicates to the skins, even in very small relative proportions to other stronger and more drying tans. On a coast with Italian and Sicilian skies—a climate often too arid at the south coast for surety in other crops—certain dry season to secure harvests in prime condition—hides of almost illimitable supply at our doors—limestone, and red clay, and sandstone soils—modern inventions for labor-saving uses, and hot, sunny, rocky hillsides, or bottom lands, asking the careful hand of culture—the pioneer in this enterprise will prove a benefactor to the State and nation, and reap a rich reward. A word of detail only, and we dismiss a subject full of the deepest interest to the people of this coast. In the Agricultural Reports for 1854, p. 34, *Rhus coriaria* is quoted as the name; if so (and we have no access at this writing to verify), it is a mistake. The species probably intended is *R. coreacea*, which is synonymous with ours. But if *R. coriaria* is really the plant the writer refers to, it may be another of similar value. Indeed, many other species, also those commonly native to the United States, are thought to be of equal value; but we deem it prudent to recommend only the world-wide and best renowned article.

Seeds may doubtless be had at the Agricultural Department, at Washington; or from Sicily, Aleppo, or anywhere in the south of Europe. Also propagated by cuttings from roots, stems, or by layers, etc.

Seeds are best, started in beds at any time with due attention. The most proper season for transplanting is November, December, and January; of course, the best time is the first of the rainy season. Plant two to four feet apart in the rows, and rows four to six feet apart, for space best suited to plow and harrow, or horse-hoe—say, two or three cleanings. In Sicily, the rainy season closes in May, like ours; when the crop is laid by—previously hoed as stated. The crop is gathered in July and August—cut four to six inches from the ground, and laid in handfuls, not spread out, for a day or so to dry—not allowed to bleach. The *leaves of young sprouts* that spring up vigorously every year, are the only parts used (as they are free from dead or decaying leaves of the older trees). Care on this point, and a dry climate like ours, where no casualty of rain ruins an occasional crop, has given Sicily a staple reputation in the markets of the world. There are, nevertheless, those who adulterate the article, and out-ape the ape. The whole twigs, leaves and all, are also cut up, and used for tanning. To a home market this might perhaps be the most feasible.

Since its cultivation in Maryland and Virginia, the price of the foreign has fallen, as it proves inferior, except for its lighter and clear hue—the American being a little greenish yellow. Yet, the latter has risen 20 to 40 per cent., while the Sicily has correspondingly fallen.

We are obliged to omit much of details, already too lengthy for a mere suggestive article.

CINCHONA CULTIVATION.

BY C. A. STIVERS, M. D.

In all the range of medicinal remedies, not one is so important and useful to mankind as the Cinchona bark, with its alkaloids, *Quinia* and *Cinchonia*. This importance, taken in connection with its comparatively limited natural area of growth, has called attention to the necessity for the cultivation of the Cinchona-tree in different parts of the world.

Many of the European governments (more especially that of Great Britain), have been engaged for the past ten years in establishing governmental plantations of this valuable tree, and have also endeavored by all possible means to encourage its cultivation by private enterprise. In the United States, as yet, no efforts have been made in this direction; partly from the fact of our peculiar form of government, which places so many "ifs," "ands," and "buts," in the way of such experiments, and partly for the want of a suitable climate in which to test it.

The first fault will have to be overcome by educating the people in such matters, until they shall see the importance and need of government aid. As for the second, I think that is already obviated in the possession of California, which seems to have all requisite climatic qualities for the successful cultivation of the Cinchona-tree. With a view to call the attention of the people of California, and possibly, by that means, also that of the State and General Governments to this subject, I have selected your journal in which to give a brief outline of the history of the tree, and also to show what has been done in its cultivation by Great Britain, in the East Indies.

Cinchona belongs to the genus of trees of the natural order *Cinchonaceæ*. There are a number of species or varieties; the principal ones, and those most cultivated, being *C. calisaya*, *C. officinalis*, and *C. succirubra;* the best of which is the *C. calisaya*. These trees are only found native on the west coast of South America, between south latitude 20°, and north latitude 10°, on the eastern slope of the second range of the Cordilleras. They are evergreen trees, having a leaf somewhat similar to the laurel. The flowers are white, rose-colored, or purplish, having a very fragrant odor, and are produced in panicles. Some of these trees are of a large size, while others are but small shrubs. The gathering of the bark, which is carried on during the dry season, is mainly done by Indians, the trees being cut as near the surface of the ground as possible, and the bark is then stripped off and dried. An aftergrowth springs up from the roots, but does not attain the original growth.

As early as 1835, Dr. Royle suggested the introduction of the Cinchona-tree into India, for the purpose of cultivation, and some plants were taken there by Mr. Markham. The plantation, however, from some cause failed, and not much was done in the matter until 1861, when a number of plants were introduced. In 1863, there was a permanent plantation of over 40,000 trees growing on the Nilgherry Hills of South Hindostan, besides those of Bengal.

About this time a sample of bark, sent from India to England, was examined, and found to yield a percentage of *Quinia* equal to that grown in South America. Thus the success of Cinchona cultivation in India was fully demonstrated, and has since then been still further proven by the extended

plantations in different parts of the country.

Within the past three months Mr. M'Ivor, Superintendent of the State Plantation in Southern India, has notified the English Government that he was prepared to ship 25,000 pounds of the bark, as a first consignment, to be sold at public auction, with a view to test its quality and value. In concluding this article, it would be well to give your readers a synopsis of a report from C. B. Clarke, botanic gardener, Calcutta. It contains many valuable hints in regard to the growth and management of the trees, which, coming from the source it does, can be relied upon:

REPORT *on Cinchona Cultivation in Bengal. From C. B. Clarke, Esq., M. A., Officiating Superintendent, Botanic Garden, and in Charge of Cinchona Cultivation in Bengal, to the Secretary to the Government of Bengal.*

SIR:—I beg leave to submit the annual report on the cultivation of Cinchona in Bengal for the year ending 31st of March, 1870.

The three species of Cinchona of which the cultivation has been extended during the year, are *C. succirubra*, *C. officinalis*, and *C. calisaya*.

The number of plants of these species in permanent plantations were as under:

	C. succirubra.	*C. officinalis.*	*C. Calisaya*
March 31, 1869.	615,730	312,719	220
March 31, 1870.	1,055,100	406,899	4,000
Increase,	439,370	94,180	3,780

The increase of permanent plantation of *C. succirubra* and *C. calisaya* has been made about Rishap at an elevation of 2,500 feet; the increase of *C. officinalis* at Rungbee at an elevation of about 4,500 feet.

The average growth for the year of the ten measured plants of *C. succirubra* planted in March, 1867, at Rishap, has been 51 inches, which fairly represents the satisfactory general growth of the *C. succirubra* plantations.

The average growth for the year of the ten measured plants of *C. officinalis* planted in October, 1864, at Rungbee, has been 12 inches, which fairly represents the unsatisfactory general growth of the *C. officinalis* plantations.

The average growth for the year of the ten measured plants of *C. calisaya* planted in June, 1867, at Rishap, has been 52 inches, which represents the average growth of all the plants in the plantation catalogued as *C. calisaya*. But several important varieties are included under the name *C. calisaya*, and the tree variety raised by seed in February, 1867, and planted out in June, 1867, has attained a height of 12 feet in October, 1869, and a tree of this age, lately cut down, had produced two pounds of dry bark.

As fully explained by Dr. T. Anderson in his annual Cinchona report in Bengal for the year ending 31st March, 1868, the exceeding steepness of the hills, combined with the large rainfall, prevents any tilth on these Cinchona plantations. The grass and low jungle having been cut close, the young Cinchona plants are planted out in the permanent plantations. The weeds having been merely headed down, not eradicated, grow with great strength in a moist and warm climate, and continual scouring of the young plantations is necessary. This is the chief expense under this system of cultivation.

C. succirubra and *C. calisaya* (tree variety), grow so freely, that by the third year the young trees in the plantations are all locked; they then crush the jungle beneath them, and can take care of themselves, and little further expense upon them is called for.

But *C. officinalis* shows no inclination to become a tree at these plantations; it remains a shrub with very scanty foliage, and even on the plantations which are five years old, there continues the same expenditure in scouring.

C. succirubra and *C. calisaya* are planted about 1,200 to the acre; *C. officinalis* about 4,000 to the acre.

In the fifth year of growth in permanent plantation an acre of *C. officinalis* carries less than one-fourth the bark carried by an acre of *C. succirubra*, and costs more than four times as much annual expenditure. Moreover, the *C. officinalis* then appears disinclined to grow much larger, whereas *C. succirubra* will clearly grow into a considerable tree.

I calculate that at present it has not been discovered how to grow *C. officinalis* to economic profit at Rungbee. I therefore stopped its extension in September last, though I was aware of the high quality of the grey bark. The present quantity is large for an experiment; and, as an experiment, a few acres of *C. officinalis* were planted in September last at a somewhat higher level (5,000 feet) than the main plantation. Also, in all the *C. officinalis* plantations be-

low the level of 4,000 feet (above which level *C. succirubra* does not thrive), *C. succirubra* has been planted between the ranks of *C. officinalis*, and will, doubtless, soon overgrow it.

The propagation and extension of *C. calisaya* has been pushed as fast as possible. There is no difficulty in multiplying *C. succirubra* and *C. officinalis* by cuttings, but at Rishap there is found the greatest difficulty and uncertainty in multiplying *C. calisaya* by cuttings. Herr von Gorkom, the Director of the Dutch Government Cinchona cultivation in Java, informs me that there the same difficulty with *C. calisaya* is found; but, on the other hand, Mr. M'Ivor, in the drier climate of the Nilgherries, says cuttings strike with perfect success.

Herr von Gorkom has sent me on several occasions most valuable packets of *C. calisaya* seed, which germinated excellently; but if it could be discovered how to grow *C. calisaya* by cuttings, I should greatly prefer that method, as by it I am sure of getting exactly the variety which I wish to propagate. Mr. M'Ivor is of opinion, that not merely do the varieties cross freely, but that many hybrids are formed from different species of Cinchona.

The most valuable bark known in the European market is the *C. calisaya* bark; this species grows admirably at Rishap, and, during the past year, propagation has been almost entirely confined to it. In growing for profit, I believe it will ultimately be found advisable to grow one or two species only on these plantations; and that it is best to discard a species at once which is clearly inferior with us to *C. calisaya* and *C. succirubra*.

I have lately brought from the Nilgherries two new kinds of Cinchona, one provisionally named *C. mirabilis*, of Mr. Broughton, the other *C. pitayo*. In *C. mirabilis* the bark contains the astonishing quantity of 13¼ per cent. of quinine alkaloid, and more than nine per cent. of crystallizable quinine. *C. pitayo* is a rich bark from Peru, a very high-level species, said to be found growing through the snow.

During the year both *C. succirubra* and *C. officinalis* ripened seeds; 5¾ ounces of the former, and 5¼ ounces of the latter were distributed. One ounce of seed will raise nearly 50,000 plants.

The *C. succirubra* trees stand six feet by six in the plantations, and, as an experiment in January last, a small portion of the denser plantation was thinned by cutting down three trees out of every four. This was found to produce 300 lbs. of dried bark.

At the same time a considerable portion of the more advanced trees were pruned by the removal of the lower branches. There was stored from the thinnings and prunings in all 2,400 lbs. of dried bark.

The only private plantation in Sikhim, which (so far as I know) is extending Cinchona planting on a considerable scale, is that of Mr. Lloyd and Colonel Angus, known as the Darjeeling Cinchona Association, and which occupies the north side of the Rungbee Valley. This Association has now about 500 acres of permanent plantation of *C. succirubra*, and has cut a considerable quantity of the three-year-old bark during the late cold weather, and sold it in the London market.

The Government Cinchona Plantations at Nunklow, in the Khasi Hills, was formed for the supply of Cinchona plants to the planters in Assam and Cachar. Seed is now easily transmitted, and I believe the discontinuance of the plantation at Nunklow has been decided upon by Government.

An English Rose Hedge.—A correspondent of the *Cottage Gardener* thus describes a rose-hedge he has seen: "On visiting the gardens of the Right Hon. Lord Middleton, of Applecross, about the first week in August, I was much astonished to find a hedge of the Gloire de Dijon Rose over 200 feet long, and nearly 5 feet in height, and in the finest possible health, and one sheet of flowers—and such flowers! I was told by Mr. Whitelaw, the intelligent gardener there, that the idea of such a hedge originated with Lady Middleton, and that the idea was no sooner entertained than it was carried out; hence the result. Lady Middleton has also had a hedge of Senateur Vaisse planted to the same extent as Gloire de Dijon, but more recently; consequently the plants have not the same fine appearance as the others. Those hedges are planted as screens to the kitchen garden, and nothing could be more appropriate; and, as Mr. Whitelaw remarked, there was no end of cutting Roses from them,

which is another matter worthy of consideration where quantities of flowers are required. I may mention that before those hedges were planted a neat wire fence was put up, with five strands, and after the plants were put in they were fastened to the wires. As they grew, the shoots were intertwined in and out until they reached the top. By this means they are quite compact, and independent of any other fastening to the wires."

NOTES ON THE CULTURE OF GREENHOUSE PLANTS.

BY CHARLES H. SHINN.

The following notes are the result of my experience, as to the best management of plants under glass, in a small greenhouse:

People have an idea that the proper growth of plants under glass is a very difficult thing, whereas it is very simple, and mainly depends upon one or two leading principles—in point of fact only *one*, which I will proceed to elucidate. Botanists classify plants according to generical differences; professional florists classify plants according to the degree of heat which insures their most perfect development. That is the reason why all large establishments have so many separate structures. They find out, by experiment, the degree of heat best adapted to each species in stock, and then put those which correspond in the same building. This is no useless division—the classes are plainly marked.

For instance, an average of 45 degrees is best for hardy annuals; ascend to 50 degrees, and plants like the Verbena flourish; rise to 60 degrees, and Petunias and Fuchsias do splendidly, but Verbenas spindle, and hardy annuals are worthless. So the scale ascends to stove plants, Orchids, etc. Now, by constant care, one may make a single greenhouse serve for several classes; but, as a general rule, most persons undertake too much. One plant *well grown* is worth many of varying constitutions. To all this it will be replied that in large greenhouses it occurs that we find all varying types together—Camellias and Verbenas on the same shelf, etc., etc.; but I answer, that all these plants are *grown* in *separate houses*, and when in bloom, are "put upon *exhibition*" for a few weeks, and then carried back to recuperate. The operation is simply a *cheat*, for persons unacquainted with the mysteries of the trade suppose that everything can be raised to perfection in *one house*, when in fact every gardener knows that such is *impossible*. Still, the range is quite extensive. Here is the rule for thorough enjoyment—Select some plant, and arrange your heat so as to give it *perfect development*. Then extend your list *down*, until the plants spindle, and *up* until they have plant-lice, and are stunted and miserable. Suppose we take Pelargoniums as the unit, and make them perfect (over 600 varieties); then Fuchsias, Primulas, Begonias, Bouvardias, Heliotropes, Lobelias, Pentstemons; these, and many more will be perfect, but Celeus, Caladium, Camellias, many Cacti, etc., will need a greater heat, yet still will do very well. I have said enough to give you an idea of my method of classification, which you can carry out much better than I. I will now give some hints as to management, gathered from my experience:

1. Plants should be quite near the glass; the moisture then condenses close to the leaves, and keeps them damp. Gardeners always keep an open tub of water on the floor under the

staging. I keep a panful in each of my frames. This keeps the air moist.

2. Our climate is so dry that old traditions must be thrown aside. Nail a five-inch cleat on the front edge of your plant table, and fill up with sawdust or tan-bark, in which sink your pots. The gain is immense—not half so much watering, and plants better for it.

3. I do not buy pots, but make boxes, and consider them superior and cheaper. Saw them out of ¼ inch redwood siding. Nail with small brads. The sides slant so that the bottom is smaller; say, 5 inches high, 3½ inches across the bottom, 4½ inches wide at top.

4. *Soil.*—Do not use broken pots, etc., for drainage. Charcoal, about ½ inch lumps, is much better—keeps the ground sweet. Gardeners use burnt earth, when they can get it, for potting, grass sods thrown in a pile with soapsuds on them, etc., etc. Plenty of sand.

PARTICULAR MANAGEMENT.

About April or May, every other row of glass should be whitewashed. In November, this should be partly rubbed off. Perhaps *all* the glass will need a thin coating. Ventilation is very important. One "forget" will be ruinous. I had last year a frame with over sixty seedling Cinerarias in thumb-pots. I propped the sash up every day in order to air them. One Sabbath I went to church, and forgot it. Thought of it during the last prayer, made faces all through the benediction, and rushed home; found the plants all cooked; did not save one! Keep plenty of water where it will evaporate. It is considered better to ventilate at the top. Fill all your corners out, and keep a succession. Primulas, Cinerarias, Mimulus, etc., will grow all summer long under your staging, in the shade, and when they are ready to bloom may be brought forward. Sow seeds of these three in May, for winter and spring blooming. Keep a *succession*, even if of nothing but Nasturtium. You will be able to start any amount of slips. I think the two best plans to be: 1st, take a saucer, fill half full of sand, and fill up with water, then put in little short pieces (1 inch to 2 inches), and set in the sun, keeping the water filled up (roots of Carnation and Rose will form in three weeks); then pot. 2d. Put one pot in another, a 3 inch in a 5 inch, 2 inches difference. Fill the space between with dirt, in which put your slips, and keep the inner pot with a little water in it. These may be old stories to many, and I may not have given much assistance; still I have at least shown my willingness, and any inquiries shall receive speedy answers, as far as I am able to give them.

REMARKS ON XYLOPHAGOUS MARINE ANIMALS, OR MARINE ANIMALS WHICH DESTROY WOOD.

BY R. E. C. STEARNS.

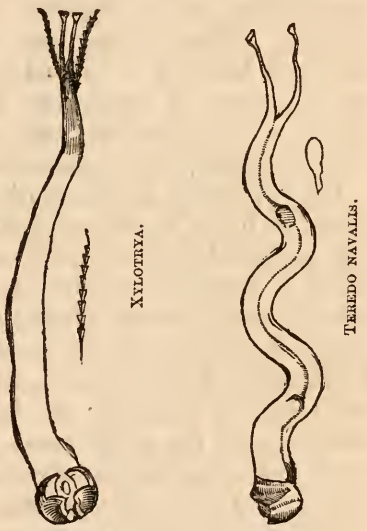
At a recent meeting of the California Academy of Sciences, Dr. Hewston submitted specimens of a species of crustacean recently detected in destroying the piling on the water-front of this city, and which it is quite likely is an introduced species, and belongs or is related to *Limnoria* or *Chelura*. A species of the first has for a long time been the source of much expense in various parts of Great Britain, by the damage it causes to the wharf and dock structures of that kingdom.

Mr. Arnold, Civil Engineer, of this city, also exhibited at the same meeting a portion of a pile destroyed by the crustacean referred to, as well as by the ship-worm; the ravages of both, and their method of operating upon the

wood, were well illustrated in the specimen submitted.

There are several species of xylophagous or wood-eating marine animals belonging to the Mollusca and Crustacea; included in the former are Teredines (*Teredininæ*) which form a subfamily of the Pholades (Family *Pholadidæ*), and which derive their name from the Greek word *Pholeo*—to bore. The Pholades proper are found in almost every sea, and live in the calcareous rocks and sandstones, as well as in clay and sand, in which they bore their burrows, and specimens are frequently found in some of the harder rock around the Cliff House, near this city. One genus, "*Xylophaga*, is found boring in floating wood, usually forming burrows across the grain about an inch deep, which are oval and lined with shell."*

Of the ship-worms (*Teredininæ*) over twenty are known, and while most of the species in the order in which they are placed, as above mentioned, burrow in harder materials, these confine their labors to wood, boring longitudinally or with the grain, and seldom if ever boring into the burrows of their neighbors. The *Teredines* are divided into three groups. First, *Teredo;* second, *Xylotrya;* third, *Uperotis*. The shell and tube in the sub-genus *Xylotrya* are the same as in the genus *Teredo;* but the shelly processes in *Xylotrya*, or siphonal palettes, as they are called, are long and penniform, or shaped like a quill or feather; to this group belong the three species of ship-worms found in California — *Xylotrya pennatifera*, *Xylotrya fimbriata*, *Xylotrya setacea*. The first and second of the species enumerated are said to be found in England as well as on our coast, while the third species is less widely distributed, and is reported from San Francisco Bay to San Pedro. As before stated, all of the species of ship-worm found thus far in California, belong to the genus *Xylotrya*, and may be distinguished by the two plume-like processes or palettes at the end of the siphons. The destruction caused by the *Xylotrya* (or wood-fish, as the generic word means), is too well known to require comment. I have known a perfectly sound pile of Oregon pine, of a diameter exceeding twelve inches, to be rendered utterly useless in eighteen



months by their ravages, while the wood elsewhere than within the section of the pile eaten and bored by them, was as sound and bright as on the day that the pile was driven; this instance is, however, extraordinary. The *Teredo navalis*, to which our ship-worm is frequently referred by local writers, is a foreign species, and the stylets are paddle-shaped, instead of penniform as in the California species.

The third group of the *Teredines* is the *Uperotis*. In these, the shelly valves and palettes are the same, but the tube is twisted and club-shaped from the an-

* Adams' Genera, Vol. II, p. 327.

imal burrowing in the husks of cocoanuts which are found floating in tropical seas.

The ship-worms are ovo-viviparous, the eggs being hatched in the body of the parent, and ejected therefrom through the upper siphonal tube. The young ship-worm, like the young oysters and others of the bivalve mollusks (*Conchifera*), swim freely for a time until they pre-empt or fix upon a pile or other submarine woodwork, when they commence burrowing. While doubtless a great deal of damage is done by them, nevertheless, as is observed by the brothers Adams, "they are useful agents in breaking down and destroying fragments of wrecks and floating timber, which otherwise might be dangerous impediments to navigation."

The ship-worms are frequently two to three feet in length, the body quite soft, but protected by the shelly coating which is deposited by them upon the sides of their burrow, forming a tube, to which, however, in the recent (not fossil) species the body is not attached; the boring is done with the foot, but whether with the shelly valves, which are shaped much like the nibs of a pod-augur, or by some other process, is not by any means a settled question.

In our species the shelly tube is so thin that it is impossible to split the wood without shattering it, but in one species, the *Teredo gigantea*, or giant ship-worm of Linnæus, the tube is often a yard long, and two inches in diameter,"* and exceedingly thick and strong.

The operations of the teredo suggested to that distinguished civil engineer, Mr. Brunel, his method of tunneling the Thames River.†

Having glanced at the xylophagous mollusks, we will now turn briefly to the wood-eating Crustacea, to which the species referred to by Dr. Hewston belongs.

The order of Isopod (or equal-footed) crustaceans inhabit the land and also fresh water and marine stations. As an illustration of their general form we may refer to the terrestrial wood-lice (*Oniscidæ*) which inhabit gardens, cellars, and other damp places, and which are called by the children, "sow-bugs."

Wood-louse.

Swimming Rock-louse.

The *Isopoda* are divided into three sub-orders: First, the *Ambulatory*, or walkers; second, the *Natatory*, or swimmers; third, the *Sedentary*, or inactive Isopods.

Many of the species are parasites in their habits, and some live in the gills or on the tails of fishes; some live in the bronchial cavity of the land-crab; others in the same portion of the sea-crabs, shrimps, and prawns.

The *Limnoria terebrans*, which is the species so destructive to marine woodwork in Great Britain, belongs to the sea wood-lice, and is the only species in that genus. Whether the form exhibited by Dr. Hewston belongs to this genus or to the genus *Chelura* among the *Amphipoda*, another order of Crustacea, and which includes a species known as *Chelura terebrans*, remains to be determined. The last-named species was discovered some years ago at Trieste, boring into wood-work in sea-water.

A species of *Chelura* is also found in

* † Woodward's Manual of Mollusca, 2nd ed., p. 507.

Australia, and it is not improbable that the species recently found in this harbor may belong to one of the species I have named, and have been imported on the bottom of vessels from some of the ports with which we hold commercial relations.

With the ship-worms and sea-lice operating as in the specimen submitted by Mr. Arnold, a most careful inspection of all submerged wood-work connected with harbor improvements on the coast, is absolutely necessary, or great loss of property and perhaps bodily injury may ensue. So far as protecting piles by saturation with some chemical, obnoxious to the animals referred to in this paper, and which will measurably retain said quality for a reasonable length of time, and resist neutralization by the

LIMNORIA TEREBRANS.

WHITE (SOLDIER) ANT.

sea-water, experiments carefully and considerately made are certainly warranted, and any process by which a successful result should be obtained, would justify a very considerable expense, and still be good financial economy.

Before closing, I will mention another family of wood-eaters, the *Termites*, or white ants, which in some parts of the world are exceedingly destructive; they are principally confined to tropical countries. "When they attack wood-work, they form innumerable galleries, all of which lead to a central point, and in their work they seem carefully to avoid piercing the surface of the wood. Hence the articles which they have perforated appear perfectly sound, when the slightest touch is almost sufficient to cause them to fall to pieces."*

In connection with the depredations of the various forms of *Xylophaga*, it will be well to call attention to certain species of wood referred to in the paper on "Australian Forest Trees," read by me at a meeting of the Academy on the first of last July.† In said paper, I mentioned the *Eucalyptus marginata* (Smith), of which Dr. Mueller says: "The Jarrah or mahogany tree of S. W. Australia, famed for its indestructible wood, which is attacked neither by *Chelura* nor *Teredo* nor *Termites*, and therefore so much sought for jetties and other structures exposed to sea-water, also for underground work, and largely exported for railway sleepers. Vessels built of this timber have been enabled to do without copper-sheathing. It is very strong, of a close grain, and a slightly oily and resinous nature; it works well, takes a fine finish, and is by ship-builders here considered superior to either Oak, Teak, or indeed any other wood." * * * The *E. rostrata* (Schlecht)—the Red Gum of Victoria—is another very valuable species for the "extraordinary endurance of the wood underground, and for this reason highly valued for fence-posts, piles, and railway sleepers; for the latter it will last a dozen years, and if well selected much longer. It is also extensively used by ship-builders. * * * Next to the Jarrah from W. Australia, this is the best wood for resisting the attacks of sea-worms and white ants. This species reaches a hundred feet in height."

A consideration of the above facts

* Baird's Dict. Nat. Hist., p. 542.

† "On the Economic Value of certain Australian Forest Trees, and their cultivation in California." This valuable paper was printed in full in Vol. II of the CALIFORNIA HORTICULTURIST, pages 271, 313, 326, 355.—ED.

indicates the course to be pursued. The cultivation of the speeies of Eucalyptus named herein, would, if commenced immediately, supply us in ten or twelve years with an indestructible timber for submarine wood-work, and prove a profitable enterprise for the capital invested, as well as a great public benefit. But even if a much longer time were required to produce trees of either of these species (whose qualities are so particularly specified by Dr. Mueller) of dimensions suitable for submarine structures, nevertheless the importance of their cultivation is so palpable as to make further comment unnecessary.

WHAT THE LEAF DOES.

It pumps water from the ground through the thousands of tubes in the stem of the tree, and sends it into the atmosphere in the form of unseen mist, to be condensed and fall in showers; the very water that, but for the leaf, would sink in the earth and find its way, perchance, through subterranean channels to the sea. And thus it is that we see it works to give us the "early and the latter rain." It works to send the rills and streams, like lines of silver, down the mountain and across the plain. It works to pour down the larger brooks which turn the wheels that energize the machinery which gives employment to millions—commerce stimulated, wealth accumulated, and intelligence disseminated through the agency of this wealth. The leaf does it all.

It has been demonstrated that every square inch of leaf lifts 3-500 of an ounce every 24 hours. Now a large forest tree has about five acres of foliage, or 6,272,630 square inches. This being multiplied by 3-500 (the amount pumped by every inch) gives us the result—2,252 ounces, or 4,176 pints, or 294 quarts, or 8 barrels. The trees on one acre give 800 barrels in 24 hours. An acre of grass, or clover, or grain, would yield about the same result.

The leaf is a worker, too, in another field where we seldom look—where it works for the good of man in a wonderful manner. It carries immense quantities of electricity from the earth to the clouds and from the clouds to the earth. Rather dangerous business transporting lightning, but it is particularly fitted for this work. Did you ever see a leaf entire as to its edge? It is always pointed, and these points, whether they be large or small, are just fitted to handle this dangerous agent. These tiny fingers seize upon and carry it away with ease and wonderful dispatch. There must be no delay; it is "time freight." True, sometimes it gathers up more than the trunk can carry, and in the attempt to crowd and pack the baggage the trunk gets terribly shattered, and we say that lightning struck the tree. But it had been struck a thousand times before. This time it was overworked.—*American Entomologist.*

Banana Culture.—The cultivation of the Banana is engaging considerable attention in the neighborhood of Pilatka, Florida, and the river counties. It is stated that three years ago a gentleman in Orange County set out nine plants, and is now reaping the fruits of a three-acre field, and realizes $125 per month from the fruit and the young plants that are continually suckering around the roots of the old plants. The Banana fruits in all seasons of the year round, and is enriched by the shedding of its huge leaves. With a little shelter of trees to break frost and winds, the Banana might become a profitable plant in California.—*California Agriculturist.*

NURSERY AND RESIDENCE OF W. F. KELSEY, OAKLAND, CAL.

BY MRS. E. S. CARR.

In connection with the Rural Homes, it is proposed to give from time to time, in the pages of the HORTICULTURIST, descriptions of our nurseries and fruit farms; for there is probably no class of citizens to whom California is more indebted for her prosperity, than those pioneer nurserymen, whose labors early demonstrated the unrivaled advantages of her soil and climate.

"For he who blesses most is blessed,
And God and man shall own his worth
Who toils to leave as his bequest
An added beauty to the earth."

And surely such fruit missionaries as Smith, of Sacramento; Mr. Seth Lewelling, and others whom we might name, deserve an honored place among the founders of the State.

From the first attempts made in fruit culture, at Sacramento, up to the present time, there has been steady, almost uninterrupted progress, until the superiority of our products is now everywhere confessed. The adaptation of special localities to special cultures is more marked here than elsewhere, and yet there is scarcely a locality where the more important kinds can not be grown with profit. Our *seedling fruits* are now attracting attention; some of them are declared by experts to be among the best known.

At the same time, forest planting has begun to assume something like the importance that it deserves, making the growth of nursery stock destined to supply this demand even more profitable than that of fruit. There has also been a rapid increase in the demand for ornamental plants of every kind.

Twelve years ago, when Mr. Kelsey bought his small homestead in Oakland, all this was not quite so certain. The soil, though rich, was heavy and unmanageable, the water supplies uncertain, and the inevitable war with squirrels and gophers to be maintained long after other difficulties were overcome. But he planted his twenty-eight acres with an orchard and nursery, in full faith that the City of Oaks would attract a population of taste and culture, whose wants he would anticipate. The city has surrounded him; little by little the public have invaded his domains, compelling him to add room to room and cottage to cottage, until it becomes a question whether Mr. Kelsey and his gardens, or families *with* children, shall hold possession.

In view, perhaps, of ultimate surrender, other and more extensive nurseries have been planted on the road to Berkeley, which are yearly becoming more profitable, as new and desirable trees and plants are added to the list.

The home place, which is illustrated by the accompanying Photograph, is beautifully situated upon what is to be the *Bois de Boulogne* of Oakland—Telegraph Road. It commands a wide prospect, fronting the hills, and the villas which already adorn every accessible site; and looking out in the opposite direction upon the city of San Francisco and the Golden Gate. Pleasant homes surround it in every direction; the Military Academy and Theological Seminary are in the near neighborhood, as are also the extensive floral establishments of Messrs. Nolan, Hutchison, and others.

But little of the ground at "Kelsey's" is devoted to ornament. Upon the lawn are some fine specimen trees, especially of the Redwood and Madroño, some choice standard Roses, and along Telegraph Avenue a good hedge of Privet and California Cherry. But the nursery itself contains such a variety of orna-

mental shrubs, and such a quantity of flowering plants, as to render the place interesting at all seasons. During all the last month the Tulips and Hyacinths have been the special attraction; a bed of the latter, containing many thousand bulbs, enabled the visitor to realize somewhat the glory of bulb-shows in Holland, or what Mr. Allen's "Flower farm" on Long Island must be, when his eighteen acres of Gladioli and ten acres of Lilies are in bloom. There are extensive plantations of Roses, Clove Pinks, Carnations, and bedding plants of all kinds. The greenhouses contain an immense quantity of young stock of variegated plants. Mr. J. G. Nicholson, who has charge of the propagating department, is an expert in the business, as one may see who is favored with a peep into the closet which serves as a "stove" for a few choice tropical growths.

A large part of the Home Nursery is taken up in the culture of evergreens. Many of these are imported from the East, one or two years old from the seed, and by frequent transplanting made into fine specimens for lawns, etc. Our Californian Coniferæ are represented by thousands; and a great number of the rarer kinds, such as *Abies Williamsonii* and *Torreya Californica*, will soon be ready for market. The business of propagating Australian and New Holland species, *Eucalyptus*, *Acacia*, *Pittosporums*, etc., is extensively prosecuted.

At the Berkeley Nurseries, one of which contains twenty-five and the other seventeen acres, there is an immense stock of fruit-trees of every variety; of the Mulberry, six or seven varieties, and all the *nut-trees* to be desired on this coast. To know what kinds of deciduous and other ornamental trees succeed in this climate, and to understand the rapidity of growth here, one should spend a day with Mr. John Kelsey in the nurseries especially under his care. There are several very fine specimen trees near his cottage.

I have noticed at all the large nurseries which I have visited the almost exclusive employment of Chinese laborers. "We are driven to it," Mr. Kelsey says; "no other class of laborers are *careful* enough, and reliable enough. Men trained to slow and thorough work, such as dibbling-in rice by hand, must necessarily have more patience in potting, transplanting, and other operations of the nursery. The Chinese like gardening better than any other outdoor employment, which can not be said of Americans or Irish."

Mr. Kelsey is constantly receiving new plants, and intends to increase his list of trees suitable for street and forest planting to the largest practicable extent. The readers of the HORTICULTURIST will be amply repaid for a visit to these nurseries, at almost any season, but especially when Roses and Cherries are in their prime.

NEW PLANT.—Botanists are engaged in planting all over Europe a new plant imported from New Granada, which, if grown successfully, will be a formidable rival to our manufactured ink. It is known as the *Coriaria Shymifolia*, or ink plant. The juice which escapes from it has been given the name of "Changi," and is a little red in color, but in the space of a few hours after exposure to the air turns to an intense black. This ink does not corrode steel pens like the ink in ordinary use, resists chemical substances, and preserves its intensity for many years.

PORTLAND has a bearing fig-tree.

FLOWER-TALK.—HONEYSUCKLES.

BY NORA BECK.

Around my porch in tangled twine,
  Where brown bees hover,
A quaint old honeysuckle-vine
  Steals drooping over;
Its clustered sweets are hanging low,
And on its breath blown to and fro
This song comes floating, sad and slow,
  Adown the clover:

"Lovers have stood within my shade,
  Watched and waited;
Kisses and prayers and vows been made,
  And blithe young hearts been mated;
My branches are hung with bird-homes gray,
Whence the wren and her nestlings flew away
In the heart of the early summer-day,
  When by storms berated.

"The lazy south wind floating by
  Hath never missed me;
And sweet June roses, hanging high,
  Forever tryst me.
We mingled branch and bloom together,
Through all the golden summer weather,
Till blossoms fled, and white snow-feather,
  Slow falling, kissed me.

"The snow-flakes came, with bitter wind,
  The roses slaying.
Then honeyed core grew withered rind,
  All winds obeying;
And ragged leaves, swift fluttering down,
Left my poor branches bare and brown,
Till snow-wreaths wove their latest crown,
  With mute essaying.

"My rose-friend nigh, alike bereft
  Of sweetness clinging,
Had yet her long-hid weapons left
  For cruel stinging;
She pierced my young limbs through and through,
And closer clung when wild winds blew,
As one might say, '*not* false, but *true*,'
  The while pain bringing."

"The spring will come with sweetness rife,
  An eager lover;
Will sheathe the thorns that take my life,
  In glossy cover.
But I—I shall not bloom in June;
For me no birds exulting tune,
No sweet last kiss of harvest moon—
  My life is over.

I crumble like my last year's leaves;
  My branches wither,
And part, like last year's unbound sheaves,
  Wind-wafted hither.
The winter's breath was all too chill;
The cruel thorns are clinging still;
I droop in loveless age, until
  I drift—ah, whither?"

HOW TO MAKE A GARDEN.

BY F. A. MILLER.

[Continued from page 114, April number.]

Having given some few hints for the preparation of soil for gardens, in the April number of the HORTICULTURIST, I will now endeavor to advise on other work which should be done before plants are set out. It is imperatively necessary to see that the arrangements for watering are all perfected, and that there shall be no unnecessary travel over the ground; the carpenter, the mason, the plumber, and the painter, should all have their work completed before operations in the garden commence. The next work, after preparing the soil thoroughly, should be the laying out of the necessary walks and beds, which should be done in accordance with convenience and good taste. In small city gardens not much choice is left, and inasmuch as my remarks are intended only to instruct "*how to make plants grow*," I will leave the arrangements for walks to the gardener employed, but will advise against raising the beds higher than the walks, which is all very well in a country where it rains more or less throughout the summer, and where drainage is necessary, but is injurious to plants in California, where it is very difficult, laborious, and expensive to keep the ground moist. Let the walks be a little higher in the centre, and have your beds about the same height as the centre of the walks.

Before planting, have suitable stakes

on hand for all shrubs and trees. The strong winds which prevail here throughout the year, make stakes indispensable.

In selecting plants, it is altogether wrong to select large-sized ones, although I am not in favor of planting very small weak plants, and small plants are particularly objectionable when taken from the greenhouse just before planting. This proposition, however, calls for a thorough explanation, as I have met many persons who absolutely object to purchasing plants which have been raised and cultivated under glass. There is no doubt that plants which have been exposed to the open air for some time, will make a much better growth during the first six or eight months, than if they are taken immediately from the greenhouse; but in nine cases out of ten, persons who call at a nursery for the purpose of purchasing plants, are only too anxious to select those plants which are in full bloom and are crowded with luxuriant foliage. As for the appearance, a plant setting in the open air compares very unfavorably with a similar plant growing under glass, and the latter is almost invariably selected. But the hardiness of a plant depends a great deal on the temperature to which a greenhouse is subjected. If greenhouses are well ventilated and aired, plants may be removed from thence into the open air without injury, if they are not too much exposed to the heavy winds. In all cases, I would suggest selecting plants from the open air if they can be had; but many varieties must be cultivated under glass so long as they remain in pots, and until they find a market. Such plants may be selected a week or two before they are intended to be planted out in the most exposed positions, and they should be placed in some sheltered situation in the open air, so that they may gradually become accustomed to the change. Deciduous shrubs are best taken up during winter, and may be transplanted without any detriment; on the contrary, they delight in new soil, and will flower during the ensuing summer season.

When you are ready to take your plants out of the pots, see that they are thoroughly watered before they are transplanted. This is one of the most important points in transplanting plants or trees from pots or boxes into the open ground. Frequently the loss of plants must be attributed to the fact that the ball of earth around their roots was in a dry condition when shifted. It is particularly necessary that this suggestion should be adopted if plants are set out late in spring or during summer. When at the time of planting the ball is in a dry condition, it is apt to remain so in spite of watering after the planting; the surrounding soil will absorb the water without affecting the dry ball of earth enveloping the roots of the plants, which can not live on its own resources, and must perish. Therefore be sure that the earth in the pot is in a moist condition when the plant is removed.

If the plant is pot-bound, or in other words, if the ball of earth is covered with roots, it is well to loosen carefully the outside roots, which will enable them to strike into the new soil at once, and take hold. There are, however, a few plants, such as the Eucalyptus, some of the Acacias, and other New Holland trees and shrubs, which should be planted without any disturbance of the roots.

All plants should be planted from one-half to one inch deeper than in their former condition, and if they are old or large plants it will be beneficial to plant them from two to three inches

deeper. After planting and before the ground around them is leveled off, a good supply of water should be given, so as to settle the ground well around the roots, and to prevent the old ball of earth from drying up. The stakes should be then set, but not too close to the stem of the plant, as this will frequently result in the breaking of the ball and in damaging the roots, which many plants can not endure. Remove all decayed or damaged leaves, and tie up the plant properly, which should be done rather loosely, so as to allow the stem and branches to expand as they develop themselves. If the strings are drawn up too tight, they are apt to cut the bark and the soft wood, which frequently results in the disfiguring of the plant, and even in the breaking-off of the stem at that point. During the following day, the surface around the plants should be leveled, and the planting may be considered finished.

THE TAMARIND TREE.—Though the fruit is generally considered tropical, the tree can undoubtedly be grown to perfection in California, as it is successfully raised in some of the Southern States. As far north as Virginia, they have attained a height of twenty-five feet, with a trunk of eighteen inches in circumference at the ground, in eight years from the seeds. They are ranked among the truly desirable ornamental trees for the lawn or roadside, being beautifully symmetrical in growth, with a trunk attaining to a lofty height, and crowned with wide-spreading branches of delicate foliage, and should be introduced among us. From the fruit, which is borne abundantly, is made a cooling and refreshing beverage, and a delicious conserve. The tree can be grown from the seeds procured from the pods, previously to being conserved.

Editorial Portfolio.

HORTICULTURAL SPRING EXHIBITION.

For the first time, San Francisco will this year witness a Horticultural Spring Exhibition. In Europe and in the East floral fairs take place every month during spring, summer, and autumn, and those of the spring season are generally the most attractive. The different classes of plants have their seasons; while some produce their flowers in autumn, others will be in the height of their glory in early spring, and others again bloom in midsummer. In order to bring all desirable plants before the notice of the public, floral shows should be held more than once a year; and the Bay District Horticultural Society has therefore resolved to hold two exhibitions annually—one in the spring, and the other in the autumn as heretofore. While it is requisite that at the autumn exhibition the display of the various kinds of fruits and other horticultural and agricultural products should form a very important feature, the spring exhibition must rely chiefly upon flowers, trees, and shrubs, and must therefore be considered more particularly a floral show. In this particular, it may reasonably be expected that the exhibition will be far more attractive and varied. Although we have to dispense with Dahlias and the Gladioli at this time, yet we have Primulas, Auriculas, and Roses, with Cinerarias, Tulips, and other early flowering bulbs, to fill the vacancy, we trust, to the satisfaction of all concerned.

It is true that this is a very busy time with florists and nurserymen, and their attendance compels them to much sacrifice; yet this little inconvenience should not be allowed to interfere with a public demonstration of this kind.

With us, public enterprises suffer to a great extent from the prevalence of selfish motives, and we hope our nurserymen and florists will not be so narrow-minded as to fail in active co-operation, but will with united effort make this exhibition a complete success. The public will undoubtedly appreciate these efforts, and this accomplished, the professional gardeners and florists will have gained much.

The excuses for not participating in these exhibitions are of trifling weight, and we consider it the duty of all professional men to sacrifice some little time and expense for the sake of this public enterprise. If all combine and work harmoniously, our Horticultural Exhibitions will rank among the best and most complete.

In regard to the coming Spring Exhibition, we understand that no effort will be spared to make it a success; and that this will be accomplished we have no doubt. We know that the men who are taking hold, will see it through.

We have heard suggestions made in regard to the suitable decoration of the Hall, and we hope that these suggestions will be carried into effect. Artistic and tasteful decorations will add considerably to the general appearance of the Hall.

The premiums offered are sufficient to afford strong inducements to exhibitors.

The plan of distributing small plants to children, which was inaugurated last year, is to be continued this year; and in order to ascertain how far these have been taken care of, the Society offers some fifty desirable and suitable prizes, to be presented to those children who have best taken care of them. This feature can not fail to be generally attractive, and if continued in the right spirit, will undoubtedly awaken that taste for flowers, plants, and shrubs, among the rising generation, which is so rarely found among us.

It is very surprising that so few of our amateur and lady gardeners avail themselves of the opportunity to contribute their share to these exhibitions. As they admire flowers and trees, they certainly must feel an interest in their exhibition; and if a few of them will but set an example and furnish their best specimens, they will not only afford material aid to the Society, but will also encourage others to do the same. There are some good prizes offered to amateurs, and we hope to see a lively competition.

As for the arrangement of plants in the Hall, we would suggest that the tables be less crowded with specimens than has been the plan on previous occasions. We would much prefer to see a more limited number of plants, provided they were the very best which could be produced. A well-grown plant, if crowded by others possibly much inferior, can not be displayed to advantage. We would, therefore, kindly suggest to our floral establishments the exhibiting of fewer plants, but let them all be good specimens, and the effect will be as satisfactory as can be desired.

We want to see the Exhibition a decided success, also, financially. The Horticultural Society has for a number of years struggled for its existence, and a liberal support is justly its due; and if the working members are encouraged by a just appreciation of their labors, we may expect some good service to the community from them in the future.

A hall tastefully filled with the best and choicest specimens of flowers, trees, and shrubs, refreshing and invigorating with their delicious perfume, and the

opportunity of listening to choice selections of sweet and popular music exquisitely performed, ought to be sufficient inducement for every one to visit the Exhibition. We do not know where else a more pleasant hour may be passed. Let us all be there.

THE CULTIVATION OF CHOICE GRAPES UNDER GLASS.

We have been requested to reply to the following queries on this subject, and our experience in this department of Horticulture being very limited, we appeal to our numerous professional readers for the required information:

1st. Which are the best vines for cultivation under glass in this country? For a space for twenty-four vines, which would you recommend, and in what proportion?

2d. How near together should they be planted?

3d. Where can the best vines be obtained at the present time?

4th. What aged vines would you recommend?

5th. Is it safe to plant now, or is it too late?

6th. The vine-house stands north and south; which vines would you plant on the east side, and which on the west?

7th. The outside borders are well made and drained. No Indian-mound stuff in them—do you use it?

Lilium Washingtonianum (Kellogg), or Lady Washington Lily.—In our last number we copied, from an exchange, notice of large consignments of this Lily being sold at high prices in Europe; but in ascribing the naming and description to Prof. A. Wood, we unintentionally indorsed an error. This Lily was exhibited in 1854 by Dr. A. Kellogg, our eminent botanist, before the California Academy of Natural Sciences, as new but too fragmentary for description. It was cultivated by Mr. H. G. Bloomer, flowered, figured, and described before the Academy, 18th of July, 1859. (See Proceedings of that year, page 13th.) Lithographed, colored, and illustrated for the *Hesperian*, in October of 1859. (See pages 340–41.) It was redescribed by A. Wood, June, 1868, in Proc. Acad. of Nat. Sciences, Philadelphia.

Durability of Wood. — We expect wooden buildings to decay, and if they endure for a century or two they are regarded as venerable specimens of antiquity. The First Baptist meeting-house in Providence, R. I., a fine architectural model, is said to be as sound, even to the top of its lofty spire, as when first built, though nearly a century old. But this is a young infant compared with some European churches. The trusses of the old part of the roof of the Basilica of St. Peter's at Rome, were framed in 816, but when carefully examined in 1814, were found to be perfectly sound and good. They were made of Fir, and have lasted over a thousand years. The domes of the Church of St. Mark, at Venice, were built nearly eight hundred and fifty years ago, and the outside timbers are yet good. Brick and stone could hardly last better than such wood-work.

Timber cased in plaster and in iron, however, has developed a very dangerous kind of dry rot.

Azaleas and Rhododendrons.—S. B. Parsons, competent authority, names the following as the three best Azaleas: Aurantiaca, *Beaute de Flandres* and *Honneur de la Belgique*. The three best Rhododendrons: *Boseum elegans*, and Lee (dark purple).—*Country Gentleman.*

WOODWARD'S GARDENS.

The gardens are now in fine order; the trees and shrubs, both deciduous and evergreen, are putting out their new growth, and, yet untainted by summer dust, are rich in their varied verdure. The Roses and many other shrubs are in full flower, and, with the rich carpeting of luxuriant grass, present a very bright and gay appearance. The well-stocked conservatories are particularly attractive; everything looks healthy and thriving. The Camellias and Azaleas are in fine bloom, as also the numerous and varied collection of flowering Begonias, whose delicately tinted flowers pleasingly contrast with the more decided hues of the bright-eyed Calceolarias. Geraniums and Pelargoniums, and many other plants, are in fine flower. The magnificent tropical plants are unusually rich in their splendid verdure, while the *Gardenias* (Cape Jasmines), *Begonia odorata*, *Crinum Asiaticum*, and the glorious *Stephanotis floribunda* (our special favorite) make the air redolent of rich perfume. No wonder that these gardens, notwithstanding the inconveniences attendant on the horse distemper, were densely crowded on Sunday last, exemplifying an increasing refinement of taste in our fellow-citizens.

REPORTS OF SOCIETIES.

Bay District Horticultural Society. Regular meeting, Saturday, April 26th, 1873.

Mr. J. H. Applegate, Jr., was elected a regular member of the Society.

Mr. Michelsen read his Essay on Camellia Culture in this State, which will be published in full in the next number of the Horticulturist.

Sundry queries were laid before the Society relating to the best varieties of Grape-vines for cultivation under glass; where to obtain them; how to manage them, etc., etc. Mr. Schumann was appointed a committee of one to prepare answers to these questions, and to read them before the next regular meeting of the Society, when the subject will be generally discussed.

FAIRS AND EXHIBITIONS.

Horticultural Spring Exhibition.—The opening of the Spring Exhibition has been unavoidably postponed on account of the inconveniences caused by the horse disease now prevalent in this city and throughout the State. The opening will take place on May 8th.

We are pleased to learn that the additional time gained for preparation will render the Exhibition more complete and successful. We understand, from reliable sources, that the Society meets everywhere with good support, and that its success financially is no longer a matter of doubt.

NOTICES OF BOOKS.

Thanks to the enterprising publishers, the May number of our always acceptable *Overland* is at hand. It contains much excellent reading matter. "The Gold Sands of the Pacific," "Borneo Cinnabar Mines," "Arab Stories and Traditions down the Nile," etc., are well worth reading. Altogether a first-rate number.

FAVORS RECEIVED.

We have received a copy of Purdy's *Small Fruit Instructor*. It contains much information on this subject, and has evidently been written with considerable care; we can safely recommend it to those of our friends who need this specialty.

Our thanks are due to the Massachusetts Horticultural Society for a copy of their Transactions for 1872.

The April number of the *Flower Gardener* is at hand. This is a quarterly magazine, published by Beach & Co., Brooklyn, N. Y. This number contains much valuable and highly interesting information, as well as a copious catalogue of their plants. Terms $1 per annum.

Our thanks are due to the Commissioner of Agriculture for the Monthly Report for March, 1873. The statistics are highly interesting, and the information valuable.

CATALOGUES RECEIVED.

Briggs & Brothers' *Quarterly Floral*, for April, is at hand. Many useful notes and some notices of new varieties.

NEW AND RARE PLANTS.

New Japan Coxcomb — *Celosia Japonica*. This is as handsome in color as the old kind, but divides itself up into a large number of small bunches, thus allowing of cutting without sacrificing the whole plant.

Double-flowered Zonale Geraniums.—M. Jean Sisley, an amateur of Lyons, France, has succeeded in raising several varieties which sell at a high price in Europe.

Immense Rose Show.—At a recent Rose show in Sydenham, England, there was on exhibition a continuous line of boxes, twelve miles long, each containing forty Roses.—*Horticulturist.*

The Pine is a native of America.

WORK FOR MAY.

BY F. A. MILLER.

Our spring has been unusually dry, and therefore late planting can not be persevered in with much prospect of success, unless artificial irrigation can be adopted.

The fruit-trees have been slightly injured by frost, but there is yet a good average crop in prospect.

Very little can be done in the orchards and vineyards at this time. Another plowing of the orchard will help materially to destroy weeds and insects, and to keep the soil in a porous condition.

I have been informed that in some locations mildew has made its appearance upon the Grape-vines, and that it seems to be the same in character as the mildew which is now affecting our Rose-bushes in the gardens; this is doubtless caused by the sudden change of temperature in our climate from hot days to cold nights.

The readers of the Horticulturist will have observed in the records of the April meeting of the Horticultural Society, mention of several remedies for mildew. I have experimented with the various remedies proposed, and find that Dr. Kellogg's prescription is very effective. It seems that one part of *sulphurous* acid, diluted with forty parts of water, has removed the mildew upon the Roses, and has not damaged either flowers or foliage. This is a cheap and convenient remedy, and may be applied either with a garden-syringe or with the watering-pot. One or two applications are sufficient. Sulphurous acid may be obtained in any of our drug-stores, and one-fourth of a gallon will last for some time. This remedy should be very extensively used.

Black sulphur is also both very effect-

ive and cheap, and is easily applied. Purchase, say, two to four pounds of black sulphur at some wholesale drug-store, dissolve it in water, and add some common yellow soap rubbed into the water, in order to have the sulphur adhere better to the foliage. Sprinkle the affected foliage and stems with this solution two or three times, and the mildew will disappear.

I have tried both of these remedies, and I find that they are sure and cheap cures.

In the kitchen garden, I must recommend frequent hoeing and the keeping of the ground clear from weeds. Now is the time to sow late Peas, and also a small quantity of Head Lettuce, and Black Radishes, which are very desirable vegetables for the table at all times. Some Beans and Corn may yet be sown, where the soil is not too dry. Tomato plants which have been retained in the frame up to this time, must be planted in the open air at once, if any Tomatoes are expected early in the season.

The flower garden is now in its glory. Roses, Geraniums, Pelargoniums, Heliotropes, Pinks, Pansies, Fuchsias, Verbenas, Petunias, Stocks, and many other flowering plants, are displaying their masses of blooms, and are filling the air with their exquisite perfume. We must not neglect to remove all flowers as soon as they begin to wither; nothing looks so shabby, or acts so detrimentally, by absorbing the vitality of plants, as old and half-decayed flowers. The plants need all their strength and resources to develop the remaining buds, and to form their new growth.

Tulips, Hyacinths, and Narcissus are now things of the past. Their foliage will soon wither and decay, and it is most important that their place should be filled with some summer-flowering plants. Mignonette is an excellent substitute, and many annuals which I have mentioned at various times will assist for the same purpose; some of them, such as the Asters, Balsams, etc., may be safely transplanted to such beds, if they have been reared in pots or boxes, or in some other protected place. While your garden is productive of a profusion of flowers at the present time, do not neglect to provide for the future. You can have your beds covered with flowers all the year round if you will exert yourself in proper time.

All summer-flowering bulbs must be planted out now. Don't forget to plant also a few Dahlias, Gladioli, Amaryllis, Tuberoses, Tigridias, and Lilies. If you are desirous of having them in your collection, you must plant them now.

Greenhouse and conservatory plants are pushing out rapidly; water may now be given more plentifully. Give air from morning until two or three o'clock in the afternoon. The sun acts powerfully through the glass, and to prevent the foliage from being scorched, whitewash the glass with a thin coat. Insects make their appearance everywhere; fumigate once a week by burning up some tobacco-stems; keep the room shut while you are doing this. Do not water the foliage before fumigating, as the smoke will affect it when in a tender and wet condition. Search your Camellias, Cape Jasmines, and other greenhouse shrubs, and remove any spiders or scales which you may find on the under-side of the leaves or along the stems. During very warm days, it will be beneficial to most of your plants if you give them a syringing.

If any of the tender seedlings make their appearance, shade them well during bright days; this will protect the young plants, and also obviate the necessity of watering so frequently. Transplant the

young seedlings as soon as they have formed three or four leaves, water immediately after transplanting, and shade well for a few days. This is best done by suspending a newspaper over the plants, which you may rest upon a few sticks placed here and there.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

We have, in previous reports, said so much regarding fruits, as being not only a delightful, but, for our health, a necessary portion of our daily diet, that we need not add anything more at the present time on the subject, now pretty well exhausted. We will merely remark that vegetable substances are more suitable to the inhabitants of warm countries, who only require in very moderate quantities meats and other fatty diet to generate heat, which is supplied in the atmosphere in abundance. We, in California, do not need fruits to the extent that is necessary in the entirely tropical regions, our climate being a medium between cold countries and those of excessive heat; yet we need the use of fruits to a very considerable extent to preserve our systems in a normally healthy condition.

We do not envy any part of the world that can not produce Strawberries, Peaches, Pears, Apples, Plums, Grapes, etc. The Banana, the Orange, the Pineapple, Date, Mango, and the other numerous and luscious, though cloying, tropical fruits, are well enough in their way, as a change from other things; they may be regarded as luxuries, of which most people tire when they are too continuously indulged in. But, to say nothing of our other delicious and piquant fruits, no one ever wearies of good, first-class Apples. One can eat them day after day, and still feel that he is as good a judge of what is first-rate as he ever was. They are found very useful in preventing dyspepsia and liver complaint. Even the people of the tropics seem of our way of thinking. Though they have, as we are very apt to think, the very paradise of fruits with them, they envy us, at any rate, our Apples, and import them in immense quantities. Thousands of barrels of Baldwins, Newtown Pippins, and other favorites, are annually shipped to tropical ports.

By the way, there is one fruit—the English Gooseberry—which is raised in such perfection in Europe, especially in England, that we should very much like to see it a success in California. We all know that it is almost a complete failure in the Eastern and Middle States, etc., on account of its destruction by the mildew. We, however, think there is a better chance for it in this State than in any other location that we know of on this continent. And we are encouraged in this belief by having met with a cultivator of fruits in Napa Valley who has made the raising of the English Gooseberry a specialty with him. He informed us that, last year, he had succeeded in producing from a few bushes some of the finest berries, equal to any he had ever seen in England. His plan was to run a rather deep furrow or drain between the rows, and thus keep them well drained in the wet season, and to plant his bushes on somewhat elevated ridges. Above all, he heavily manured them with ashes, lime, and well-decomposed horse-dung—as much as one barrowful and a half to each bush. He also informed us that his bushes at the present time, by this course, present a most promising appearance, being entirely free from any mildew, and loaded with healthy fruit.

This fruit-raiser stated that his cultivated Blackberries present a most wonderful sight, every year, when in fruit, being perfectly loaded down, and bearing on an average twenty pounds to the stock.

The late frosts have materially damaged the fruit-crop generally, particularly the Grapes, Apricots, Nectarines, and Peaches; but it is expected that the markets will be pretty well supplied in due season, although the yield, in certain kinds which we have named above, may be less than in previous years. Our markets are usually overstocked in the height of each fruit's season, and it has been a frequent occurrence for large quantities to be thrown into the bay, for want of purchasers. Hence it is fair to presume that growers will net more for their consignments, without creating any very material advance in the price to consumers.

Oranges are in good supply, the native product having the preference over foreign varieties. The recent cool weather kept back the Strawberries, and for some days they came into the market little more than half ripe, making them rather hard and comparatively unwholesome; being picked also too soon, except for the collection of the dimes. But they are daily improving, though slowly, in quality as well as in quantity, ruddier in hue, more tender, and therefore finer in flavor. The weather is still (21st of April) not quite favorable for their growth. The range of prices for them is still rather wide.

The Panama steamers have brought liberal shipments of Limes, and moderate consignments of Bananas, Pineapples, and Mangoes. Pears are scarce, of course, being now at the fag-end of the winter season; but the supply of Apples from Oregon and the higher lands in California has been larger during a few days, though prices are steady. Apples, by the box, retail at $2@$3. We quote Bananas, 50@75c.; Mangoes, $1.50 per dozen; Eastern Chestnuts, 25c., Italian do, 50c., Smyrna Figs, 35@40c., per pound.

Dried fruits are at about the same rates as last month.

All spring vegetables are abundant, and most of them are much cheaper, of course, as the season advances. The Panama steamer brought a lot of Mexican Tomatoes, which are selling at 25c. per pound.

First appearance of Summer Squashes on the 21st of April—30c. per pound.

Medical Value of Asparagus.—A medical correspondent of an English journal says that the advantages of Asparagus are not sufficiently estimated by those who suffer with rheumatism and gout. Slight cases of rheumatism are cured in a few days by feeding on this delicious esculent, and more chronic cases are much relieved, especially if the patient avoids all acids, whether in food or beverage. The Jerusalem Artichoke has also a similar effect in relieving rheumatism. The heads may be eaten in the usual way; but tea made from the leaves of the stalk, and drank three or four times a day, is a certain remedy, though not equally agreeable.

Clearing Moss from Fruit Trees.—The *American Agriculturist* says, nothing is better than carbolic soap and lye. Make common lye of wood ashes, not strong, and add half a pound of carbolic soap to a three-gallon pail of boiling lye. Apply hot with a swab to old trees. It has been used with entire success upon Apple, Pear, Peach and Cherry trees, destroying every particle of moss it touches.

Editorial Gleanings.

TO MANAGE CUTTINGS.

In selecting a cutting, a great deal depends upon a judicious choice; if the slip is too young and full of fresh sap, it will fade away from too much evaporation, and if it is too old—*i. e.*, hard and woody—it will take a great while to strike root. You must take a cutting that is partly ripened, and is from a vigorous shoot, yet is a little hardened at the base.

It is also essential to have a bud or joint at or near the end of the cutting, as all roots strike from it, and the nearer it is to the base, the greater your chance of success.

Plant your cuttings in common red pots, filled half full of rich loam, and two inches of sand on the top (scouring sand will do, but not sea-sand), wet this thoroughly, and put the cuttings close around the edge of the pot; for if the bud joint comes in contact with the surface of the pot, it seems to strike root more quickly. Pull off the lower leaves before you plant the cutting. Press the wet sand tightly about the tiny stem, for a great deal of your success in raising the cuttings depends upon the close contact of the sand with the stem. When cuttings are firmly planted, cover them with a glass shade if possible, for it will greatly promote the growth of the plants.

Moisture, light, and heat are the three essentials to plant-life; without them no cutting will start.

Shade for two or three days from sunlight, but do not let the sand become dry; then give all the sun you can obtain; keep up a good supply of moisture, and you can hardly fail to root most of your cuttings.

Cuttings of Roses, Verbenas, Oleanders, Heliotropes, etc., etc., can also be rooted in small vials filled with warmish water, and suspended from the window casement. Select the cuttings as described above; pull off the lowest leaves, and insert the end for about an inch into the vial. Tie a string about its neck, and hang in the sun. If a bit of cotton wool is wrapped about the cutting where it goes into the neck of the vial, and it is kept wet, it prevents the rapid evaporation of the water.

When the tiny roots show themselves about an inch or more in length, fill up the vial with a rich composted soil; let it hang for two or three days longer, then break off the glass carefully, without disturbing the roots, and pot the plant.

Managed in this way the roots receive no check, and the plant will grow very vigorously. The cutting can be taken from the water and the roots planted in pots, but they will cling closely together, and are not as naturally disposed as when the glass is broken off, after the roots are covered with soil.

If the water evaporates a third or more in the vial, it must be filled up with warmish water.—*Floral Cabinet.*

Cabbage-worms.—A correspondent of the New York *Tribune*, from Jonesboro, Tenn., says, Cabbage-worms may be got rid of, by putting a few stalks of the well-known herb Penny-royal, on every head of Cabbage. The worms will quickly disappear.

A friend informs us that he drives the worm from his Cabbage by scattering wheat-bran over the growing plants. There is something about the bran that is distasteful to the worms, and they leave immediately upon its being scattered upon the Cabbage. He repeats the dose once or twice. The bran does not injure the Cabbage.

TREE TRANSPLANTATION.

To the Editor of the Scientific American:—On page 37 of your current volume some one says: "Most persons make a fatal mistake in trimming trees when transplanted. Never cut off a limb or a twig till they (the trees) have a secure foothold."

This advice, in the *Scientific American*, at once becomes a powerful influence. Whatever affects the tree-planting interest is of national importance; and I can show by reasons sufficient, as I could by the experience of all successful tree planters, that the advice referred to is radically wrong, and should read: "Always cut down the top of a tree transplanted, so that the relative proportion be preserved between roots and branches."

A tree to secure a foothold in its new bed must make a new growth of wood both at the top and root; otherwise death results in all cases after transplantation. Most trees lose, in transplanting, the larger portion of their roots; how does this operate when the top is left of full size and untrimmed? The leaves come out full with the advent of spring; and it takes all the nourishment supplied by the remaining roots to support the leaves, and no new wood is made.

If the top of the tree is cut down and the leaf buds destroyed, then, of necessity, in order to put forth leaves, there must be a new woody growth; when this occurs, there is always a corresponding root growth, and thus a foothold is secured. Many trees, like the Sugar Maple, only make wood during a brief period in spring; consequently, if transplanted with ever so much care after this season, they invariably die.

A tree which continues making wood during the entire season, like the Willow and Locust, can with care be transplanted at any time; but it may be set down as a rule, with but few exceptions, that deciduous trees should only be transplanted when bare of leaves, and then the top left must be proportioned to the root.

To further illustrate the fallacy of the no-trimming theory, suppose that in putting out cuttings, as of the Cottonwood or Willow, a top was left. Does any one suppose that a new root would be formed? It is the growth of the new top that is accompanied by a new root growth; in fact they are inseparable. The everywhere popular White Elm and Sugar Maple, although exceedingly difficult to transplant successfully with large tops, will generally live and grow if every branch is cut off, and the short bare poles only set.

Rural Adornment.—Nothing contributes more to the appreciation of a rural home than its surroundings. Nothing is more seriously missed by the early settlers in a new country, especially by the female members of a household, than the shrubs and flowers which they have left behind them in their early homes. How many hearts have longed for the familiar Lilac-bush with its early, handsome, and fragrant clusters of flowers. What sweet memories of the ever-pleasing and beautiful Rose-bush; or, of the old-fashioned Snowball, with its masses of snowy flowers contrasting so finely with its dark green foliage; or the modest, unobtrusive little Wax-bush with its pearly blossoms, and in due time its strings of snow-white berries which refuse to drop from the slender twigs, long after the frost has stripped the green leaves.

Notwithstanding the absence of these and many other memory-honored shrubs

and flowers in the frontier homes, very much may be done to substitute for them native plants of perhaps equal value. There is a patch of wood not many miles distant from any settler, where some shrubs may be procured which will relieve the garden or the yard of its nakedness, and lend beauty and attraction, perhaps quite equal to those favorites which are now beyond reach. The kind of such shrubs will, of course, vary in different localities.

Ancient Timber.—Probably the oldest timber in the world, which has been subjected to the use of man, is that which is found in the ancient temples of Egypt. It is found in connection with stone-work which is known to be at least 4,000 years old. This wood, and the only wood used in the construction of the temple, is in the form of ties, holding the end of one stone to another in its upper surface. When two blocks were laid in place, then it appears that an excavation about an inch deep was made in each block, into which an hour-glass shaped tie was driven. It is therefore very difficult to force any stone from its position. The ties appear to have been the Tamarisk, or Chittim-wood, of which the ark was constructed, a sacred tree in ancient Egypt, and now very rarely found in the valley of the Nile. Those dovetailed ties are just as sound now as on the day of their insertion. Although fuel is very scarce in that country, those bits of wood are not large enough to make it an object with Arabs to heave off layer after layer of heavy stone for so small a prize. Had they been of bronze, half the old temples would have been destroyed ages ago, so precious would they have been for various purposes.

The Mulberry originated in Persia.

Flowers and the Flower-Trade.—The following remarks are furnished by Mr. M. B. Batcham, Secretary of the Ohio Horticultural Society:

"The use of flowers and plants for the decoration of parlors and tables, at fashionable parties and weddings, has increased wonderfully within a few years. It is not unusual for eight hundred or a thousand dollars to be expended for flowers and plants for a single occasion. The sale of cut-flowers in the city of New York is estimated at over a million of dollars annually. About one-fourth of this sum is expended in one month—at the season of Christmas and New Year's festivities, at which time the florists are all taxed to their utmost abilities, and extravagant prices are often obtained for choice flowers.

"The *Horticulturist* says the wholesale or trade price was, the past winter, for Rosebuds, $5 to $8 per 100; Camellias, $50; Tuberoses, $10; but the consumers pay double these rates. As spring approaches the prices decline. The little vine called *Smilax* is very much used, and sells for 50 cents to $1 per yard. Mr. Henderson, the great florist, says there are about twenty greenhouses, having an area of 20,000 feet, in New York and Boston, devoted to growing Smilax alone; and whole acres of glass structures devoted to Rosebuds, Violets, Tuberoses, etc.

"A Philadelphia paper says flowers are quite the rage there. It is the fashion now to send boxes of nice cut flowers as presents, instead of stiffly tied bouquets, and ladies greatly prefer this method, as the flowers keep fresh much longer, and can be used for a variety of purposes. Flowers purchased for funerals and weddings are of the most expensive kind, and yield a large revenue to the growers. In midwinter the price

of a handsome basket is from $10 to $50. Bouquets can be made from $5 to $25. Single Rosebuds cost 25 cents, and Carnations 20 cents. Smilax is sold for $1 a yard, and one spray of Lily of the Valley costs twenty-five cents. Wealthy people invest largely in flowers on all occasions of festivity. Large floral bells, which cost from $100 to $200, are ordered for weddings; then the brackets and vases must be trimmed and filled, and trailing baskets of rare flowers must ornament every table and tripod."

A Poisonous Plant.—A few years ago there was in the Royal Botanical Gardens at Kew, a specimen of probably the most poisonous plant ever introduced into England. It was the *Jatropa urens*, the properties of which are so noxious that its possession is positively dangerous.

The ex-curator of the gardens was one day reaching over it, when its fine, bristling stings touched his wrist. The first sensation which he felt was a numbness and swelling of the lips; the action of the poison was on the heart, circulation was stopped, and he soon fell, unconscious; the last thing he remembered being cries of "Run for the doctor!" Either the doctor was skillful, or the dose of poison injected not quite, though nearly, enough to cause death; but afterward the young gardener, in whose house the plant was placed, got it thrust into a corner, and would not come within arm's length of it. He watered the offender with a pot having an extremely long spout. In a short time, however, the plant disappeared altogether, and another specimen of the genus *Jatropa*, which was afterward introduced, vanished in the like mysterious manner. It was presumed that the attendants were secretly determined that such plants should not be retained in the houses, to cause the possibility of an accident such as that which happened to their curator. —*The Garden.*

A Neglected Source of Food—The African Earth-Nut.—Dr. Muter, in the pages of *The Food Journal*, calls attention to what he terms a neglected source of food. Some time ago, while investigating Cocoa by means of the microscope, he discovered an ingredient employed by way of adulteration to which he could give no name. Subsequently, he had a sample of the substance, offered at the Mark Lane Exchange as an article of food for cattle, forwarded to him for analysis. It now became necessary to deal with the matter seriously, and so further microscopic investigation led to the discovery that the mysterious ingredient was simply the flour of the African Pea or Earth-nut. Dr. Muter declares, however, that the bean of this nut is an excellent substance, which, instead of being used only as food for cattle, or by some adulterators more enlightened than their neighbors, should be everywhere recognized as a marketable article of human diet.

Althœa Frutex.—This handsome and showy shrub is properly an *Hibiscus*—a very numerous genus, comprehending no less, now, than forty or more species, most of them inhabitants of either India. It produces its flowers rather late in the season, but is a fine, hardy ornamental plant. The flowers are bell-shaped and of various colors, pale or bright purple with dark bottoms, white with purple bottoms, and yellow with the same.

These flowers being large, gay, and numerous, and the shrubs of compact, rather tall and good conical shape, make

an attractive appearance, and give the completest idea of the classic character. These shrubs grow naturally in Syria. Many of them are now grown double in their flowers, which form a valuable and beautiful variety. They are well suited for lawns as well as gardens. They rise with shrubby stalks to the height of eight or ten feet. The several varieties may be propagated by grafting upon each other, which is the common method of propagating the sorts with striped leaves. Their late blooming is an advantage when other flowering shrubs are more scarce. They remain a long while in bloom, and the flowers are very numerous.

Cinnamon. — Cinnamon bark is well known to all our readers. Boys and girls, as well as many grown people, like to scent it and eat it. It is an article of commerce, and great quantities are brought to this country every year. It is in daily use, but not many take any thought about how and where it grows, and how it is prepared for the market.

The Cinnamon plant is supposed to be a native of Ceylon, an island in the Indian Ocean, south of Asia, the people of which are called the Ceylonese. But this plant is cultivated chiefly by the people of China, not because a better quality or more abundant crop is produced, but because the Chinese are more industrious, and value commerce more highly than the Ceylonese.

These people have their Cinnamon harvest, when all hands are busily engaged, as we are in harvesting the productions of this country, but this harvest commences in May and continues until October.

The plants are not cut down and destroyed, but the twigs, or shoot-limbs, are carefully selected and cut off, ranging in size from a half inch to two inches—the smaller the better.

After they are cut from the plant, a knife made for the purpose is run several times through the bark, so that it may be easily stripped off.

After being stripped off, the bark is dried in the sun, and rolls up like quills. It is then bound into bundles of thirty pounds each, sewed up in mats, and sent to market.

The cassia buds which are procured at the drug and confectionary stores, and chewed to sweeten the breath, are the dried flowers of the Cinnamon-tree, gathered for commerce just before they burst into bloom.

Fuchsias from Seed.—Fuchsias are readily grown from seed, and usually vary widely from the original stock. The seed pods should be allowed to remain on the plant until they fall off; then lay them aside for a few days, or until they begin to decay. The seed may then be washed from the pulp and spread upon paper to dry. They may be sown immediately, or kept for a few months in paper bags. Sow the seed in fine, sifted soil, composed of leaf-mold and sand, covering not more than an eighth of an inch deep; sprinkle the soil with water, being careful not to wash away the seed; then place the pots or boxes containing them in a warm place, giving water as required. When the seedlings are large enough to handle, pot off singly into small thumb-pots. As the plants become large and strong, shift into larger pots.—*Rural New Yorker.*

The annual product of hay in the United States is not far from 25,000,000 tons. Worth $250,000,000.

RAIN-FALL IN SAN FRANCISCO, 1849 TO 1873.

RECORDED BY THOMAS TENNENT.

	1849.		1850.		1851.		1852.		1853.		1854.		1855.		1856.		1857.		1858.		1859.		1860.	
	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.
July	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.02	1	.....	..	.05	2	.....	..	.21	1
August	.....	..	.....	..	.....	..	.....	..	.04	1	.01	1	.....	..	.....	..	.05	2	.16	2	.02	1	.....	..
September	.....	..	0.33	4	1.03	1	.....	..	.46	4	.15	3	.....	..	.07	2	.....	..	.....	..	.03	1	.....	..
October	3.14	3	.....	..	.21	2	.80	1	.12	2	2.41	9	.....	..	.45	5	.93	3	2.74	4	.05	1	.91	12
November	8.66	8	0.92	7	2.12	5	5.31	12	2.28	12	.34	2	.67	7	2.79	9	3.01	11	.69	5	7.28	15	.58	3
December	6.20	12	1.05	4	7.10	14	13.20	20	2.32	11	.81	3	5.76	15	3.75	12	4.14	8	6.14	14	1.57	6	6.16	21
	1850.		**1851.**		**1852.**		**1853.**		**1854.**		**1855.**		**1856.**		**1857.**		**1858.**		**1859.**		**1860.**		**1861.**	
January	8.34	15	.72	5	.58	4	3.92	11	3.88	10	3.67	11	9.40	13	2.45	7	4.36	8	1.28	4	1.64	8	2.47	8
February	1.77	5	.54	4	.14	4	1.42	5	8.04	16	4.77	10	.50	4	8.59	15	1.83	8	6.32	18	1.60	7	3.72	8
March	4.53	7	1.94	9	6.68	14	4.86	6	3.51	11	4.64	12	1.60	5	1.62	6	5.55	8	3.02	11	3.99	13	4.08	8
April	.46	3	1.23	8	.26	3	5.37	8	3.12	9	5.00	10	2.94	6	.....	..	1.55	4	.27	4	3.14	8	.51	4
May	.....	..	.67	3	.32	1	.38	7	.02	1	1.88	6	.76	3	.02	3	.34	3	1.55	4	2.86	11	1.00	3
June	.....	..	.....	..	.....	..	.....	..	.08	2	.....	..	.03	1	.12	1	.05	1	.....	..	09	2	.08	2
	33.10	53	7.40	39	18.44	48	35.26	70	23.87	79	23.68	67	21.66	54	19.81	61	21.88	56	22.22	68	22.27	73	19.72	70

	1861.		1862.		1863.		1864.		1865.		1866.		1867.		1868.		1869.		1870.		1871.		1872.	
	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.
July	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..
August	.....	..	.....	..	.....	..	.21	3	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..
September	.02	1	.....	..	.03	1	.01	1	.24	2	.11	2	.04	1	.....	..	.12	1	.03	1	.03	2	0.14	1
October	.....	..	.40	2	.....	..	.13	3	.26	4	.....	..	.20	1	.15	3	1.29	2	.....	..	.11	2	0.21	1
November	4.10	12	.15	3	2.55	5	6.68	8	4.19	10	3.35	12	3.41	6	1.18	5	1.19	5	.43	4	3.72	9	2.62	3
December	9.54	16	2.35	9	1.80	8	8.91	18	.58	8	15.16	18	10.69	18	4.34	11	4.31	7	3.38	8	16.74	14	7.25	10
	1862.		**1863.**		**1864.**		**1865.**		**1866.**		**1867.**		**1868.**		**1869.**		**1870.**		**1871.**		**1872.**		**1873.**	
January	24.36	18	3.63	9	1.83	5	5.14	9	10.88	16	5.16	15	9.50	17	6.35	14	3.89	9	3.07	7	4.22	9	2.17	8
February	7.53	10	3.19	10	.....	..	1.34	8	2.12	9	7.20	9	6.13	9	3.90	5	4.78	9	3.76	10	6.97	18	4.24	17
March	2.20	11	2.06	8	1.52	9	.74	4	3.04	12	1.58	7	6.30	12	3.14	12	2.00	8	1.29	8	1.64	9	0.78	4
April	.73	9	1.61	9	1.57	4	.94	3	.12	1	2.36	8	2.31	9	2.19	5	1.53	4	1.93	5	1.10	6	.....	..
May	.74	5	.23	2	.78	5	.63	2	1.46	6	.....	..	.03	2	.08	2	.20	2	.21	3	.16	2	.....	..
June	.05	1	.....	..	.....	..	.....	..	.04	1	.....	..	.23	3	.02	1	.....	..	.....	..	.02	2	.....	..
	49.27	83	13.62	52	10.08	37	24.73	59	22.93	69	34.92	71	38.84	78	21.35	58	19.31	47	14.10	46	34.71	73	.....	..

METEOROLOGICAL RECORD,

FOR THE MONTH FROM MARCH 28TH TO APRIL 27TH, 1873.

Prepared for THE HORTICULTURIST by THOMAS TENNENT, Chronometer and Instrument Maker, Battery Street, opposite the Custom-house.

BAROMETER.

Mean height at 9 A.M. .....30.20 in.
do 12 M. 30.20
do 3 P.M. 30.18
do 6 P.M. 30.17
Greatest height, on the 7th at 9 A.M. 30.43
Least height, on 24th and 25th at 6 P.M. 29.00

THERMOMETER.

(In the shade and free from reflected heat.)

Mean height at 9 A.M. .....55°
do 12 M. .....59°
do 3 P.M. ..... 60°
do 6 P.M. .....56°
Greatest height, on 15th at 3 P.M. .....70°
Least height, on 4th at 9 A.M. .....46°

SELF-REGISTERING THERMOMETER.

Mean height during the night.....39°
Greatest height, on night of 18th and 20th.....45°
Least height, on night of 5th.....28°

WINDS.

North and North-west on 14 days; South and South-east on 1 day; South-west on 6 days; West on 10 days.

RAIN GUAGE.

March 30th.....0.01 inches.
April 2d.....0.08 "
" 20th.....0 35 "
Total.....0.44 inches.
Total rain of the season up to date.....17.84 "

WEATHER.

Clear on 10 days; variable on 12 days; cloudy and foggy on 8 days; rain on 3 days

Bouquet of California Wild Flowers.

1. *Long-Petaled Iris.*
2. *Western Honeysuckle.*
3. *Guinea Hen Flower.*
4. *Lindley's Primrose.*
5. *California False Wind-Flower.*
6. *Downing's Beauty (Lobelia.)*
7. *Venus's Looking Glass (Cat's Ears.)*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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FERN CULTURE.

BY F. A. MILLER.

The cultivation of Ferns seems to be the prevailing popular horticultural refinement of the day. A taste for the beautiful is gradually developing itself among us. Certainly Ferns are becoming the favorites with our amateur gardeners, first on account of their exquisitely graceful foliage; and secondly, because most of them are easily taken care of. But my use of the term foliage is really incorrect; their foliage-like shoots being more properly called "fronds," on the under side of which the seed is produced in the shape of spores—powder-like atoms—which are capable of developing themselves into plants by proper treatment.

While the spores of some varieties of Ferns develop themselves into plants without difficulty and under very ordinary treatment, there are many other kinds which are extremely difficult to propagate in this way, and which must be multiplied by dividing the root after it has become sufficiently strong; and this is the best and most successful mode of propagating Ferns.

However, as new varieties are continually in demand, and can not be obtained by importing the living plants, the planting of spores must be resorted to. In some cases I have seen the young plants developing themselves in from two to three months; but in a majority of cases the spores will lie dormant for over a year, when some will move into life, while others will be found to be without any sign of vitality.

The spores should be planted upon old pieces of wood overgrown with moss, or in sphagnum; or if neither of these are to hand, cut up some common moss and mix with it some pure white sand, scatter the spores over the surface, cover closely with glass, and put in a shady and warm situation. By keeping the glass cover close over the surface, the spores will not require any water for several months. Allow them plenty of time to move, and do not disturb the soil until you are positive that the spores are totally lost.

The propagation by division of the roots is very simple. Take off the offsets carefully with some roots attached to each portion, plant in small pots, water well, and keep well shaded for a week or two.

Some few varieties of Ferns produce young plants upon their fronds. As soon as these have formed two or three small

fronds, they should be taken off and planted into small pots, and be well shaded.

The best soil for Ferns is one-third white sand, one-third leaf-mold, and one-third fibrous peat. Sphagnum is most excellent for Ferns, but it is very difficult to obtain here; fibrous peat is also very scarce, and if it can not be had, I would recommend one-third of light loam mixed with finely cut moss and moss roots, and two-thirds of leaf-mold and white sand.

All Ferns grow best in shade, and most of them require a moist atmosphere. In greenhouses and conservatories, they grow best under the shade of other plants, or remote from the bright light. I have seen some varieties of Adiantums thriving admirably well under the shelves of the greenhouse. If grown in rooms, the dry atmosphere predominating there will not permit them to vegetate freely for any great length of time; and if the fronds are covered with dust, the plants will soon perish. The ever progressive science of Floriculture, however, has come to our aid, in the construction of "Fern-cases," which are now all the *furor* in Europe and in the East. The first Fern-cases were constructed and came to public notice at the World's Fair, held in London in 1851, and since then the idea has met with favor everywhere, and they are now among the most popular ornaments for the window-garden and the parlor.

Fern-cases are constructed in all possible forms; the sides and tops being of glass, and made air-tight for the purpose of confining the moisture and preventing its escape, the evaporating water being condensed within the inclosed space. This is just what Ferns are in need of; and I may inform the reader, that Ferns once planted in a Fern-case and well moistened will not require any more water for several months, if kept perfectly air-tight. Some Ferns, perhaps, will do better if the Fern-case is occasionally ventilated, but most of them do not require it. It can therefore easily be seen, that the Fern-case requires no care whatever, and may be placed almost anywhere in the drawing-room, the parlor, or any other desirable locality.

At some other time, I will give a list of the best Ferns for cultivation, both in and out of doors, comprising such varieties only as may be obtained in this market at a reasonable price.

SPONGE ON THE SAN DIEGO COAST.

From the numerous specimens of Sponge found on the beach and in the caves of La Jolla, it is very probable that extensive beds of this valuable article of commerce exist somewhere in the neighborhood. Most of the Sponge of commerce is now procured from the Mediterranean Sea, more especially about the islands of the Archipelago and in the Levant. They are found adhering closely to the bottom, and require some force to be detached. The fishing is carried on principally by divers, although some is done by spearing, which, however, materially injures the Sponge. The inhabitants of a small town named Cranidi, about twenty miles southeast of Nauplia, are the most expert divers, being trained to the business from their infancy. After being fished up, the Sponge, when perfectly free from sand and dry, is exceedingly light—almost as light as down, being moved by the slightest breath of air. There is a little trickery practiced in this business as in all others, and the sponges before being taken to market are laid on the beach to allow the ripple

of the sea to slush them with the finest particles of sand. They are then gathered together in heaps, and pressed close enough to become hard and flat when dry. Notwithstanding they may subsequently undergo a thorough washing and sifting they will weigh three or four times their original weight. The principal Sponge market in the world is Smyrna, in Asia Minor.

The pieces of Sponge that have been from time to time found on the beach at La Jolla are of excellent quality. A careful examination of the bottom a little distance from the shore might result in the discovery of an extensive bed of this zoophyte.—*San Diego Union.*

Absorption of Moisture by Leaves.—Mr. M. Cailletet has lately been investigating the question as to whether the leaves of plants are capable of absorbing water in a liquid state; and sums up the result of his experiments, by stating that the fact seems to be demonstrated that a plant growing in a humid soil and receiving by its roots the quantity of water necessary to its normal condition, does not absorb the water which moistens its leaves, but that such absorption takes place as soon as the leaves begin to wither, in consequence of the desiccation of the soil. In this way he explains the phenomenon of certain plants maintaining a healthy condition without any contact with the soil, and even absolutely isolated from all assimilable substances. Thus, a specimen of *Pourretea*, a rootless Bromeliacious plant, maintained a healthy existence and exhibited considerable increase in weight, while suspended for more than six years in the air by a wire. No moisture ever reached it except that from the garden syringe, and yet it was continually putting out new leaves and flowering abundantly.—*Gard. Monthly.*

CALIFORNIA WILD FLOWERS.

BY DR. A. KELLOGG.

We present the readers of The Horticulturist and Floral Magazine a small bouquet of wild flowers found in the vicinity of San Francisco.

Flowers are ever the symbols of wisdom and purity. Tokens of the genial, sunny side of humanity, they bear on their gay wings kindly messages of good to all. Radiant and charming with divine philosophy, and sweet as is Apollo's lute, they bring again the blessed angels of joy to the hearts of old and young. These are the wise fables of the fairies, now as ever so beautifully true.

The first (or No. 1) is the Long-petaled Iris (*Iris longipetala*), or Large-flowered Fleur-de-lis, the first flower of spring; abounding upon open hill-sides and in springy dales. The flower is of a delicate sky-blue ground, with deep purple-blue veins, on stems one to two feet high; very much sought after on the continent of Europe, and greatly admired for its peculiar style of beauty.

We have also the Douglas Iris (*Iris Douglasii*); flower of the deep rich radiance of the rainbow; of varied hues, from prevailing indigo to rose-color, delicate flesh-color, and white; a plant of intermediate size, which unobtrusively seeks the shelter of shrubs and the shades of the woods. The Golden Iris is by some considered a variety of this.

There is also the little Long-tubed Iris (*Iris macrosiphon*), of deeper, brighter, richer hue than any other, varying to purple and indigo. Its glossy, shining, varnished leaves arch over sidewise in the most graceful possible manner. It is the prettiest border plant in the world. The long line of reflected light from the bow of its arch is the most cheerful sight (if allowed expression to

feeling), of the most vivid sheen of living green our eyes ever beheld. The flowers, too, are very remarkable for the length of their tube (four to five inches), as the name imports. Add to all this the enlivening fragrance, and the consummation seems complete.

No. 2 is the Western Azalea, or Western Honeysuckle Shrub. Among the large family of Azaleas on this continent, perhaps, all points considered, that of the Bay of San Francisco surpasses them all. Let us review for a moment the ground of this opinion, so that we be neither prejudiced nor partial judges.

To our female friends, and all admirers of *white flowers*, it commends itself by this prime prerequisite. An emblem of chaste purity and innocence—fragrant as the affections that ensphere all true hearts—it embalms the breeze, and exhilarates every circle it enters. It has just shade enough of slight buff, or of faint creamy-yellowish hue, to give richness and variety to one lip—and sometimes, like a country lass, it dons a slight pink blush or tinge of modesty. These flowers are not too hasty in their appearance before the public gaze, untimely suing for admirers, but patiently bide their time, until properly clad with the emblems of due intelligence. Then, amply adorned with new and freshening foliage, the flowers in bountiful clusters display themselves against this cheerful background of green in all their glory. And, as if to signify its queenly pre-eminence, the shrub is peerless in height, rising from fifteen to twenty feet. In the clear streams that go softly meandering the meadows, the Western Honeysuckle delights to bathe her feet; or, with laudable ambition, climbs the hills and tall steeps along margins of sweet brooks that "murmur melodiously among the smooth pebbles." Other Azaleas are too often naked and bare of foliage when in bloom, yet have they their peculiar and appropriate beauty. In colder climes, the sun and diamond rain-drops often more than supply the lack of leaves. Having been a witness to many, if not all, of the most brilliant and charming of these native shrubs, north and south, to Alaska, we know of none so striking and exquisitely beautiful, where all have beauty, as the one of the Far West—the crowning glory of our land! Mr. Jas. Lick, and perhaps one or two others, have appreciatively taken this shrub under cultivation. Mr. F. A. Miller is the first nurseryman and gardener, so far as we know, who has yet started it from seed. Why do the invisible heart-associations cling around some correspondent visible object, like this shrub? If ever mortal ears thrill to celestial songs, or, listening to their like, conceive a faint and far-off idea of the blest abodes, it is when the spring shower is over and gone, and the warbling notes of the Hermit Thrush in rolling numbers echo sweetly from out the hollow resounding woods, as we rove in Honeysuckle bowers. Startled and entranced, silent and alone! . . . . Did we listen to the song of angels, unawares?

No. 3 is the Lance-leafed Checkered Bells (*Fritillaria lanceolata*), Guinea-hen Flower, or Rice-root Lily of the miners. Of these we have several species. The nodding bell-shaped flowers are checkered with square or slightly oblong-square spots, similar to a checker-board, of dark madder-purple on a greenish or reddish ground-color. The flower-stem is one to two or three feet high, with lance-shaped leaves in a whorl around the smooth stem below, with a few scattering ones above. In the young state it has but one leaf, very broadly

lance-form, or somewhat general oblong egg-shape, smooth, and of tender, fleshy, herby texture; the leaf-stem about equal in length to the blade. This root-leaf is usually absent the year it blooms. The bulb makes ample provision for future contingencies, by multiplying innumerable little baby-bulblets from the mother bulb, that surround the base. When disturbed, they so easily detach, that the earth is filled with them, like grains of rice; hence the miners' name. The "Edible Lily" of Kamtschatka (*Fritillaria Kamtschatcensis*) mentioned by travelers, is a species of this plant, as verified by personal observation in our expedition to Alaska some years ago. The Red Bells (*Fritillaria recurva*) of Mendocino County is by far the most beautiful of the species; the Edible Lily is the nearest approach to it, and a very fine species. The Red Bells, or Dwarf Lily, is in shape exactly the same as the true Lily. The black spots or checks are very distinct—a perfect prescript of the modern chess-board and Scotch plaid.

No. 4 is Lindley's Primrose (*Œnothera Lindleyi*), a choice one among the many beautiful species found in this vicinity; perhaps the best selection that could be made. The flowers are of a cheerful bright rose-color, with deep red or crimson spots at the base of each petal or flower-leaf, so that the general bright base gives brilliant effect and character to the blossoms: these are about two inches in expansion. The top of the plant, a foot or so in height, is broadly branching, open and airy, with recurved spreading branches and summit. The stems and leaves are so slender and unobtrusive, that, a little way off, the flowers seem dancing and courtesying magically in the air. Our *Œ. arcuata* may prove a variety of this, with darker purple flowers and sickle-shaped leaves.

No. 5 is the California False Windflower (*Anemopsis Californica*). This plant in the leafy state somewhat resembles the common Water Dock, with which it is often found growing. It may be seen on the margins of miasmatic marsh lands. Here, as ever, we find native antidotes which in mercy the All-Father's finger points out—ever laying the soothing hand of blessing over even fens and pools of filth—following mortal men and things into the stagnant mires they will not reclaim. It is one of the best stomachic stimulants and tonic ague remedies known, due exceptions always being given to Peruvian bark and its common allies. Five to fifteen grains, or one-fourth to one half a teaspoonful of the powdered root, should be taken three or four times a day; also, chewed in the mouth constantly for chronic affections of the throat and breast. Although found on the marshes bordering the bay at Oakland, the flower there has not the brilliant scarlet tinge we see in specimens from the interior of the State. It is highly probable there may be two species of this interesting, ornamental, and useful plant.

No. 6 is Downing's Beauty (*Downingia elegans*). This Lobelia like flower sports some modest and gay colors, besides the pure cheerful white and blue of its more common hue. This is seen oftener in the interior of our State. It is a tender, succulent, spreading little herb, just suited to the parlor; is very fond of company, and found in patches or "fairy circles" around little lakes or basins, in adobe or strong black cracky clay soils. At Alameda it tips a bright wink by the wayside at the traveler, and abounds in the lowlands of San Rafael, the San José Mission, and elsewhere. If one were always in the mood to play the *role* of old Esculapius, there are

virtues that bloom unnumbered beneath our feet. But there are other and higher virtues that gleam from *Beauty's* eyes —truly the greatest solace of the soul. Thence, perchance, we deem this gross clay of ours only second-best—our second self.

No. 7 belongs to a plant with heart-shaped leaves, cowled and thrown back like a dashing old "calash" bonnet, yet very affectionately clasping the rough stem; found commonly in sterile soils, or infesting corn-fields; *some* better than a weed, being ornamental if not useful. This is Venus's Looking-glass (*Specularia perfoliata*, var.). How she ever came to peep into this little blue eyed beauty, history gives no account. It is very likely, however—nay, morally sure, in a certain sense—that, as the plant is a variety of Cat's Ears, and Venus being one of your parlor cats, she just as naturally took to it for a mirror, as do ducks to water.

HORTICULTURE AS A PROFESSION FOR YOUNG LADIES.

A very able suggestion for a new profession for gentlemen was made by a correspondent of the *Pall Mall Gazette* a short time since. Referring to the want of technical knowledge among amateur lovers of Horticulture and persons possessing small gardens, and the great difficulty of obtaining the services of an educated, well-informed gardener, he suggests that Horticulture be raised to the rank of a profession. "A large proportion of people having gardens can not afford to keep a gardener, and would not have work for one if they could. They are driven to the precarious assistance of men who, with the smallest possible knowledge, work at high wages by the day. Even those who have money enough and soil enough to 'keep a gardener' are fortunate if they can get one, at the ordinary wages of a curate, with any knowledge of his business. There is a great want among middle-class people in the neighborhood of London, and other great cities or towns, of an intelligent knowledge of Horticulture. People would be willing enough to pay for this knowledge if they could only get it. Our Roses or our Grape-vines develop symptoms of disease, and we do not know how to arrest it. It is easy enough in the case of the 'human subject.' We send for the doctor. We send for a man who has made medicine or surgery (perhaps both) the study of his life, and he tells us what to do, and, if necessary, he does it. Now, why should we not know to whom to send in our horticultural dilemmas? Why should we not have our diplomatized horticulturists, to whom we might send to rescue our trees and flowers from disease or death? Surely, it is pleasanter occupation to bud Roses or to prune fruit-trees, than to cut off human legs or arms, and to extirpate horrid cancers? A thorough knowledge of Botany and Horticulture is not more difficult to attain, and is not less ennobling when attained, than an equal knowledge of surgery and medicine. Why, then, should these pursuits not be erected into a 'gentlemanly profession?'" Why may they not, indeed? And why not, I beg leave to add, into a ladylike profession? I place the suggestion before the readers of the *Queen*, as affording a new and perfectly legitimate opening for the employment of women, and in a field in which numbers of ladies already excel, more particularly as practical gardeners, *en amateur*, no doubt, but with a skill and taste which are not to be met with in men following the profession or business of

gardeners, except a few at the very top of the profession. Why should we not have our female Paxtons and Kents? Mrs. Loudon, instructed no doubt by her talented husband, imbibed a great taste for and love of the art; and other ladies might find in Horticulture a profession which would be remunerative, and could not detract in itself in any way from their social *status* as gentlewomen.

Leaving the laying out of landscape gardens and parks to the gentlemen, there is still, in other branches of gardening, a wide field open, in which ladies thoroughly educated in the science of Horticulture and Botany might find employment, and in which their less fortunate sisters, with ordinary strength and less preliminary training, might work. I remember, a short time since, reading an account of a college or school of Horticulture for women in America, and it has long been matter of astonishment to me that, in the present dearth of remunerative employment for women of the middle-class, no one has yet thought of making them "gardeners." The idea was suggested many years ago, in my hearing, by a well-known literary gentleman, and was called forth by the universal—and it now appears never ending—complaints of the want of knowledge, and, I am sorry to add, the predatory habits of the numerous jobbing gardeners my mother had in her employment. I remember that one of my sisters and myself, in utter despair of getting any good work or good result in the way of flowers for effect, or fruit for eating, from the coachman-gardener and his numerous myrmidons of gardeners by the day, took upon ourselves the entire superintendence of the greenhouse and out-door garden. The former was a very large one, the latter a good sized suburban piece of ground. We only stipulated for the services of the man to remove large pots, dig the ground where very heavy, and wash the greenhouse; he was to be entirely under our orders. We went to work with enthusiasm, determined to succeed, and, as a matter of course, we did succeed beyond our hopes.

Of course, if there are women (but I am loth to believe it) so foolish as to be afraid of soiling their hands or spoiling their complexion by being much out in the open air, I do not address them. My suggestions are meant for those who look upon the duties of life seriously, and who, being compelled by circumstances to earn their daily subsistence, would find in Horticulture not only a remunerative but a delightful occupation; and if the *Pall Mall* correspondent be correct in his views, it would pay. He says: "Of course, the question may suggest itself, will it pay? I am quite disposed to think it would. I, for my part, and I have heard others say the same, would often be glad to pay my guinea for a visit from a skilled horticulturist." If the want of scientific knowledge among working gardeners is as great as this implies, women, by taking up the profession, could do no injury to the other sex; they would oust no one from his place, and would simply step into a void, filling up the gap between the shining lights of Horticulture and Botany, and the ignorant, obstinate, jobbing gardener, who very often takes the name of one without any knowledge of the duties, but a great idea of the perquisites of the situation.—*The Queen.*

Sponges of good quality are found on the coast of Florida, but the fishing is not extensively prosecuted there.

HEDGES.

BY E. J. HOOPER.

The subject of hedge fences is an important one with us. Every year, as timber becomes scarcer, the necessity (as well as the love of beauty, both in gardens and fields), for some substitute for posts, rails, and boards, becomes more apparent. One of the most expensive items in a fruit or flower cultivator's accounts is his fencing bill; no one is so well acquainted with this fact as himself. That he does not immediately accord to live fences the preference, is simply because, with all his knowledge of the continued cost of the present system, he is not sure that, without a cost still greater, live fences can ever be made equal to the wooden ones in service for all the purposes to which "post and rails," etc., are applied. We must confess that when we look at the few live fences that we see in any part of California, there is good reason for this indifference, and even dislike to the—as some say—"new-fangled notion." Wherever these attempts have been made at hedging, it would be difficult to point out even a single instance in which a genuine farmer or horticulturist would not reasonably prefer some kind of wooden fence. We are continually reminded of the hedges of Europe by newspaper writers, who hold up those affairs as models worthy of imitation. But, we who "have been there," and we think are tolerably well acquainted with the subject, know that very good hedges even there are rather the exception than the rule; and that these have to be kept up at a very considerable annual expense. We consider that much of whatever effectiveness European hedges do possess, is more owing to the "ditches" which are there accepted as the legal boundaries to property, as well as the divisions of fields and gardens from one another, than to any great merit in the hedges themselves. These hedges, for the most part, are full of what are there called "gaps," or open places, made by the breaking through of boys, sportsmen, and other unruly cattle; and after every bi-yearly trimming which they receive, a horse and man is employed in carting the clippings to these open spaces, and they are there used to mend these "gaps" with. No wonder, then, that with these poor examples nearly everywhere before them, our cultivators of the soil are very suspicious of change.

Notwithstanding all this, with good materials, or, in other words, with the proper shrubs, and with good judgment and proper pains, we can make in this highly favored soil and climate very good hedges, and when the science of the subject is understood, can make them superior to anything Europe can produce. There they chiefly use the *Cratægus* or White Thorn; and this plant is a valuable one for us possibly, if it can stand drought. We have also some excellent plants with which to make them, and which are superior to any of the materials of which foreign hedges are made. I allude, for instance, to the Osage Orange; for another, the Honey Locust; and for a third, that plant lately recommended and found in this State in great abundance—the California Wild Cherry—(*Cerasus illicifolia*). The first has proved an invaluable boon to the farmers of Illinois and the prairie lands generally, where timber is very scarce; and in England just now, its introduction there is exciting universal attention. The second forms a strong hedge, and has been found successful in the East in turning effectually all stock; and the third, although not yet tried to any ex-

tent, has every quality to make a good hedge in our climate, and has succeeded as a beautiful hedge with F. B. Fuller, opposite the Los Gatos Nursery.

In starting to make a hedge of either of these, it must not be forgotten that they are, all of them, naturally *trees*; and as we want them to become shrubs when in the condition of a hedge, we have to resort to peculiar treatment to make them alter their nature. The object is to check their tree-growing, upright tendency, and to make them dwarf and very bushy. Now, one of the very worst modes of effecting this, is to give them severe prunings at the fall of the year, and little or no attention in the summer season. Yet this is the almost universal practice with those who try them. At the time of planting, the plants are cut to within six or nine inches of the ground, and every succeeding fall or winter, for three or four successive years, cut nearly back to where they sprouted from. They generally get a shearing about August or September—not sooner; a few weeds are taken out once or twice a year, and this is their almost invariable course of treatment.

An experienced physiologist will at once perceive that this practice will never make a good hedge out of subjects naturally trees; but this is not so apparent to the "uninitiated." To them it seems one of the most natural things in the world, that to make anything bushy, all that needs to be done is to head it down. But this is only true under certain conditions.

The first process with hedge *trees* is to make them *shrubs*, which must be done by some of the known principles of dwarfing. There are three recognized modes of dwarfing trees, namely, ringing, root-pruning, and summer-pruning. The two former being impracticable in such an extensive affair as hedging, the last mode is the only available one for the purpose. Summer-pruning has a very remarkable effect on trees, the exact reverse of pruning when plants are in a comparative state of rest. If a tree is cut down immediately after the fall of the leaf, or in September or October, the next season it pushes forth with renewed vigor, determined, as it were, more than ever to be the tree nature designed it. So great is this power given it by the winter or late pruning, that if a few successive years of this system were persevered in, without any counteracting influence from summer-pruning, what few side branches the stump had made would be entirely destroyed, and nothing would remain but a dense mass of erect, strong-growing shoots. On the other hand, cutting off the shoots of trees immediately after they have put forth in the spring, so weakens them, that in a few years the trees would die outright.

It is obvious, that to make a good live fence out of trees—that is, to make them become good shrubs, with a uniform growth both at the sides and at the top—some discrimination is necessary in the matter of pruning. The strong-growing central shoots only should be cut off in summer, and this, too, before they have completed their season's growth. The sides should be encouraged to make the strongest growth possible; which is to be attained by pruning in the winter, and in the winter only.

If these principles were duly recognized, live hedges would cost but half the expense they now do; because, though they would have to be gone over twice a year, they would in fact receive but one complete pruning.

We conceive that in offering these

remarks, by bringing this subject before the thinking portion of the community, from whom the most substantial knowledge is dispensed to the tillers of the soil, who, in general, are too apt to undervalue what is called mere book knowledge, we are aiding a not unimportant branch of horticultural knowledge.

FLAVORING WITH LEAVES.

Leaves are more or less popular for garnishing, but it has often surprised me, says a correspondent of the *Garden*, that they are so little used for flavoring. With the exception of sweet and bitter herbs grown chiefly for the purpose, and Parsley (which is neither bitter nor sweet, but the most popular of all flavoring plants), comparatively few other leaves are used. Perhaps I ought also to except the Sweet Bay, which is popular in rice and other puddings, and certainly imparts one of the most pleasant and exquisite flavors. But, on the other hand, what a waste there is of the flavoring properties of Peach, Almond, and Laurel leaves, so richly charged with the essence of Bitter Almonds, so much used in most kitchens! Of course, such leaves must be used with caution, but so must the spirit as well. An infusion of these could readily be made, either green or dry, and a tea or tablespoonful of the flavoring liquid used to taste. One of the most useful and harmless of all leaves for flavoring is that of the common Syringa. When Cucumbers are scarce, these are a perfect substitute in salads or anything in which that flavor is desired. The taste is not only like that of Cucumbers, but identical—a curious instance of the correlation of flavors in widely different families. Again, the young leaves of Cucumbers have a striking likeness in the way of flavor to that of the fruit. The same may be affirmed of Carrot-tops, which are as like carrots in taste as may be. In most gardens there is a prodigious waste of Celery flavor in the sacrifice of the external leaves and their partially blanched footstalks. Scores of sticks of Celery are cut up into soup, when the outsides would flavor it equally well or better. The young leaves of Gooseberries added to bottled fruit give a fresher flavor and a greener color to pies and tarts. The leaves of the Flowering Currant give a sort of intermediate flavor between that of Black and Red Currants. Orange, Citron, and Lemon leaves impart a flavoring equal to that of the fruit and rind combined, and somewhat different from both. A few leaves added to pies, or boiled in the milk used to bake with rice, or formed into crusts or paste, impart an admirable and almost inimitable bouquet. In short, leaves are not half so much used for seasoning purposes as they might be.

Utilization of Sawdust.—M. Gustave Hueze says that, though sawdust decomposes very slowly, yet it may be economically used as a litter in stables, and left for several months in contact with the solid and liquid excrement of animals, which it readily absorbs. It may also be composted with quick-lime and left in a heap for about a year. Additions may be made to this heap from time to time, but, when such additions are made, the whole heap should be well stirred. It will be improved by being frequently saturated with urine or sewer-water. Sawdust thus treated may be used on partially exhausted soils with great advantage.—*Department of Agriculture.*

The vintage of the Australian vineyards is estimated at 500,000 gallons.

THE CULTURE OF CAMELLIA JAPONICA.

Read before the Bay District Horticultural Society

BY R. MICHELSEN.

In presenting this essay for consideration, it is not my intention to give the results of experience in this country of the culture of this valuable plant, because we may safely assume, the Camellia has never been cultivated here! For importing plants from the East, potting them and giving them a place in the greenhouse, and only looking after them when the flowers are developing, can not be called cultivation in the proper sense. Cultivation is the continued effort to bring it to its highest possible standard of perfection; or, to what I especially refer, the raising it in large quantities for the trade.

Heretofore our nurserymen, who should be leading cultivators of those plants which require a more careful and peculiar treatment, never found the necessary time for it; they, I deeply regret to say, joining the general exertion for the acquirement of material wealth as fast as possible, neglected those plants which did not bring the desired pecuniary results at shortest notice. I feel confident that the raising of Camellias, after once being fairly started, would prove to be more renumerative than those plants that anybody can raise easily in large quantities in a short time. The growers of Camellias would be more protected against competition, by the very nature of the plant; as it takes at least three years before a plant is salable, and those plants which arrive here from the East are at least doubled in price on account of freight, loss on the road, etc. Instead of importing Camellias, they should be made an article of export, as we have considerable advantages in raising them, in regard to climate, over the eastern cultivators.

All vegetables grow here to the greatest perfection. California has become proverbial for its immense production of plants, flowers and fruits, and there is no good reason why we should not be just as successful with Camellias. It is asserted, even by practical horticulturists, that the climate is not favorable! The air is too dry, dust, scorching sun, etc., are the only reasons given; but have not the cultivators of this noble plant elsewhere also to battle against these adverse influences, besides a great many more? I need only to mention the long, cold and damp winter they suffer in the East and in Europe, to give a thrill of horror to every experienced horticulturist.

The Camellia is here cultivated in greenhouses only, and the impression appears to be general, that it will not grow in the open air, and even not in frames, although it is a perfectly hardy plant; more insensible to the effects of cold than *Cycas revoluta*, *Chamerops humilis*, etc., which do well in sheltered localities. If proper attention is paid to the Camellia, and it is sheltered against wind, heavy rain, and excessive heat, and receives such soil as its peculiarities require, and good drainage, I have not the least doubt its growth would afford perfect satisfaction. Regarding no other plant, it may be safely said, do more differences of opinion exist in reference to its culture, even among successful cultivators, than of this plant; thus showing that the Camellia is in fact not very particular as to the mode of its treatment. This, however, will be conceded by all, that it must be moderately shaded against the scorching sun; that it should be kept rather moist during the flowering season and while it is forming new leaves, and when these are hardened the supply of water should be gradually diminished, and the soil

be kept comparatively dry, while the plants should be sprinkled twice a day to assist the newly forming buds in developing into flower-buds, otherwise they are likely to start afresh into second growth, and then, in most cases, all the flowers are lost.

In regard to the proper soil, opinions differ widely. I have seen Camellias cultivated in rich, fibrous peat, mixed with one-half sand; they grew in this soil, in frames, as thriftily as a *Pittosporum tobira* grows here in the open air. But as peat of that quality can not be obtained here, I would recommend a mixture of three parts rich loam, two parts peat, and one part sand. Our eastern friends appear to prefer a heavy soil for Camellias; the ball of the imported plants is always as hard as a brick. It is really surprising that the Camellias do not give it up in despair, before they are considered sufficiently strong to be sent out to California.

Let us now turn our attention to the raising of plants. Begin at the beginning, and make the cuttings with three to four eyes early in spring, put them in the bed in the propagating house, cover them with extra glass, keep them close, and give regular bottom heat of about 75° to 80°. In about two months they will make roots; when these have attained sufficient strength, give the young plants three-inch pots, and put them in a moderately hot bed. After they have made here their first growth, and the leaves are hardened, the better varieties may be planted out in a frame, while those which have to be grafted must be kept under glass until August of the following year, when they will be strong enough for the operation.

This grafting is a very simple process: a cut is made half through the stem on a convenient place; the scion is cut wedge-like on both sides with a clean cut, and of the length of about two to three eyes; insert it into the stem, tie some soft cotton string around it, and put the plant in a propagating house; this should be kept moist and close; the plant should not be sprinkled. If the operation is performed carefully, the scion will have formed connection with the plant in six to eight weeks; then the new plant must be hardened gradually, be kept under glass during the winter, and planted out in a frame in the spring. The frame should be two and one-half feet high, the floor being nine inches below the walk; five to six inches of sand should be filled in, and on this a layer of six inches of soil. After these preparations are completed, all is ready for planting out the young Camellias. Plant them in rows, about nine inches, and the plants in the rows six inches, apart. The frame should now be kept close and well shaded; watering should be done in the morning. It will also have a very beneficial effect if the plants are sprinkled in the afternoon, before the sun disappears, and the frame then be closed. The water evaporating, will produce a moist, soft air, which will effectually prevent the red spider and other insects from infesting the plants. After the plants have made their first growth, they should receive more air. Whether it would be advisable here to remove the glass entirely during summer, and give shade only, I am not prepared to say; I am, however, inclined to the opinion, that it would be more beneficial to keep the plants under glass, especially as I have not the least doubt they will, after they have had sufficient rest, make a second growth, during which they should receive similar treatment to that in spring. The glass may be taken off during the fall, until the heavy rains set in. Next spring, before the plants begin to grow, they should be

cut back, according to size and strength of plant, in order to make them bushy and to get cuttings. They must now be treated as last year. The majority of the plants will be salable when they have finished their first growth; then they must be potted, put in a greenhouse, and be kept close and shady. There they must remain until fall, when they will have formed new roots, and then are ready for sale.

FISH CULTURE.

Nearly every known animal, large or small, has its own peculiar parasites or lice, that prey upon the larger animal, generally to its inconvenience, and oftentimes affecting the health. It would seem as though fish, constantly immersed in water, might be free from parasites, but such is not the fact. Livingston Stone, in his work on "Domestic Trout," says:

"It is well known that when trout become injured or unhealthy, a fungoid growth appears in blotches over the surface of their back, and usually terminates in fatal results in a few days. It has been supposed that the fungus eats into the tissue of the fish, and destroys it.

"The microscope reveals, however, that it is not the fungus that penetrates into the fish, but a multitude of microscopic worms. They are not found in the upper parts of the fungus, but just below the roots, or where the fungus joins on the surface of the skin. Here, between the roots of the fungus and the body of the fish are found hundreds of these creatures, incessantly in motion, and apparently eating vigorously.

"They are about one-eightieth of an inch in length and one two-hundredths of an inch in diameter, and are provided with a mouth, and at the other extremity with about twenty claw-like appendages for fastening on to the fish on which they feed. They are continually eating into the tissues of the fish, and the twenty tentacles enable them to fasten on so tightly that the fish can not shake them off. These parasites appear to live on the flesh of the fish, and the fungus to live on the digested matter into which they transform it.

"This discovery led to some experiments in search of a remedy, and it was found that a strong solution of salt destroys the parasites. Experiments were then made of immersing a trout in salt water, and it was found to be perfectly harmless, if not too long-continued. A method was thus found of killing the parasites without killing the fish, which fact was confirmed by actually taking a trout covered with fungus and immersing him in a salt bath for a moment or two, and afterward keeping him by himself for several days. The fungus peeled off, the parasites were killed, the bare spots healed over, and the trout got well.

"From all of which we may, I think, draw the following conclusions; That it is the worm, and not the fungus, which eats into and kills the fish; and that the fish can be cured, when not too much weakened, by immersion in a strong solution of salt. I used a tablespoonful of salt to a pint of water, and kept the fish in it till he went over on his back, and then took him out and put him instantly into cold running water."

To Prevent Rust.—It is said that equal parts of carbolic acid and olive oil, smeared over the surface of the instruments, are an unfailing preventive of rust in any climate.

Editorial Portfolio.

It is a source of deep regret and mortifying discouragement to us, that so little interest was taken in the late Floral Exhibition of our Horticultural Society, in this city, by the general public, and more especially by those of the community who affect a love of the beautiful and vaunt their refinement of taste. It is useless to plead horse-distemper, inclemency of the weather, etc., as these impediments did not prevent the attendance at other places of amusement; and it is evident that horse-racing, circus-riding, and the grimaces and antics of clowns, with the attendant noisy and coarse music, are more tasteful to a very large portion of our population.

Although we were in a measure suspicious of these preferences, yet we hoped a further advancement of taste had been made, and that although a creditable appreciation of the higher-grade music and purer and more natural delights of a flower and plant exhibition might not be displayed by the public, yet for the sake of their children, whose mental cultivation and refinement are largely assisted by such instructive displays, we trusted that sufficient patronage would have been awarded the Society to have at least reimbursed it in the actual outlay for the music, decorations, and the numerous etceteras, instead of leaving it some $2,000 deficient, independently of the unrequited labor of not a few enthusiastic members of the Society, whose bitter disappointment and disgust can be readily imagined.

We must nevertheless state, that there were many pleasing exceptions to this too general apathy, and we are happy to say, that, although the attendance was light, yet it consisted of the *elite* of our community, in education, wealth, and refinement, and that they were highly appreciative. It was doubtless on these points the best recognized of our fairs; and to these friends, as marking their approval of what they saw and heard, we suggest a kindly consideration of the following appeal, which the Trustees of the Society have considered expedient to address to them.

San Francisco, June, 1873.

Dear Sir:—It has been the misfortune of the Bay District Horticultural Society of California, to meet with a very heavy loss in their late Spring Exhibition. Various circumstances, among which may be mentioned the horse disease, the inclemency of the weather, and the general depression of business, may be assigned as causes for the apathy exhibited by the general public.

It is, however, very apparent that but little interest is taken in the arduous efforts of this Society to foster taste, supply information, discuss matters pertaining to Horticulture, encourage the culture of useful and ornamental trees and shrubs, and introduce such plants as are desirable for our peculiar climate.

Our Art Association, our Mechanics' Institute, our Academy of Sciences, are each well sustained. Then why, also, should not the Horticultural Society receive like support? Certainly it is of the greatest importance to California, that the horticultural and floral as well as the agricultural resources of our State should be fully developed, both for profit, for comfort, and for ornament.

Since the unfortunate result to the Society of the Spring Fair has become more generally known, a feeling of kindly sympathy has arisen, accompanied with a general expression that the Society should be sustained. In order to avail ourselves of this increased

interest in the welfare of this Society, and to place the institution on a better basis, the Trustees have considered it expedient to appeal to all who feel an interest in Horticulture and Floriculture, to become members; and they hope that at least three hundred life-members may volunteer into its ranks.

E. J. Hooper, Esq., a gentleman well identified with the interests of Horticulture and Floriculture, has kindly consented to wait upon you for your consent to become a life-member of our institution. We append the following extract from the press:

The recent Floral Exhibition. — We regret very much to know that the late "Floral Exhibition" in our city, and for which so much labor, time, and money has been expended, has most undoubtedly, resulted in a considerable loss to the Horticultural Society, as well as to its members.

The question now arises, why is this? We have a city of over *one hundred and seventy thousand people*, and although a very handsome place of entertainment was opened for them at a very low cost, a display of the very choicest products of the gardens and conservatories, plants of great beauty and rarity, together with the luxury of the choicest music both by day and evening for a week, yet during a greater part of the day, the hall has received but few visitors, and even in the evenings the attendance has been slim.

Have our people lost the love of flowers and music? or are they so wedded to the pursuits of business and to money-making that these higher claims upon their natures have become as it were dormant.

When we visited this "Hall of Floral Beauty," and saw so few visitors, we confess we were not only surprised but sorrowful, for it does not speak well for the tastes and the liberality of our citizens, who should give an earnest encouragement to exhibitions of this kind, for they are the *nurseries* of a higher taste in the youth of this age; and, like the "Art Union" of our city, which we are glad to know is highly prosperous, this Society and these exhibitions should be as liberally sustained, for "Art and Nature" are the *handmaids* of Science—they are the beautifiers of the earth.

REPORTS OF SOCIETIES.

American Pomological Society: *Fourteenth Session, and Quarter-Centennial Celebration.*—Whereas, the American Pomological Society, at its last session, accepted the invitation of the Massachusetts Horticultural Society, to hold its Quarter-Centennial Celebration and Biennial Session in the city of Boston, in 1873:

Therefore, in conformity with said acceptance, the undersigned give notice that the Fourteenth Session of this National Association will be held in the hall of the Massachusetts Horticultural Society, Tremont Street, in Boston, commencing Wednesday, September 10th, 1873, at 10 o'clock, A. M., and continue for three days.

All horticultural, pomological, agricultural, and other kindred associations, in the United States and British Provinces, are invited to send delegations, as large as they may deem expedient, and all persons interested in the cultivation of fruits are invited to be present and take seats in the Convention.

The coming session will be especially interesting, commemorating, as it will, the termination of the first quarter of a century of the existence of the Society, and it is believed will be one of the most important and useful that the Society has ever held. On this occasion there will be brought together the best cultivators and fruits of our widely extended country, when may be examined and compared the fruits, not only of the cooler climes of the North, but of the South and West, and the Pacific slope. It is therefore very desirable

that every State, Territory and Province of America should be fully and ably represented in this convention, thereby promoting the advancement of one of the great resources of our national wealth, the extension and perpetuation of the amicable and social relations which have heretofore existed among the members of the Society, and the diffusion throughout the land of our deliberations, for the benefit of our constantly expanding territory.

It is therefore hoped that there will be a full attendance of delegates from all quarters of our country, thereby stimulating more extensive cultivation by the concentrated information and experience of cultivators, and aiding the Society in perfecting its Catalogue of Fruits. This will be one of the prominent subjects which will come before the Society, and we therefore respectfully urge the various State and local committees which have not already responded to the circular of P. Barry (Chairman of the General Fruit Committee, Rochester, N. Y.), to do so, with such information and lists of fruits as may aid in determining what varieties are best adapted to their several localities.

At this session the Society will appoint the place for its next meeting, and also decide what action it will take on the invitation to participate in the International Exhibition at the Centennial Celebration of 1876, in Philadelphia, and it is respectfully requested that members come prepared to express their opinions in regard to this subject.

Arrangements will be made with hotels, and as far as possible with the various railroad companies, terminating in Boston, for a reduction of fare, and of which notice will be given in a future circular. Similar arrangements can undoubtedly be made by the various delegations with roads in their localities.

Members and delegates are requested to contribute specimens of the fruits of their respective districts, and to communicate in regard to them whatever may aid in promoting the objects of the Society and the science of American Pomology. Each contributor is requested to prepare a complete list of his collection, and to present the same with his fruits, that the report of all the varieties entered may be submitted to the meeting as early as practicable.

The Massachusetts Society for promoting Agriculture have kindly appropriated five hundred dollars, and liberal sums have been promised by other generous patrons. See premium list.

An increased interest will be given to the occasion by the Grand Exhibition of Plants and Flowers by the Massachusetts Horticultural Society, which will occur at the same time.

Packages of Fruits, with the name of the contributor, may be addressed as follows: "*American Pomological Society*," care of E. W. Buswell, Massachusetts Horticultural Society, Boston.

All persons desirous of becoming members can remit the fee to Thomas P. James, Esq., Treasurer, Cambridge, Mass. Life Membership, twenty dollars; Biennial, four dollars.

MARSHALL P. WILDER,
Boston, Mass.

F. R. ELLIOTT, Secretary,
Cleveland, Ohio.

SPRING EXHIBITION OF THE BAY DISTRICT HORTICULTURAL SOCIETY.—The first annual Spring Exhibition of our Horticultural Society opened on Wednesday, May 8th, at Horticultural Hall.

At 3 o'clock P.M., punctually, Dr. A. Kellogg, the worthy President of the

Society, introduced the orator of the day, Dr. E. S. Carr, Professor of Agriculture of the State University, who delivered the opening address. The Professor, in his usual style, gave a very interesting sketch of the history of Horticulture; reviewing its progress from the earliest period of ancient times to the present day; and he succeeded well in his efforts to enlighten his hearers, and to encourage their praiseworthy endeavors to advance the progress of Horticulture.

Professor Carr spoke from his manuscript for fifty minutes. His address had no immediate reference to the Exhibition; it did not criticise the productions displayed in the hall; but it reviewed the history of Horticulture from the birth of civilization in India to the present day. The Professor adverted to gardening among the Hindoos, the Assyrians, the Hebrews, the Egyptians, the Greeks, Romans, Chinese, and the Aztecs; and then he spoke of gardening in modern Europe and modern America. He remarked that what France can afford to do at Versailles and Fontainebleau, and England at Kew Gardens, we can afford to do in California. Our people were beginning to realize the benefit of public gardens to health and morals. What we need more than anything else, is the general diffusion of a knowledge of the subjects relating to Horticulture, among the whole people. Botany ought to be one of the daily studies in all our common schools. Our city parks should be so planted as to furnish these schools with essential objects of instruction, and every country school-house ought to have its shrubbery and its garden. Crowning and completing this, our State should possess, either connected with its Capitol, or University, or both, a botanic garden and arboretum, in which specimens of every plant adapted to this clime might be found. We had excellent models at Kew Gardens, and the Garden of Plants, at Paris, both of which, besides being of inestimable value to science, are good examples of scientific gardening. Both had grown up from humble beginnings to be the pride of their respective nations. The features of these gardens the Professor now described; and he remarked, that at Kew are to be found more of the refinements of horticultural art than in any place in the whole world. He feared it would be a long time before we have in California such a collection of our noble coniferous trees and shrubs as was exhibited in the arboretum at Kew, not to speak of the Indian, Chinese, Japanese, South American, and Australian Flora, so ably represented under glass and in the open ground. But that we have made some beginning in the right way, there were abundant evidences before them. The Horticultural Society had, he doubted not, a noble and useful career before it. Such exhibitions as the present were of immense value, from the stimulus that they gave to public and private undertakings; and ranked, perhaps, higher than public gardens in usefulness, inasmuch as they diffused so much information through their published proceedings. This had been the case with the Royal Society of England, and in our own country the Massachusetts Horticultural Society had attained a high rank. We should probably never see in America such an arboretum and flower-palace as at Chatsworth, or such a fifty-acre flower-garden as that of Drumlanrigg, the result of private enterprise; but we should see them, he trusted, in our co-operative parlors and gardens, and in the grounds of our State institutions, or we should be found wanting in one of the most

vital and significant marks of a high civilization: and he trusted that the time was not far distant when the possibilities of this coast in Horticulture, Floriculture, and Agriculture, would be realized on the University grounds at Berkeley. Every state in Europe had noble collections of useful and ornamental plants—had them even in their colonies, as the French at Martinique, and the English at Melbourne, in Victoria, and Sydney, in New South Wales. Even Brazil sets us an example worthy of imitation.

The Professor was heartily applauded at the close of his address.

Dr. Kellogg then announced the Exhibition open to the public, and all present availed themselves of the opportunity to examine the various collections.

The hall presented a very gay and festive appearance, and nothing seems to have been neglected to make the Exhibition a perfect success. The decorations were very appropriate and complete; the music all that could be desired. Everyone conceded that the enterprise deserved a fair appreciation from the public, and a financial success.

The plants in general were far superior to those exhibited on former occasions, and this fact alone gave the most favorable indication of progress. The better cultivation, better selections, and a better arrangement of the various groups, did not escape the notice of the visitors.

To give a full description of all the details would take up too much space in these columns, and as most of our readers undoubtedly visited the Exhibition themselves, we shall confine ourselves to the leading features.

In all 138 entries were made, each entry representing a collection. The principal exhibitors were E. L. Reimer, F. Lüdemann & Co., Miller & Sievers, E. Meyer, and R. B. Woodward.

The most meritorious groups may be summed up as follows:

Flowering Plants in Bloom, of which three collections were entered. The collection of Mr. E. Meyer obtained the first prize.

Of *Evergreens indigenous to Australia*, two collections were offered. The collection of Mr. E. L. Reimer was really meritorious, containing over 100 different species, well cultivated; he obtained the first prize.

Of *Coniferous Trees*, two entries were made. Mr. Reimer received the first prize.

Conservatory and Greenhouse Plants were well represented; three collections were entered. The first prize was awarded to Mr. E. Meyer; but we think that the decision of the judges on this point may be criticised, as also in various others. It would have been more satisfactory to the exhibitors and the public, had the report of the judges been accompanied by explanations, assigning reasons for their decision. However, more of this at some other time.

Bedding Plants were shown in two collections, and F. Lüdemann & Co. obtained the first prize.

Hardy Ornamental Foliage Plants were represented in two collections. We noticed in these groups a very remarkable improvement. Many really excellent and valuable specimens were shown. The collection of Mr. Reimer obtained the first prize.

Tender Ornamental Foliage Plants always form one of the most attractive features of floral exhibitions. Three collections were shown, and, as usual, it was a foregone conclusion that Mr. Woodward deserved the first prize, which was awarded to him. The sec-

ond prize was adjudged to Miller & Sievers.

Tropical Plants were fairly represented in the group arranged by Mr. Brown of Woodward's Gardens. He very deservedly obtained the first prize without any competition.

Climbing Plants were well represented by three different exhibitors. The collections were extensive, and made a good showing throughout. In our opinion the various collections were equally meritorious; however, the first prize was adjudged to E. Meyer.

New and Rare Plants were shown in four different collections. We can not uphold the rulings of the judges on this point. The exhibits were all more or less meritorious.

Of *Plants adapted for Hanging Baskets and Rock-work*, the collection of F. Lüdemann & Co. was awarded the first prize, and well deserved it.

The *Exhibit of Ferns* made a grand showing, and formed one of the leading features of the Exhibition. There was only one general collection entered, by Miller & Sievers, numbering over fifty species, all in fine condition. The first prize was awarded to them.

Mr. Woodward entered *Twelve Specimen Ferns*, which represented some excellent varieties, but did not come up to the standard of specimen Ferns; although they deserved the prize for which they competed.

Miller & Sievers exhibited *Five Specimen Ferns*, which were the best plants ever shown here.

Of *Ornamental Grasses*, the same firm had a good collection, for which they received the first prize.

Roses in Bloom are always most desirable features in an exhibition. Three collections were entered, the best of which was shown by Mr. E. L. Reimer. The judges gave him the third prize, declining to give the first or second, for which act we can not assign any sufficient reason. A general opinion prevailed, that Mr. Reimer was entitled to the first prize. His roses were well-grown, in healthy condition, and free from mildew, which has of late affected nearly all the Roses in this neighborhood. His collection comprised forty-three excellent and popular varieties, all in perfect bloom.

For *Cinerarias*, the first prize was awarded to Mr. E. Meyer.

For *Coleus*, F. Lüdemann & Co. obtained the first prize.

The same firm received the first prize for *Fuchsias*.

The first prize for *Double Geraniums*, and also for *Variegated Leaf Geraniums*, was given to Mr. Reimer.

Flowering Begonias were exhibited by Miller & Sievers, and obtained the first prize.

The following additional prizes were awarded:

For *Variegated Leaf Begonias*, first prize to Mr. Woodward.

For *Auriculas and Primulas*, first prize to Miller & Sievers.

For *Pansies*, first prize to F. Lüdemann & Co.

For *Verbenas*, first prize to Miller & Sievers.

For *Pinks*, first prize to E. Meyer.

For *Petunias*, second prize to Miller & Sievers.

For *Camellias* in bloom, second prize to E. Meyer.

For *Best-grown Plants, in ten varieties*, first prize to E. L. Reimer.

For *Plants indigenous to California*, first prize to Miller & Sievers.

For *Rustic Hanging Baskets* — First prize to Miller & Sievers. The same firm obtained the first prizes on *Wire Hanging Baskets*, *Rustic Flower Stand*, *Wire Flower Stand*, and *Round Fern-case*.

The exhibit of *Coniferæ Cones*, by Mr. C. Stephens, was the most complete ever shown here, and was awarded the first prize.

Mr. E. Meyer received the first prize on his beautiful *Square Fern-case.*

The exhibit of *Cut Flowers* was not so general as might have been expected. We understand that some of our florists were deterred from exhibiting on account of pressure of business. This may be so. We know a much better display could have been made. The most meritorious general collection of Cut Flowers was placed on exhibition by Messrs. Lüdemann & Co., who received the first prize.

The *Cut Roses* of Mr. Reimer were really beautiful, and worthy of close examination. He deserved and obtained the first prize.

The *Cut Pansies* of Messrs. Lüdemann & Co. were exquisite, and could not have been better; they were awarded the first prize.

The *Cut Pinks* of Miller & Sievers were excellent, and were rewarded by the first prize.

The judges on Plants, Cut Flowers, and miscellaneous articles, were: Mr. Ed. Wolleb, an amateur and lover of flowers; Mr. Henry A. Sonntag, formerly one of the leading florists of this city; and Mr. Nicholson, a well-known florist and nurseryman of Oakland.

The *Bouquet Show* took place on Monday, May 12th, and was, contrary to our expectations, meagre. We were sorry to see that so little interest was manifested in this particular branch of floral exhibition, when it is a well-known fact that our San Francisco people can well appreciate a good floral ornament in the shape of a bouquet, basket, etc.

The three principal exhibitors were E. Meyer, Miller & Sievers, and E. L. Reimer.

Mr. Meyer received the first prize on his *Round Bouquets* and *Wedding Bouquets.*

Miller & Sievers were awarded the first prizes on their *Basket of Flowers, Funeral Wreath, Cross,* and *Flat Bouquets.*

E. L. Reimer deserved and received the first prize on his gigantic and well-shaped *Pyramid Bouquet.*

The judges on Bouquets and Baskets were Mr. C. Schuman, Mr. C. Stephens, and Mr. A. O. Cook.

Financially, the Exhibition was a complete failure: the Society has sustained a loss of $2,000. This is a very lamentable fact, and not flattering to the taste of the people of San Francisco. We are surprised at the result, and can not understand why the attendance at the Exhibition Hall was not more numerous. Certainly there was nothing wanted to please the visitor. All who were present were delighted, and general satisfaction was expressed.

We shall at some other time have more to say in regard to this neglect of more generous support to an institution so well deserving of the good-will of our people. Something must be done to awaken more interest in Horticulture on this coast, and the sooner a strenuous effort is made by the Society to increase the list of their members to about five hundred, the better it will be for all concerned.

We venture to say, however, that the Exhibition would have yielded more money if circumstances had been more favorable.

The postponement of the opening from May 1st to May 8th created some confusion, and unnecessarily increased the expense of advertising and other preparatory work.

The weather during the time of the Exhibition was very unpleasant and un-

favorable; so much so that many who were anxious to attend were compelled to stay at home with their families. The evenings were very cold and windy, and offered no inducement to promenade.

We hope most sincerely that the Society will be enabled speedily to overcome the effects of their loss, by appealing to the generosity of many hundreds of our wealthy citizens, who should consider it a pleasing duty to extend their support to an institution so well calculated to benefit the community and the State at large.

Cherry-Trees.—These should never be highly manured. Singular as it may seem, better results have been obtained by growing Cherry-trees in grass than by cultivating them as highly as Pears. Experienced fruit-growers in Delaware, who once began a system of manuring and treatment of Cherry-trees, found, after an experience of a few years, that the bark would burst, gum would ooze out, and many portions of the tree show an unhealthy condition. The growers immediately discontinued high feeding, and seeded the land down to grass. The trees recovered their health, and have borne beautifully since the system of grass-culture began. It is the only fruit-tree of all varieties which we can safely recommend to be treated in this way. A Delaware friend says his row of Cherry-trees, growing in grass along the fences, are the picture of health and luxuriance; while in previous years with orchard culture he could never make them successful.—*Independent.*

From the vast establishment of the wealthy, to the tulip-bed of the florist, or the potato-patch of the cottager, there is in gardening a perpetual source of recreation, instruction and practical benefit.

WOODWARD'S GARDENS.

The gardens are now in fine order, and appear to be attracting a large amount of attention from the holiday-keeping portion of the community. The conservatory and green and tropical houses are well deserving the inspection of the scientific botanist, as well as the practical gardener and amateur. *Gloxinias* and *Achimenes* are abundant, in fine condition, and great variety. *Begonias* also are very attractive; we notice a very fine plant of *Begonia odorata*, which invites attention by its handsome appearance and rich perfume. *Gloriosa superba*, *Aphelandra aurantiaca*, and *A. Herefolia*, *Franciscea eximea*, and *Ceropegia elegans* (of which this is the only specimen on this coast), are some of the most interesting plants. There is also a very handsome specimen of *Clerodendron Balfouriana* profusely in bloom; *Phelia mimosa*, or smoke plant, is curious, and there are some fine varieties of *Hibiscus*.

The *Rex* family of *Begonias*, *Caladimus*, *Euphorbia splendens*, *Russelia juncea*, *Alutelan vexiliarium*, and *Agapanthus umbellata*, are well represented. *Stephanotus floribunda* is in full bloom, as also *Cactus spathiosa*. The *Colei* family afford a magnificent contrast in their gorgeous tints. The *Fuchsias* and *Salvias* are also in great variety. *Salvia patens* (blue Salvia) exhibits an exceedingly pure and brilliant tint of that pleasing color. There are also several fine varieties of Orchids in bloom, while the splendid condition and rich assortment of this group is very gratifying, both to the amateur and professional gardener.

The Cinchona Tree is quite extensively cultivated for Peruvian bark, in Bengal. It is a native of South America, and its introduction in California is recommended.—*California Agriculturist.*

FAVORS RECEIVED.

The Overland Monthly.—By favor of John H. Carmany & Co., the June number of this always welcome magazine is at hand. This is an excellent number. The "Comstock Lode," "California Indians," and "Commercial and Monetary Interests of California," particularly interest us.

A Simple Floral Ornament.—A contributor to the *Gardeners' Magazine* says that a lady friend of his gathered a handful of the flowers of Forget-me-not, (*Myosotis palustris*), and, to preserve them as long a period as possible, they were put in a large soup-plate filled with rain-water. The flowers were placed near the window, so as to enjoy the advantages resulting from an abundance of light and air, and the water was replenished when needful. In about three weeks, white thread-like roots were emitted from the portion of the flower-stalks in the water, and they ultimately formed a thick net-work over the plate. The flowers remained quite fresh, except a few of the most advanced when gathered, and, as soon as the roots began to run in the water, the buds began to expand—to take the place of those which faded; and up to the middle of November, the bouquet—if it may be so called—was a dense mass of flowers, and a more beautiful or chaste ornament for the indoor apartment can not be imagined. — *Boston Journal of Chemistry.*

The Walnut crop is quite an item in Los Angeles County, Cal., where more attention has been bestowed upon the propagation of the Walnut than in any other part of the State. Fifty thousand pounds of this year's crop have been sold at ten cents per pound.

WORK FOR THE MONTH.

BY F. A. MILLER.

The spring of 1873 has been unusually unfavorable to all kinds of gardening, both in and out of doors. We have had no late rains, and the soil had become very dry as early as May 15th. This lack of moisture has been attended by heavy and cold winds, which prevailed during the greater part of May, retarding the development of all kinds of vegetation, as well as the maturing of the spring crops in general.

Notwithstanding all these unfavorable circumstances, the grain fields, the vineyards, and the orchards at present promise a fair average crop; which, however, may be a disappointment to many, who, at the earlier part of the season, had every reason to expect a most abundant crop of fruits as well as of cereals. However, things in general might be much worse than they are, and therefore we see no sufficient cause for grumbling. What we consider here unfavorable weather did not deprive us of our usual abundance of Strawberries, Cherries, and other fruits and vegetables, of very fair quality; and this is a strong argument in favor of the immigration to California, which is steadily increasing.

All that California wants to make it the most prosperous land upon the globe, is a thorough system of irrigation where it is practicable. Wherever the waters of our lakes and rivers can be made available for this purpose, it should be done. Where the work is too heavy for individuals, the State and Congress should aid all legitimate and *bona fide* enterprises, which may seek to accomplish the desired object.

Vineyards and orchards should be thoroughly examined. Mildew, if permitted to spread in the vineyard, will

do much damage. An excellent remedy is an application of sulphur, wherever any traces of mildew appear. In the orchard various insects are apt to do harm, and if they can be destroyed before overrunning your trees, you may save yourself much labor and annoyance.

This is an excellent time for the propagation of all kinds of soft-wooded flowering plants, such as Geraniums, Fuchsias, Heliotropes, Pelargoniums, Petunias, Verbenas, Begonias, etc.; also for the propagation of Pinks and Carnations.

All cuttings should be well shaded during bright days. The sand in which you intend to plant your cuttings should be well saturated with water before planting, so that you may not be compelled to water soon afterward. The grand secret, in California, in the treatment of all tender seeds and cuttings, is to water sparingly. If they are placed close under glass, well shaded, and with a moderate bottom heat of fresh manure and tan, sufficient moisture will be condensed continually to make watering unnecessary, until the cuttings are rooted, or the seedlings well advanced.

California Chestnuts.—The Oakland *Transcript* gives an account of a specimen Chestnut taken from a tree growing in the foot-hills of the San Pablo Range. The Petaluma *Argus* states that in the forests in the northern part of this county and in Mendocino, there are a considerable number of Chestnut-trees, some of them being from four to six feet in diameter, and from one hundred to one hundred and fifty feet in height. If the Chestnut is indigenous to this climate, California ought not to import the nut from the East at a high figure.

REPORT ON THE FRUIT MARKET.

BY E. J. HOOPER.

It is all very well to talk of fruits as the gift of nature; as being such exceedingly wholesome diet, and all that sort of thing. Fruits, people say, being provided for man's refreshment and health, can not possibly be injurious. But, we think, these people ought to define what they mean by the benefits to be derived from the use of fruit, what sort of fruit, and in what condition it should be when eaten. If it be the matured and perfect product of a tree or shrub, in which the saccharine element is freely evolved and distributed with plenty of good juicy matter through the pulp, which has itself lost its early tenacity—in other words if it be ripe fruit they mean — we see no objection to a liberal consumption of it. But if they call early, rather solid, and nearly green Apricots or Cherries, early green Apples and Pears, little shriveled tasteless Peaches, Water-melons almost without a particle of sweet juice in them, and Plums as hard as bullets, fit offerings at the shrine of Pomona, and suitable food for either a rustic or a civic population, then we wish, if it were in our power, to condemn these sellers of and dealers in this immature and injurious diet, to eat what they offer and recommend to a credulous and confiding public.

In fact, no kind of fruit should be gathered from the trees until it is either quite ripe—or, in some varieties, till it is in such condition, that it will attain the desirable maturity within a certain time after gathering, becoming, thereby, suitable in its wholesomeness for assimilation in the human system. If dealers are willing to sacrifice the health and well-being of their customers for sordid and "filthy lucre," the buyers them-

selves must be instructed by those best informed and most experienced in the subject, not to risk their own health, as well as that of their families, by buying this unripe and destructive trash, called fruit.

If Strawberries were not among the most beneficial fruits in the world, undoubtedly the very unripe condition in which they are at first brought to market, to collect the plenteous dimes of the wealthy, would be productive of great mischief; but there is such an inherent healthfulness in this berry, even in its immature or half-ripe condition, that the injury to the consumers of it is really very small. [Qy? Ed.] Not so, however, with other fruits. Parents should beware of the trouble and sickness they may inflict on themselves and children by their use in an unripe state.

The public taste for fruit has for ten years past, in this State, increased at a far greater ratio than the supply has increased. The idea is prevalent, and with good reason, that the use of fruit is one of the most certain conducives of health, as well as one of the greatest luxuries. No one who would like to engage judiciously in its culture, need have any fear that the market will be glutted by the time his trees may come into full bearing condition.

In the production of Strawberries, Blackberries, Melons, Grapes, Peaches, and Pears, we beat the whole world; not so much in quality, as in the quantity we produce. The amount that is sold here would appear almost incredible, and what we shall soon be able to send abroad will astonish even ourselves.

There is abundant encouragement to plant every kind of fruit except Gooseberries and Raspberries, which, at present, will warrant only a limited culture; but there are other sorts sufficient to afford a rich supply of fresh fruit for the whole season, until winter intervenes and rests the exhausted energies of Nature.

Cherries first appeared in market about the 12th of April. They came from that early producing region in and around Pleasant Valley, in Yolo County. Along the moderately elevated foot-hills the severe and late frosts in April did but little damage to vegetation and early fruit blossoms. It is in the lower grounds, where the dampness lingers longest, that the most injury ensues to the various crops and unfolding buds.

Strawberries, although rather later than usual this year, have been, and still are, abundant and cheap. The cool weather which has remained with us so long this spring, is conducive to the production of large crops of our favorite berry. Longworth's Prolific is always worthy of its name, but especially so this season. No other kind as yet is able to compete with it in hardiness, productiveness, and flavor, combined. Its irregularity of shape is but of small consideration, and its color, although not so bright as some others, is rich and tempting in appearance. The writer well remembers its origin, and first appearance in Cincinnati, in 1843. Being an hermaphrodite, it was deemed extremely valuable among so many merely staminates and pistillates, and soon rose very high in public favor.

Green Gooseberries showed themselves on the stalls on the 1st of May. What a pity it is that we can not entirely overcome the mildew in the English Gooseberry; although we hope this year to be able to record some success in its prevention by a zealous cultivator of fruits in Napa Valley.

Cherries (10th May) do not make any great display as yet, but before this report is printed, supplies will be very

liberal. This is a profitable fruit to cultivate in this climate, as we have not here the heavy and long rains which sometimes rot it in the East.

California Lemons are not abundant, but the Sicily variety has lately well made up for this. Cargoes of Tahiti Oranges keep arriving, and further shipments from Los Angeles are being continually received.

Chestnuts have disappeared entirely for the season.

The initial consignment of any large quantity of Gooseberries to our fruit market arrived about the 12th of May.

Apples and Pears nearly disappeared on the 15th of May.

Currants were seen first in market on the 18th of May.

Apricots were first offered to the public on the 19th of May.

The first California-grown Tomatoes made their appearance on the 16th of May, though in limited quantities. Egg-plants and Okra on the 20th of May.

Cure for Rheumatism. — One of the latest fashions in physic — though we are not aware that it is recognized by the faculty—is the use, by the Belgians, of the *Plectranthus fruticosus* for rheumatism. All that is required, it seems, is to grow the plant in the room inhabited by the sufferer. As the plant is so very commonly grown in cottage windows in England under the name of the Nettle Geranium (being, however, neither a nettle nor a Geranium) it might have been thought that its virtues, if it has any, would long since have been discovered here, and that rheumatism would be non-existent in English cottages enlivened by this plant. We are sceptical on the point, but really have no definite reasons for our unbelief.—*Gardener's Chronicle.*

Editorial Gleanings.

NEGLECTED PLANTS.

There are few plants of greater beauty as decorative specimens, when well cultivated, than is the *Humea elegans*, for this plant, well grown, forms one of the finest ornaments to the flower garden; its rich and unique perfume being also wafted by every breeze that blows. At the same time, if poorly cultivated, it is but a weedy, inferior plant. The *Humea elegans* is, however, easy of culture, so that there is nothing whatever to hinder it being generally cultivated in Victorian gardens. When placed upon terraces, or in groups of three or five at the termination of walks, the *Humea* gives a marked and peculiar character to ornamental grounds, and an aristocratic expression to the whole. Such plants as Liliums, Fuchsias, Hydrangeas, and Gladioli are admirably adapted as associates of the *Humea elegans*. It is a Chinese plant, and is named after Sir A. Hume. It is also a biennial, and therefore it is necessary to cultivate it thoroughly in order to bloom it the first season. In England it is frequently grown ten feet in height, and perfectly bushy, covering some eight feet in diameter at the base, and when well in bloom exactly resembling a fountain in full play, the blossoms being a lovely auburn color, moving with every breath of wind, and at the same time giving off a very agreeable and aromatic odor, at once refreshing and uncommon.

As regards the cultivation of the *Humea elegans*, it is best, in the first place, to secure a little seed, which can be sown at this season of the year in pots or boxes, the soil most suitable being a sandy loam. If a frame or greenhouse is available, so much the better, for the

pots or boxes can be placed therein. When the young plants have come up well, they should be pricked out into separate flower-pots, only one in each; and as they afterward require it, into larger size; or they may be planted out of doors where they are to permanently remain directly they have attained to nice sturdy little plants, when their growth will be very rapid. But do not crowd them too much round with other plants at first, for they require plenty of air and space, forming their roots only slowly. If they are wanted for ornamental vases, they should be gradually potted into larger pots, as they need it, until they are finally placed in the vases, for they do not like moving when once planted out in the open ground. When first planted out, a slight shading may be found necessary, such as a few boughs stuck round them, gradually inuring them to the powerful rays of the sun. If they are thus managed, they will, in some six or eight months after the seed is sown, form handsome plants, and the cultivator who grows them will never regret the time and attention devoted to them.

The sprays of blossoms cut from the plants and placed among cut flowers are great additions, particularly to nicely arranged epergnes for the drawing-room or dining table. The *Humea elegans* has so far been an almost totally neglected plant in our Victorian gardens, and we are convinced that it is chiefly from the want of knowledge of its great beauty that it has not been made a first favorite. We trust, therefore, that some of our energetic amateurs will try this elegant plant, for we are sure that, when once seen well done, it will quickly become rescued from apparent obscurity.—*Melbourne Times.*

We are apt to believe what we wish.

THE LAUGHING PLANT.

Palgrave's work on Central and Eastern Arabia furnishes something new for botanists. A plant is described under the name of Laughing Plant, the seeds of which produce effects very much like laughing gas. It grows solely in Arabia, attaining a height of only about six inches at Kaseem, while at Oman it rises to three or four feet, with wide-spreading branches, being woody and the leaves green. Its flowers, in tufts, are yellow. Two or three black seeds, much like French Beans in size and shape, are produced in a soft woolly kind of capsule. They have a sweetish taste with a slight flavor of opium. The odor from them is rather offensive, producing a sickening sensation. The essential property of this extraordinary plant is in the seed, which, pulverized and administered cautiously, soon begins to operate in a way to create astonishment. The person begins to laugh boisterously; then he dances, sings, and cuts fantastic capers of a ludicrous character. Such extravagance of manner was never witnessed from any other dosing. It is uproariously funny for about an hour. It is a common amusement to charge food with the powder for an unsuspecting individual, for the harmless enjoyment of his capering antics. When the excitement subsides, the exhausted exhibitor falls into a profound slumber. In another hour, on awakening, he is totally unconscious of what has occurred. It is a common expression that there is nothing new under the sun. Surely, to men of science this is something new, which demands the careful investigation of such extraordinary properties of a vegetable growth that exercises such potent influence over the brain. For it is morally certain that this recently discovered Laughing Plant, so extraordinary in its potent influence

on the human brain, is something new to science, demanding the attention of dispensatory makers, as well as those professors of *materia medica* who are supposed to know all that is to be known of plants, from the Cedars of Lebanon to the Hyssop that springeth out of the wall.—*American Artisan.*

REFUSE OF TANNERIES.

Wm. S. Rand, of Lewis County, Ky., writing to the *Country Gentleman*, says:

"I was interested in a large tannery, located in a barren and light, sandy, white soil, destitute of any fertilizing principles. Upon and over this abandoned surface the waste of tan-bark, hair, lime, glue, scraps, and liquor or refuse water, were carried promiscuously. After the first year, seeds and grain of all descriptions voluntarily grew. My father, residing on these premises, who is a practical horticulturist, observed this demonstration of tannery refuse, and put it to practical use over a tract of about three hundred acres, as circumstances required. In a white, tenacious clay and sand soil he used the hair and lime to raise Potatoes, both Irish and Sweet. The returns exceeded all expectation, and a comparatively worthless soil is now a rich, productive potato ground. The hair is slow to decompose, but lightens and invigorates the earth. Rotten tan-bark is destitute of many fertilizing principles, but the experiment teaches that it is sustaining to Clover, as clover-seed will germinate and keep green in tan-bark longer than in any other manure.

"Hide-scraps, scrapings, leather-shavings—all which are animal substances — decompose, by which the necessary gases are generated and imparted to the inquisitive rootlets. Especially when mixed with barn-yard manure or compost heaps, this makes a rich and valuable fertilizer, excelling most of the manufactured stuff now on the market as more productive.

"The liquid waste of tanneries contains more fertilizing principles than all others named, yet it is run off; but wherever it does penetrate and serve the soil, mark the increase.

"The refuse water of the lime-vats, with equal parts of the tan liquor, is not to be excelled as liquid manure. In addition, sprinkle it over vines and Cabbages, and wash the bark of fruit-trees with it—worms and insects will disappear. It is safe on flowers—indeed *there is no waste* of tanneries, if properly applied. My father converted a desert into a charming, useful, and profitable soil—made the wilderness a beautiful home—and the chief agency was the use of the refuse of the tannery.

"Not a vestige of the tannery building remains—the fire-fiend destroyed all—but where it stood, and where the branches leading the liquor flowed, the surface that received the waste of the tannery is rich in producing qualities, and the luxuriant growth of every seed that falls upon this once barren soil tells of the transcendent value of the tannery waste and refuse. It will restore any land to productiveness, and prove a useful and paying investment to apply it.

Blood Globules.—The number of blood globules is greater in mammifers than in birds, in the latter than in fishes. The number is almost always in an inverse ratio to the volume of the globules; the relation between number and volume is not proportional. Birds gain more by the augmentation of the volume of their blood globules than they lose by the diminution in their number.

Sheep in Vineyards.—Sheep seem to have a strong antipathy for or a love of weeds; it matters to the farmer but very little which, so that they destroy almost every pestiferous weed they find growing within their range; leaf, seed-pod, the small limbs of all weeds, large or small, are alike to them, and by them are converted more quickly than by any other practicable process into one of the most fertilizing manures known to farmers. Sheep fed with dry food, in winter, always prefer a leafy hay, full of the leaves of weeds, vines and clover, to one of long straight stalks, as of timothy or red-top, however nutritious the latter may be for larger animals. Farmers would do well to take advantage of this weed-destroying propensity in sheep, to clear their land, cultivated or uncultivated, of noxious weeds. We are not careful enough to extirpate weeds before they go to seed, and particularly in unplowed and unpastured fields. Hence, new seeds are ripened and annually are self-grown broadcast over other portions of our farms; and particularly is this the case with very many vineyard lands. Large rank weeds are often seen peering even above the Grape-vines in many places. Now there is no more effectual way of destroying the weeds, large and small, in these same vineyards, than by turning in droves of sheep immediately after the vintage; and if you have not got them of your own, borrow a flock of your neighbor who has, and turn them in. When they have destroyed every weed and bunch of wild grass, they will feast upon the drying leaves of the vines, and the smaller and weaker shoots, but with not the least injury to the vine as regards grape-producing another year, and will leave a considerable quantity of manure just where you want it.—*S. F. Rural Press.*

Is Poultry-keeping Profitable?—Upon this subject the *Western Rural* makes the following just and sensible remarks, giving some cogent reasons why poultry should be kept upon the farm, and as to the profits arising therefrom: "For several years poultry have been very profitable, eggs and chickens commanding a high price. By a little attention to their breeding and management, poultry may be made very valuable to the farmer in many ways, one of the most important being the excellent manure they make. A comfortable, frost-proof poultry-house should be constructed in such a position that the hens will have access to the orchard, for they are exceedingly useful for destroying the curculio, the apple-worm, and other hurtful insects. Plum-trees in a poultry yard generally yield an abundant crop of fruit, perfectly free from the attacks of the curculio. The best breed of fowls are always the most profitable; but even these should not be kept more than two or three years. Old hens should be got rid of, and young and vigorous pullets put in their places. The floor of the poultry-house should be covered with wood-ashes, dry muck, or old sawdust, for the purpose of absorbing the droppings of the fowls, and preventing an offensive smell. The house should be cleaned out frequently and the manure kept in a shed, or in large casks or boxes, until required for use in spring; its effect on field or garden crops is remarkable."

Tea of Great Value.—The greatest dainty that the palate of a Chinese craves is *fan chow*, the flower of tea. A *Chronicle* man had an opportunity a short time ago to sip the imperial tea bloom, the priceless beverage of Celestial extravagance. Learning that the

enterprising firm of Castle Brothers, 213 and 215 Front Street, had samples of a very rare tea, he visited the counting-room of that firm, was shown the samples, and directed to Tuck Chong & Co., Chinese wholesale merchants, for information. Tuck Chong, an urbane Chinese, received the reporter kindly, listened to his request to be shown the imperial leaf, and brought in the priceless luxury in a small and highly ornamented box of sandal-wood. The slide lid was pulled out, and six alternate layers of perfumed rice paper and silk were carefully lifted.

Beneath all this covering was a gilded, square piece of sandal-wood. This also was lifted and the tea blossom was displayed. Rolled into balls, twisted into tiny, flame-shaped rolls an inch long, twisted very small, tied in little bunches like cigarettes at one end, and whipped into shreds at the other, was the tea flower, packed into loose petals of its own kind to preserve its fragrance. "This," said Tuck Chong, "is a tea that only mandarins of highest rank ever get a chance to drink in China. It is grown on the plantation of a very rich mandarin in the province of Foo Chow, and can only be gotten from him or his agent in Pekin. There was once a law forbidding its export, but even an American can now buy and drink it. It cost $16\frac{1}{2}$ in China. My brother brought back a few pounds on his last visit to China. I have none for sale, but it could not be sold in San Francisco for less than $20 a pound."

Virtues of Borax. — It may not be generally known how very valuable borax is in various purposes of household use. We find it the very best cockroach exterminator yet discovered. One-half pound, costing but fifty cents, has completely cleared a large house formerly swarming with them, so that the appearance of one a month is quite a novelty. The various exterminating powders puffed and advertised have been found not fully effective, tending rather to make the roaches crazy than to kill. There is something peculiar, either in the smell or touch of borax, which is certain death to them. They will flee in terror from it, and never appear again where it once has been placed. It is also valuable for laundry purposes. The washerwomen of Holland and Belgium, so proverbially clean, and who get their linen so beautifully white, use refined borax instead of soda, in the proportion of a large handful of borax powder to ten gallons of water. They save soap nearly one-half. All the large washing establishments adopt the same mode. For laces, cambrics, etc., an extra quantity of powder is used; and for crinolines (requiring to be made stiff) a stronger solution is necessary. Borax, being a neutral salt, does not in the slightest degree injure the texture of linen. Its effect is to soften the hardest water, and therefore it should be kept on the toilet table. As a way of cleaning the hair nothing is better than a solution of borax in water. It leaves the scalp in a most cleanly condition, and the hair is just sufficiently stiffened to retain its place. This stiffness, however, can be readily removed, if objectionable, by washing with water.

Zinc Labels.—In nurseries and horticultural establishments generally it is necessary to attach labels to the different specimens, and when these are exposed to the weather the writing on the label becomes illegible in a few years, and if care is not taken to renew it, the inscription will be lost. These labels are commonly made of wood, and the

inscription put on with a plumbago pencil. Sheet-zinc cut into any convenient form, and attached either by a slender point cut to the label, or by a fine copper wire, is the best material for labels. A special ink for the inscription may be made by taking one part each of acetate of copper and chloride of ammonium, and half a part of lamp-black, and mix these with ten parts of water. Keep it in a glass bottle with a ground-glass stopper. Shake well before using, and write with a coarse steel pen. The writing will resist the action of the weather for years.—*Monthly Report of Department of Agriculture.*

Growing Tomatoes from Cuttings.—A correspondent of the *Western Rural* says: Sometime since, it occurred to me that Tomatoes might be grown from cuttings of the bearing vine, in the fall, and wintered in greenhouses in a bearing condition. Accordingly, I made several cuttings and potted them in four inch pots, when well rooted, and have since continued them in a bearing condition. They are now in fruit. The object in view is to have early bearing plants for spring, by the time they can go out of doors, instead of waiting for seedlings to acquire sufficient age to produce fruit.

The experiment thus far is a success. The plants are strong and thrifty, and more stocky than when grown from seed. They are disposed to branch at the axil of each leaf, and need pruning and cutting back. No plant roots easier from cuttings than the Tomato.

The Osage Orange.—The *Maclura aurantica* has become a familiar shrub in most parts of the United States, from its general use as a hedge-plant; but it is now proposed to utilize the Osage Orange for other purposes. A decoction of the wood is said to yield a beautiful and very permanent yellow dye, and this decoction, carefully evaporated, forms a bright yellow extract called aurantine, which may be used in imparting its color to fabrics. In addition to this coloring matter, the wood of the Osage Orange is rich in tannin. Experiments made in Texas represent that hides are tanned quicker with the wood of this tree than with oak bark. The seeds yield a bland, limpid oil, resembling olive-oil, and which may, in general use, be substituted for it.

Discovery in Horticulture.—On the authority of a translation from a French journal, an exchange announces the discovery, that by watering vegetables and fruit-trees with a solution of the sulphate of iron (copperas), the most astonishing results are obtained. Applied to growing Beans, they gained sixty per cent. on their ordinary size, while the flavor was much improved. Fruit-trees were greatly benefited by watering with this solution, the Pear-tree especially being improved in thriftiness of growth and productiveness. If our gardeners and fruit-growers desire to make experiments in this direction, they can be made very cheaply, as copperas can be purchased at wholesale at about three cents per pound.

We have in the *Gardeners' Chronicle* a remarkable instance of the luminosity of fungi. The spawn of some unknown species of fungus, growing on a trunk of Spruce or Larch, was found to give a perfect blaze of white light along the track where the trunk had been dragged. The light was enough to read the face of a watch, and it continued for three days.

Floral and Vegetable Essences for Perfume.—Nearly all the essences employed in perfumery are of European production; and yet, there are men in obscure places in the United States who have made modest fortunes producing these essences. It will come to pass that we shall pay more attention to such productions, when we learn that there is profit in something else besides vegetables, fruits and grains.

This is the way the manufacture of these essences is distributed in Europe: England produces Lavender and Peppermint largely. At Nismes, attention is given to Rosemary, Thyme and Lavender. Cannes extracts the essence of the Rose, the yellow Acacia, the Jasmine, and Neroli. Sicily furnishes Citron and Orange; Italy, Iris and Bergamot.

—*Rural New Yorker.*

Value of Barn-yard Manure.—The tobacco growers of the Connecticut Valley are beginning to learn the value of barn-yard manure. Instead of paying fifty cents per load, as was formerly the rate, these farmers are now glad to pay ten to twelve dollars per cord. In consequence of the demand, large quantities of stable-manure are shipped thither from the States surrounding Connecticut. If every farmer knew the worth of stable-manure, he would see that his own farm would pay him higher prices for it than could be afforded by the owner of any other farm. "A hint to the wise is sufficient."

A Simple Deodorizer.—One pound of green copperas, costing seven cents, dissolved in one quart of water, and poured down a water-closet, will effectually concentrate and destroy the foulest smells. On board ships and steamboats, about hotels and other public places, there is nothing so nice to purify the air. Simple green copperas dissolved under the bed, in anything that will hold water, will render a hospital or other place for the sick, free from unpleasant smells. For butchers' stalls, fish-markets, slaughter-houses, sinks, and wherever there are offensive putrid gasses, dissolve copperas and sprinkle it about, and in a few days the smell will pass away.—*Rural Carolinian.*

From an exhaustive annual trade review, printed in the San Francisco *Commercial Herald*, of January 17th, it appears that the Wheat-crop of California in 1872 was 25,000,000 bushels; that the Wheat and Flour exports were 7,000,000 centals; that the gold and silver yield of States and Territories was $80,000,000; that the coinage at the Branch Mint at San Francisco was $16,380,000; that the foreign import values at the port were $40,000,000, and the export value by sea $24,000,000; that the Wool clip was 25,000,000 lbs, and that the Wine product was 4,000,000 gallons.

Make your Trees Branch Low.—Train your Pear-trees for garden or field use that they will branch at a distance of one or two feet from the ground. The advantages are easily enumerated:

1. It is easy to trim.
2. It is easy to gather the fruit.
3. Falling fruit is little injured.
4. All branches being sturdy will not be strained by over-bearing or overweight of fruit.
5. Soil will be kept shady and moist.
6. The trunk will be protected from the scorching sun.
7. The tree will grow more and more beautiful.—*Horticulturist.*

Snuff for Green Fly.—Gardeners who have tried snuff to kill the green fly, or aphis, on house-plants, say that it works well if properly applied. The plants should either be dipped in water or thoroughly wetted in some other manner, then the snuff may be blown upon the plants through a pipe-tube, sulphur-bellows, or in any way to have it reach every portion of the stems and leaves. Of course, the snuff must be very dry, and the following day wash it off with a syringe, or by again dipping the plants.—*Rural New Yorker.*

Roses in England.—An English journal says: Few persons are aware of the magnitude to which the Rose may be grown, or the splendid effect it can be made to produce on a lawn or pleasure-ground; yet with a sufficiently strong stem, and a system of careful and patient training, there can be no reasonable doubt but that the standard Roses can be grown to the size and form of the Weeping Ash, having the branches all produced from the top of a single stem, and flowing downward upon all sides—a very ornamental object for the lawn.

Aphides or Green Fly.—To destroy these pests, boil an ounce of quassia for ten minutes in one quart of water; then add soft or whale-oil soap, about the quantity of a small hen's egg, apply this to the infested plants, and the destruction of the Aphides will be certain. It will not injure the plants.

At a local meeting in New England, one speaker said he considered the value of his farm enhanced $1,000, in consequence of the attractiveness given to it by *five Elm-trees*, planted along the roadside by his grandfather 85 years ago.

The *Food Journal* draws attention to the wasteful system of peeling potatoes before cooking. In most cases they cook better in their "jackets." The skins are much more easily removed after cooking, and where the consumption is considerable the saving would be worth regarding.

It may be profitable to those having turkeys in their yard, to know that pulverized charcoal mixed with meal and potatoes, will fatten those birds in a wonderfully short space of time.—*Southern Agriculturist.*

Ten cubic yards of meadow hay weigh a ton. When hay is taken out of an old stack, eight or nine yards make a ton. Eleven or twelve cubic yards of clover, when dried, weigh a ton.

METEOROLOGICAL RECORD,

For the Month, April 28th to May 28th, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Chronometer and Instrument-maker, Battery Street, opposite the Custom-house.)

BAROMETER.

Mean height at 9 A.M.	30.06 in.
do 12 M.	30.06
do 3 P.M.	30.05
do 6 P.M.	30.04
Greatest height, on April 29th at 9 A.M.	30.26
Least height, on May 16th at 6 P.M.	29.93

THERMOMETER.

(*In the shade and free from reflected heat.*)

Mean height at 9 A.M.	56°
do 12 M.	61°
do 3 P.M.	61°
do 6 P.M.	57°
Greatest height, on the 7th at 12 M.	72°
Least height, on the 14th at 9 A.M.	51°

SELF-REGISTERING THERMOMETER.

Mean height during the night	40°
Greatest height, on night of 8th	44°
Least height, on night of 21st	36°

WINDS.

North and North-west on 10 days; South and South-east on 2 days; South-west on 5 days; West on 14 days.

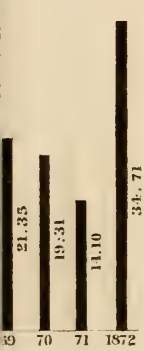
RAIN GUAGE.

April 28th	0.09 inches.
May 14th	0.01 "
Total	0.10 inches.
Total rain of the season up to date	17.94 "

WEATHER.

Clear on 20 days; variable on 8 days; cloudy and foggy on 3 days

onthly Rainfall
rs 1849 72.



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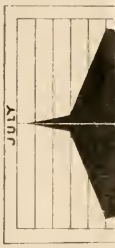

Fig 3-Average M
for 23 Yea

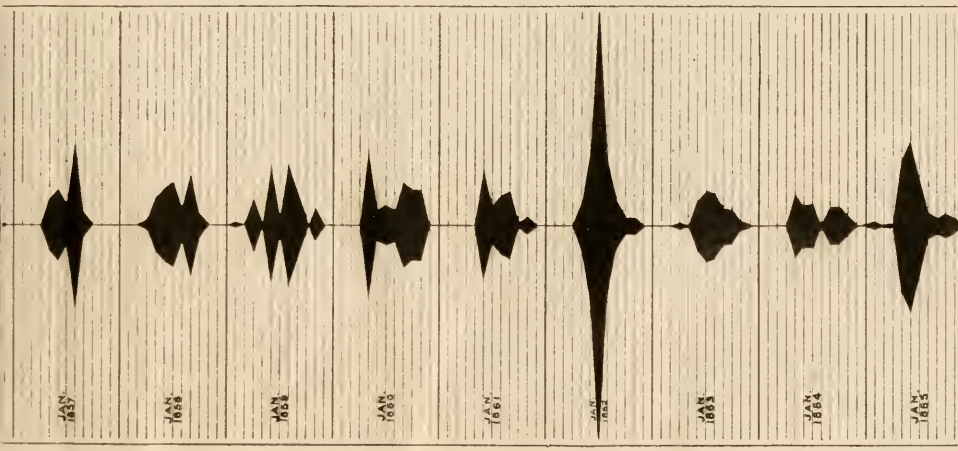

Fig 2-Monthly Rainfall at San Francisco, from 1849-72.

Fig. 1- Yearly Rainfall at San Francisco for 23 Years fro

THE

California Horticulturist

AND FLORAL MAGAZINE.

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CULTURE OF HOUSE-PLANTS.

BY F. A. MILLER.

[Continued from page 17, January number.]

In my last, I commenced the enumeration of a list of plants calculated to do well in the house under ordinary treatment. I headed the list with the popular Chinese Primrose and the far-famed Cyclamen, and endeavored to show that many of the most desirable plants require moisture in the atmosphere as well as about their roots; that the comparatively dry air of the rooms we inhabit is not favorable to the growth of plants, and that this difficulty may be partly overcome by an occasional sprinkling or syringing of the foliage. If this can not be done in the room on account of the injury to carpets and furniture, let it be done in the porch on a pleasant day; morning is the best time. Give fresh air whenever the weather is pleasant, and during very hot days screen the plants from the direct rays of the sun, which are too powerful through glass, unless it is lightly frosted or painted.

There are many other points which should be carefully observed in the cultivation of house-plants, such as proper drainage, judicious watering, and the application of some fertilizing agent. However, I shall have occasion to speak of these matters as we proceed in the enumeration of my list of plants.

I can highly recommend the various varieties of *Begonia* for cultivation in the house; they have no superior. The foliage of some is most remarkable and brilliant, while others give a profusion of bright and graceful flowers at all seasons. There are a great number of varieties, all of which deserve a place in a collection, and every year new ones are added which generally prove to be an improvement on some of the older ones. Of flowering Begonias, the nine best are:

Begonia nitida, having flowers white and showy. This is an old and well-known variety, nevertheless very desirable and easy to cultivate; it requires a somewhat shady place, and is fond of moisture. It continually throws out young shoots from the roots, which will flower in a few weeks. This plant should not be allowed to run up higher than twelve to eighteen inches, when the shoots should be cut back to make room for the younger branches. To grow a fine specimen plant, it should be shifted into a one-size larger pot every six months. In two or three

years, the plant will have grown to such dimensions that it should be taken from the pot and divided. In doing this, it is well to shake off all the earth and plant the divided portions in four-inch pots in new soil. Almost any kind of light soil, mixed with old manure, will answer the purpose. After dividing the old root, all the old shoots should be cut down, letting the young growth remain. It is also easily propagated by cuttings.

Begonia parrifolia is another very desirable plant for its foliage as well as for its white flowers, which are smaller than those of the former, but are produced in still greater abundance during winter and summer. This variety should be grown to the height of from nine to fifteen inches, and if frequently cut back it will form a dense mass of foliage and flowers. It should be shifted into a pot one size larger at least once every year. It also grows readily from cuttings, although much slower than *nitida*.

Begonia semperflorens is a charming variety, its bright red flowers hanging in graceful masses from every branch, during every season of the year. This also is an old variety, but will always remain popular. Ordinary treatment suffices to develop its neat and elegant habit to perfection.

Begonia hybrida multiflora is very distinct from all the others; its flowers are of a delicate pink color, rather small, but produced in great profusion throughout the year. Its foliage is graceful, and its habits neat and compact. It should have a place in every collection.

Begonia Weltoniensis is the queen of all the flowering Begonias, and of recent introduction. I do not know any plant which combines more good qualities. Its foliage is really exquisite, large and richly shaded; the stems of the stock and branches are of a beautiful reddish color; its habit is compact and pleasing, and the flowers, which it produces in great abundance, are of a very delicate pinkish rose-color. It is a perfect gem, is of easy culture, propagates freely from cuttings, and is satisfied with any light and sandy soil, mixed with one-third old manure. No one should be without it; it was introduced here last year, and young plants may soon be had of our florists at moderate rates.

Begonia odorata is a great improvement on the old varieties, on account of the delightful fragrance of its large and beautiful white flowers. It is of very recent introduction, but plants may now be obtained in some of our floral establishments. Its foliage is large and of a rich dark-green color; its stem is apt to run up too high, and in order to grow it in a bushy and more compact form, it should be pinched in frequently. Every one should have it; its cultivation is not subject to any difficulties.

Begonia Boliviensis is also of recent introduction; it is remarkable for its very large and showy bell-shaped flowers of a rich scarlet color, and very graceful pendent form; it is tuberous-rooted; its habit is to grow well up; its foliage is light green, and contrasts well with other Begonias. It is a grand novelty, and very distinct from all the other varieties. During this spring it has flowered with us in great profusion, and is admired by every one. The plant should be allowed to rest during the winter-season, and be kept in a rather dry condition; it does not require large pots. But very few plants are cultivated here, as it is difficult to import it in good condition. Certainly, it is a most desirable acquisition from Bolivia, its native country.

Begonia Verschaffeltii is one of the very best; it was introduced about three years since, but is not yet cultivated to

a great extent, as it propagates rather slowly. It throws up immense flower-stalks well above its elegant foliage, to the height of two to four feet, producing a brilliant mass of flowers of pinkish color, and remains in bloom for a long time. It is one of the most effective flowering Begonias. An abundance of flower-spikes are produced in succession during spring and summer.

I shall close my list of the most desirable flowering Begonias with the

Begonia smaragdina, which, although an old variety, deserves the attention of every amateur. It blooms with us freely during the winter months, and its flowers, which are produced in the style of those of *B. Verschaffeltii*, are of much more graceful and dwarfish nature, and of a very delicate light pink color. Its foliage is most remarkable, and answers the purpose of an ornamental foliage Begonia; leaves of a light green, marbled with dark green. It is one of the easiest to cultivate, but does not seem to thrive well in the shade. It should be watered sparingly until it is ready to bloom, when water should be applied more liberally.

The collection of Begonias named and described above will give the fullest satisfaction to every one who wishes to cultivate the very best class of house-plants. They should be in every house.

[To be continued.]

KNOTS ON PLUM-TREES.—A correspondent of the American Institute Farmer's Club says that for removing knots from Plum-trees, he takes a paint-brush, dips it in spirits of turpentine, and thoroughly saturates the knot, being careful not to touch the tree except in the diseased parts. The turpentine kills the excrescence; the tree puts on healthy branches below it. He burns all branches of diseased trees removed in pruning.

FRUIT-GROWING—ALDEN PROCESS OF PRESERVATION OF FRUITS.

BY E. J. HOOPER.

The cultivation of all those kinds of hardy fruits that we have already successfully acclimatized in California, and of probably a great many more of tender, semi-tropical, and even tropical habits that may yet be adapted to our highly favored State (some of these latter have already become profitable in the warmer parts of the country), is not only an enterprise of great money value, but also very important and valuable in a social, economical, and hygienic point of view. However cheaply one country may be supplied from others with fruits, whether in their fresh and natural state, or canned, dried, or by the lately discovered Alden process (which seems to prepare them next best to the fresh or canned), it can never become a general consumer of this healthy diet, unless it is raised within its own limits, and immediately at hand. The consumption of fruit has the effect of cheapening, of course, some other articles of food, and in the careful statistics of the Northwestern Dairymen's Convention, we find that "fruit materially affected the consumption of cheese, meat, and bread." Fruit supplies a more agreeable, wholesome, and sanitary substance of food for man than some other articles. The many wild fruits, also, that have in the course of time been reclaimed from their natural condition, or improved, mark greatly advanced steps in human progress and refinement.

The advantages which California possesses over the rest of the Union for the production of such almost numberless varieties, offers the greatest encouragement to fruit-raising. In nearly all the other States the Peach is limited, the Pear has diseases, the Plum has too

many insect pests, the Cherry too often rots and is injured by insects, and Grapes are expensive in their cultivation, and are very limited in their varieties (the native only being hardy out-of-doors). The Apple is their most generally suitable fruit, and even that in many sections is very much defaced by a variety of insect enemies. Their severe winters and springs occasionally are very injurious, and too often also even destructive. But here in California, there is no limit to fruit production, and fortunately so, when the processes of its successful preservation in several ways are taken into consideration. And this affords us an opportunity to describe the new "Alden" process, which seems most opportunely to present itself at the present time as a means for the profitable disposal of our surplus fruits, particularly when they are raised at an inconvenient distance from the markets. This method of drying fruits and vegetables has been lately introduced into California at the village of San Lorenzo, Alameda County. The principle of desiccation is quite rapid, and fermentation is obviated by its being operated at a high temperature; the surrounding atmosphere must be moist. The fruit is placed on shelves or trays of gauze in an apartment whose temperature is not more than 210 deg., nor less than 160 deg. at the bottom, and 110 deg. at the top. The trays are gradually raised twenty or thirty feet in this chamber, and, within about seven hours after they have step by step reached the top, they are ready to be taken out. This reduces them about seventy per cent. in weight, and they are ready for sale.

The dampness maintained in the chimney or chamber produces an excellent effect on the fruit, it being far superior to that which is commonly dried in kilns or in the sun, and it sells more readily. This operation has been most successfully adopted in many places in the East, and is coming into general use there.

The plan of preservation does not cause the fruits to shrink as in the common processes, and when soaked in water, they come out into their original size, taste, and colors. It costs but half a cent per pound for the green fruit, and if this process is adopted here it will afford us as great and even greater advantages than any other fruit district in the world enjoys, when our wonderful resources and means for the production of so many various fruits which are adapted to our soil and climate are considered. The Alden fruit occupies only one-fifth of the weight of the fresh fruit, and can be sent to market at only one-fifth of the cost. It will keep for years, and will enable fruit-farmers at great distances from the markets, to send their fruit thus preserved, at times best suited to their convenience. We shall at any rate, very shortly see what success attends the San Lorenzo establishment, and our fruit-cultivators will doubtless be guided accordingly.

When these arts of preserving fruits, which are now in their infancy, shall become general, and so perfect that our surplus crops can be utilized, the extent to which fruits and vegetables will be consumed will be on a scale surpassing all present conception. The anticipation that the market for abundantly producing kinds like ours will be overstocked, must be met by ascertaining the districts and countries most needing them.

Probably, as in the introduction of most improvements in every science, there will not be wanting parties who will raise the cry of humbug, and utter doleful preachments against patronizing novelties; but in this Alden process we

have an almost certain guarantee (from its success in the East) that with all our superior advantages in California for the purposes required, we are likely to witness something extraordinary in its effects in an economical, as well as pecuniary aspect.

It would seem that in nothing do we more need to learn than in the proper handling and marketing of our fruits. Thousands of bushels of Grapes, Apricots, Pears, Apples, Peaches, and Plums, etc., are annually most wastefully fed to stock, or allowed to rot on the ground. Many more thousands have been shaken from the trees, tumbled into bags, barrels, or wooden boxes, and trotted over rough roads until their market value was reduced to barely the cost of this rough handling, and the owners are now doubtingly considering the question, Will fruit-growing pay? Well, this Alden affair, it is to be hoped, if a paying result is reached and made publicly known, will help to effect a beneficial change in our fruit interests in this State. We shall from time to time report progress with regard to it, and be able, probably, to write something more about it in our August and September numbers.

The Wheat crop of the country for last year is estimated by the Agricultural Bureau at 240,000,000 bushels more than for the preceding year, and the quality is also much better. The department estimates the Indian Corn crop of the United States to be eight per cent. above the average. The yield of Oats is estimated to be not quite two hundred and sixty-five million bushels. Barley is reported as not likely to be less, but poorer than last year, and Rye two per cent. less in quantity than last year, though generally good.

AGAPANTHUS.*

BY F. A. MILLER.

A highly valuable bulbous-rooted flowering plant, which has been cultivated very successfully by most of our florists for a number of years. The treatment of the Agapanthus is very simple; sandy loam mixed with one-fourth to one-third of old manure is an excellent soil for it. Although it is generally treated as a greenhouse plant, I have seen a profusion of flowers produced upon plants in the open air, when partly sheltered from our heavy winds. We may, therefore, consider it a hardy plant in this neighborhood and all similar climates. The principal flowering season is in the summer, yet I have seen Agapanthus here in perfect bloom in December and January. This is easily accomplished: having several plants, one may be allowed to rest (by rest, I mean that no more water should be given than is positively necessary to keep the roots from drying up, and that the plant or root during that time should occupy a cool place in any out-of-the-way corner), while the others may be forced into vigorous vegetation by a liberal supply of moisture and a warm exposure. If plants are cultivated in the open air, they will naturally flower during the early summer, which is our most favorable season.

The variety cultivated here is the *A. umbellatus*, undoubtedly the most desirable. Its flowers are of good size, and are produced in great numbers, upon a stalk from two to three feet high. Its foliage is also very decorative and generally admired.

It is propagated by division of the roots, which operation should be performed immediately after its flowering period.

* Natural Order *Liliaceæ*.

A variety has been produced which is known as *A. multiflorus*. It is said that it yields a greater abundance of flowers, and throws up several flower-stalks during the season.

Another variety, *A. umbellatus* (fol. var.) created quite a sensation within the last few years, in Europe, with its finely variegated foliage.

Neither of these varieties has yet been introduced here, but it is to be hoped that they will soon make their appearance in our floral establishments.

I would strongly recommend the Agapanthus to our flower-loving public; its many good qualities make it a most desirable acquisition.

There is a plant growing very abundantly in our piny woods and in the Pine-forests through the South, known as the "Deer-tongue." It presents a bunch or tuft of light green tongue-shaped leaves, springing immediately from the ground, the leaves measuring from six to eight inches in length and about one inch in breadth. From the centre of this bunch of leaves starts up, as the season advances, a straight stalk, rising to the height of from two to three feet, and terminating in a collection of bright purple flowers. The leaves are very fragrant when bruised, having a strong vanilla odor.

"This little plant—a growth peculiar to the lower States—is now," says the *Mobile Register*, "attracting no little attention as an article for scenting tobacco, and wrappers for fine cigars. Even at this time it is commanding a high price in the market; and as it becomes better known, the demand for it will doubtless be greater. We are confident that the day is not far distant when it will figure as one of our most important products; and since it is climatically secured to the South, and can be grown to perfection upon our poorest Pine-lands, the freak of good fortune which brought it into notice is likely to prove a good freak to us."—*Ex.*

Water Cress.—Any farmer who has a running stream or a pond fed by living water, may at least raise enough Cress for home consumption; and near cities, or where railroad transportation is available, it may be cultivated with profit. It is an aquatic perennial; and where coming up spontaneously, or if sown, the roots once obtaining a foothold, the plant soon covers the surface of the water, and thereafter yields an abundant supply. It often brings from $3 to $5 per bushel, or $1 per peach-basketful.

When the water is shallow, all that is necessary is to drop the seed into the water in the fall, and it will usually grow without further trouble; or in the spring the roots may be planted directly, at the distance of one to two feet from each other. Cress is anti-scorbutic and exceedingly agreeable to the taste, and is truly valuable as one of our best spring salads. It is only the want of knowledge relating to the habits and cultivation of this plant, that prevents its more universal cultivation. Trout streams especially are well adapted to the cultivation of this plant, since the water for raising healthy trout must be pure, and pure water gives a peculiarly agreeable flavor to the plant.

The seed is very fine, over 100,000 being contained to the ounce. The plant is supposed to have been introduced from Europe, but has become naturalized and wild in many portions of the United States. The stem is from six to eighteen inches long, according to the depth of water in which it grows, the leaves being borne along the stems; both the leaves and stems are used for eating.—*Western Rural.*

WEEDS.

We have been favored by Professor D. C. Gilman, President of the University of California, with a copy of a "Lecture on Weeds," by Prof. Wm. H. Brewer, Botanist of the California Geological Survey, and we have found it so interesting that we have deemed it advisable to lay before our readers the following extracts from it:

"Farmers and gardeners usually apply the term, weed, to *any small plant growing where it is not wanted.* Commonly they are troublesome, some by choking out better ones, of which you all know familiar examples; some by having noxious qualities, as *Wild Onion;* some because unsightly, as *Ragweed;* some because of thorns or prickles, as the *Thistle;* some by interfering with tillage or farm operations, as *Hardhack*; some because of burs, as *Burdock;* some because of spoiling the temper, as *Purslane* is claimed to do by our Hartford friends—in short, they are *troublesome* in a variety of ways, and yet only truly troublesome when they are hard to eradicate, or rather, hard to keep down in numbers. I shall show that the actual *eradication* of weeds, although often talked of is very seldom done.

"It is usually their numbers that makes them injurious, and they multiply in a variety of ways. Some by seeds, some by roots, some by shoots, some by runners, some by all these methods, and every combination of them. Those that die after shedding their single crop of seed, mostly increase by seed, but the perennial ones in a variety of ways.

"The troublesome weeds of one locality are not those of another. I am not familiar with the comparative worthlessness or annoyances of Connecticut weeds, so I shall devote myself mostly to general facts.

"All weeds are local in their troublesomeness; those most annoying in one locality are not much of a pest in another region. To be troublesome, they must be peculiarly well fitted for both the soil and climate, and as before said, must have strong powers of multiplying. Some years ago, in a neighboring State, I made observations for several years on the numbers of seeds produced by some of the most common weeds. I found individual plants of the May weed (*Maruta Cotula*) producing 30,000 seeds, while near such luxuriant plants were others so dwarfed that they would ripen less than a dozen, so wide were its powers. When starved, it would ripen its few seeds on a very small plant, but each of these seeds, if it fell on good ground could the next year produce its thousands. The Ox-eye Daisy (*Leucanthemum vulgare*), from 100 to 10,000 from a single root. Canada Thistle (*Cirsium arvense*), from a few up to 10,000; the Pasture Thistle (*C. lanceolatum*), still more; and a roadside Mullein (*Verbascum Thapsus*) produces 600,000 seeds. I might extend this list. I merely give you these to illustrate how enormous are the powers of multiplication of some of these common pests. Then, again, with many of them the seeds have special means of being scattered. Some by the winds, some by animals, to fall everywhere, and to spring up and flourish whenever the right conditions occur.

"It is perhaps from these enormous powers of increase that the belief has so often become popular, that they were a spontaneous production, that is, originating without seeds. I have met intelligent men who believe that the Mullein, Fire-weed (*Erechthites*), and other plants would spring up where no seed had fallen, when the fact is, that these plants are so wonderfully prolific that a few plants can seed a farm. Their seeds fall everywhere, perhaps not one in a thousand ever grow. The Mullein I spoke of (and it was not an unusually large one) with its 600,000 seeds, if they were evenly distributed, and all grew, would produce a plant on every square yard of 126 acres. The fact that weeds are far more prolific than the grains they grow with, gives rise to a class of facts that is often forgotten. Many of you know that Wheat containing Chess becomes more foul each year, unless very great care is taken with the seed. The cause is, that the Chess multiplies so much faster than the Wheat. A field of Wheat, yielding

twenty-fold the seed sown, is very good; thirty-fold is very extraordinary; but a Chess-plant not yielding one hundred fold would be a very poor one. Hence its proportion increases on the Wheat, and as it is also more tenacious of life, a hard winter may kill the Wheat, when the Chess will come on and produce a crop, inducing the belief that Wheat has turned to Chess. In fact, this has been a subject of discussion—I know not how long—and men may still be found who believe in such transmutation. Yet few successful farmers now believe it; with good farmers the idea is exploded.

"With such plants, we must get rid of them by sowing clean seed *always*. Chess may be got out of a farm, as I know by experience, but it takes years of patient and vigilant warfare. And the same may be said of cockle.

"Bear in mind that the soil, climate, and cultivation regulate the troublesomeness of weeds. In one part of New York State, Wild Onions injure the pastures. In another part, where the pastures are just as good, one scarcely ever meets with a specimen. The same is true of the Snapdragon (*Linaria vulgaris*). Many of our worst weeds are importations from Europe, and what illustrates this part of my subject, is the fact that some of them are not troublesome there. It is only when they come here, on a new soil, and with a new climate, that they become so."

Plant Trees.—The question of planting trees is one that is of particular interest to California at the present time. There are but very few trees in most of our rich and fertile valleys, and through negligence or indifference on the part of the inhabitants but few, if any, have been set out even around their residences. Many localities, now considered worthless, could be made productive in a few years by studding the land with trees, and encouraging their growth for a few years by irrigation. After they have secured deep root they would require no further attention except to keep them in order. By planting trees on farms they are increased from one to a hundred fold in value; and in many instances land that is now considered worthless, can, by this means, be reclaimed to agriculture. The expense is warranted by the increased value of land covered by trees. Last spring, for example, the Michigan Southern and Lake Shore Railroad Company planted trees, fifty feet apart, along both sides of their road between White Pigeon and Toledo, 11,000 Chestnuts and 10,000 European Larches of one year's growth being used for the purpose. Great care was used in preparing the holes for the reception of the roots, the top soil being thrown in the bottom. The cost of this work was only eight cents per tree, including everything. A number of the Eastern cities are setting out trees in their streets on the *boulevard* plan, and in all quarters an interest in the tree subject is being manifested. Will Californians awaken to their own interests in this matter?—*Alta*.

Shade for Glass-Houses.—The best permanent shade for plant-houses is linseed oil and sugar of lead, in the proportion of about a teaspoonful of lead to a quart of oil; but the exact trial must be governed by the amount of shade required, which can easily be proved by trying it upon pieces of waste glass. First, wash the glass thoroughly clean, and then, on a dry, clear morning, take the oil mixture, and paint as thinly as possible over the glass with an ordinary paint-brush. By dabbing it gently with a dry brush, it will impart to it the appearance of ground glass. The shade will stand for a season, and can be removed by washing it with strong pearl-ash water.—*New Jersey Mechanic*.

THE RAIN-FALL AT SAN FRANCISCO, AND THE AGRICULTURE OF CALIFORNIA.

A recent paper read before the California Academy of Sciences on "The Probable Periodicity of Rain-fall," was illustrated by diagrams which exhibit so clearly the relative rain-fall at San Francisco that we lay them before our readers, instead of the columns of figures from which they were drawn. They also furnish us a text for a few remarks on the agricultural prospects of this State.

Figure I illustrates the relative total yearly rain-fall for each year. Figure II shows the monthly rain-fall for the same years; and the size of the black areas indicates the relative amount in each year. In this, we see the well-marked short period of comparatively little rain-fall and of clear weather during some part of our winter months, or wet season. Figure III exhibits (on a scale twice that of Fig. II) the average monthly rain-fall for twenty-three years, 1849 to 1872. In this, the short, dry period of our wet season is masked because it does not occur at any regular time. It is readily seen that no law of periodicity of rain-fall can be deduced from these observations; nor has any been deduced even in the elaborate discussion of the rain-fall of the United States by Prof. Charles A. Schott, of the Coast Survey,* nor is there any apparent secular change of the rain-fall. A knowledge of each would be valuable both scientifically and practically.

In the early life of California, her prosperity depended upon the yearly yield of gold; her prospective prosperity depends upon the rain-fall over the surface of the State. Were this as great and uniform as it is on the east of the Rocky Mountains, our future could be predicted, and little interest would be manifested upon the subject. But west of the Rocky Mountains, and especially along the Pacific sea-board, every farmer, mechanic, manufacturer, and capitalist is vitally concerned, and fully appreciates the value of water. It is the life-blood of those sections of the country not blessed with large rain-fall.

Along the northern coast the precipitation of rain is enormous; to the southward it reaches almost nothing. On the coast of Alaska the average amount is 83 inches; at the entrance to the Strait of Fuca, 123 inches; entrance to the Columbia River, 75 inches; and about 36 inches at Cape Mendocino in latitude 40½°. Thence to the southward the rainfall decreases rapidly to latitude 28° or 26°, where we find the "doldrums," with much cloudy weather and little or no rain-fall. South of the "doldrums" the seasons change, and the rains, which are generally very light, commence in June or July and end in December.

Our prosperity as a State depends not only upon the facts concerning the rain-fall as already developed, but upon our capacity to utilize them. We know that without a certain amount of rain-fall, our grain-crops must be failures; with a given number of inches fairly distributed during the season, a crop is assured. Northward of latitude 39°, we know that in a series of years the rain-fall is adequate to give large crops to ordinary industry. South of 39° on the sea-board, but especially east of the coast range of mountains, the crops are very uncertain for want of rain. With the virgin soil of our valleys and a rain-fall of twelve inches at proper intervals, on summer-fallowed land, the average

* Tables and Results of the Precipitation, in Rain and Snow, in the United States," etc. Smithsonian "Contribution to Knowledge," No. 222; May, 1872.

yield of Wheat will exceed thirty bushels to the acre; with seven inches, under similar conditions, the yield will be about fifteen bushels. This is the result of our inquiries and personal examinations of the San Joaquin and Tulare valleys this season. Last year, with a rain-fall of ten and a quarter inches about Visalia, the yield of Wheat was very large; this year, with a rain-fall of seven and a quarter inches, the crops are comparative failures.

We are thus dependent upon the rain-fall for our crops. There is not an average rain-fall throughout our great valleys south of thirty-nine degrees to give an average or certain crop, and millions of rich acres will lie idle under blue skies for want of water. We can not control the rain-fall, but we can control the water, in part, after it is fallen. The river-courses are to-day carrying to the sea millions of cubic feet of water that can be spread over our valley lands, and along the flanks of our vine-soils of the Sierra Nevada. All we need in addition to the rain-fall over the whole land, is the control of a few inches in depth of water, over the lands under cultivation, from the middle of February to the middle of March, to insure great crops of grain, grass, alfalfa, etc., and to invigorate our orchards, vineyards, and forests. To accomplish this, we need a comprehensive system of irrigation, controlling the water from the mountains and distributing it under just but inflexible rules. Such a system will demand the highest engineering skill, money, time, authority, and integrity. It must be done, or this State will remain nearly in *statu quo*.

This season we have seen tens of thousands of acres of grain irrigated since March first, standing well, with a promise of thirty-five to fifty-five bushels of Wheat per acre. On one farm of 3,000 acres the crop was given up as an absolute failure near the end of February, but by energetic efforts irrigation water was got on to it soon after the first of March, and with only one flooding it was saved to yield probably fifty bushels per acre. The irrigation water cost one dollar and a quarter per acre. We could enumerate many other similar though less marked cases.

So far as we can learn, the United States Board of Commissioners of Irrigation for the Sacramento, San Joaquin, and Tulare Valleys have satisfied themselves that the rivers flowing from the Sierra Nevada can be controlled and utilized to spread their vitalizing power over millions of acres of land, that to-day are barren, and for want of sufficient rain-fall must otherwise remain so.

The land of those valleys is peculiarly adapted for irrigation; there is no known equal area on the globe with a more even surface and gentle, regular slopes than the great basin between the Sierra Nevada and the Coast Range. Every inch of water over that basin is worth millions of gold dollars to this coast. It can be made to support millions of people, and that fact carries other marvelous results with it in the development of commerce and the useful arts.

American Steam-Plows.—We do not know of any successful American steam-plow. The English system of stationary engines on each side of the field is, so far, the only practical mode of plowing by steam. American inventors have sought to accomplish steam-plowing by the aid of a traction engine. It remains to be shown that it is either economical or practical.—*N. Y. World.*

SHELLAC.

The uses of Shellac in this country have, within a few years past, increased wonderfully, and the consumption for all purposes is very large. The chief use of this substance is in the manufacture of the various kinds of varnish, for which it is admirably adapted, and is preferred to almost any other material. Large quantities are also used in the manufacture of sealing-wax, of which it forms the chief ingredient. Besides these chief uses, Shellac enters quite largely into all kinds of sizing matter, particularly that used by the hatters for stiffening bodies of hats.

The best specimens of this article are brought from Siam, and the next to this is reckoned that from Assam. That from Bengal is deemed inferior. It is said that the capacity of those regions to keep up the supply far exceeds any possible demand, and this may be more readily understood when it is considered that these localities furnish the supply for all the markets of the world.

Though Shellac is very well known in connection with the uses to which it is put, it is not generally known what it really is. It is a resinous substance, which was once supposed to be deposited by an insect on the twigs and branches of various species of the Fig or Banyan tree in the East Indies. It is, however, rather the product of the tree itself, exuding at the sting of the insect.

These insects resemble somewhat the cochineal insects of Central America, and at certain seasons of the year fly about in immense swarms, puncturing the tender branches of the tree, from which flows a milky juice. This juice hardening forms a crust about the twigs, which are then broken from the tree, and form what is known to commerce as stick-lac. When this stick-lac is broken up and its coloring matter removed by warm water, it assumes the form of a small grain, and hence is called seed-lac. It is sometimes melted into cakes, and is then called lump-lac. But more commonly it is prepared for market by putting the seed-lac into fine linen bags and slowly heating them, and then straining and wringing out the material upon a smooth surface of wood. Purified in this form it is known as Shellac. It is soluble in alcohol, and melts readily at a moderate heat.

The coloring matter of Shellac, which owes its origin to the insect, is readily washed out with warm water. The material thus obtained yields a bright red powder not unlike carmine. This dye is yet used by the natives for coloring crimson, and the crimsons of the ancients are supposed to have been obtained from this source. The dyers of Brussels and Holland, whose red colors have always been remarkable for their durability, use this material. Before the discovery of cochineal this lac coloring-matter was in universal demand, but now that other red dyes have been discovered, its use is considerably diminished.

Arranging Flowers in Beds.—In arranging flowers in beds, the principal things to be avoided are: The placing of rose-colored or red flowers next to scarlet or orange, or orange next to yellow, blue next to violet, or rose next to violet. On the contrary, the following colors harmonize: white will relieve any color (but should not be placed next to yellow), orange with light blue, yellow with violet, dark blue with orange-yellow, white with pink or rose, and lilac with yellow. By observing these rules the amateur may have his flower-borders vie in beauty and arrangement

with those of greater pretensions, and even surpass many of them. Nothing adds more to beautify home than a well arranged flower-bed of rare flowers.—*Southern Agriculturist.*

REMARKS ON THE NUDIBRANCHIATE, OR NAKED-GILLED, MOLLUSKS.

BY R. E. C. STEARNS.

In the true Gasteropodons (Greek—*gaster*, belly, *podes*, feet), or belly-footed mollusks, we find two great Orders: the Branchifera (from the Latin words *branchiæ*, gills, and *fero*, to bear), or Gillbearers; and the Pulmonifera (from the Latin *pulmo*, lung, and *fero*, to bear), or Lungbearers—the latter respiring by pulmonary sacs.

Besides this striking difference in structure, the branchiferous Gasteropods pass through a distinct larval stage, and come from the egg in a very different form from that which they present when mature or in the adult stage.

The pulmoniferous mollusks undergo no such metamorphosis.

The *Branchifera* are divided into two sub-orders according to the position of the gills, and the sub-orders are again divided into groups.

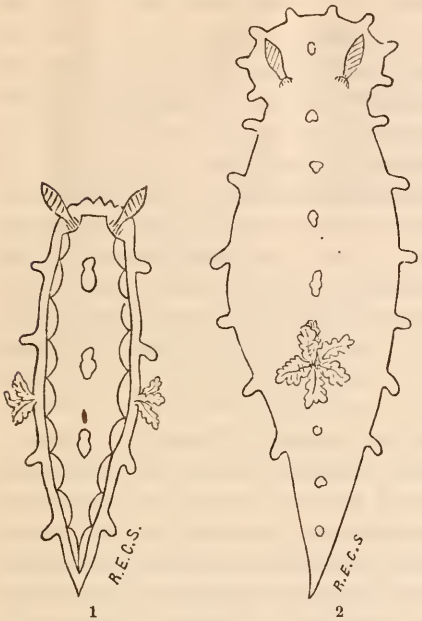
One of these sub-orders is called the *Opisthobranchiata* (from the Greek word *opisthos*, behind, and *branchiæ*, gills), and it is this group to which I refer herein. The second great group of the sub-order *Opisthobranchiata* is the *Nudibranchiata*, or naked-gilled crawlers. The animals, as would be inferred from the name of the group, are destitute of shells, except during the embryonic period, when these delicately constructed creatures are furnished with a small glassy spiral shell, and can swim in the water freely; but as they advance in age the form of the body is modified, and the shell falls off. In the matter of sexual development, they are hermaphrodite; they are also carnivorous in their food, which consists principally of zoöphytes.

The Nudibranchiates are divided into three principal families: the *Æolidæ*, which have the gills along each side of the back; the *Tritonidæ*, which resemble *Æolidæ* somewhat in form and position of the gills, but present other structural differences, which warrant their separation as a family; and the *Doridæ*, generally of broader form and larger size than the two preceding families, as well as of tougher substance, which have the gills placed in a circle on the back and generally in the hinder part of the body. The gills or branchial plumes are of very elegant forms, and frequently present the appearance of Fern-leaves, or similar graceful and feathery shapes; the foot (or belly) is much smaller than the mantle (or back, as seen from above).

The first two families contain species frequently remarkably elaborate in the development of the tentacular processes upon the back and sides, often of most brilliant and varied coloration, while the substance of their bodies is but a trifling degree harder than that of the jelly-fishes; the various tissues of the body being so transparent and delicate that the beating of the heart and the digestive processes are discernible.

These remarkable creatures, many of them of marvelous beauty, are found in all parts of the oceanic waters, from the Arctic to the Equatorial seas; probably thousands of species exist as yet undescribed. As but few of the naked-gilled mollusks are of a substance sufficiently solid to admit of preservation in alcohol, they are seldom seen in collections. They may be detected at lowest

water-mark on the under side of rocks, appearing to the uneducated observer as nothing more than a highly colored bit of mucus or slime, for the reason that being exceedingly timid, when disturbed they draw their bodies into an almost shapeless lump.



1 2

NUDIBRANCHIATE MOLLUSKS.

Figures 1 and 2 represent two species of California Nudibranchiate (or naked-gilled) Mollusks, magnified, being twice as long and twice as wide as the living specimens were from which the drawings were made; both belonging to the group of *Triopa*. The first (Fig. 1) is *Lateribranchœia festiva*, so named because the branchæa or gills are on the side of the body and opposite each other; the body is of a transparent cream color, and the festooned or looped lines on the back are of an opaque chalky whiteness, while the substance of the bodies in both of the forms figured is nearly as soft as jelly.

The largest of the two figures is *Triopa Carpenteri*, named for Dr. P. P. Carpenter, a distinguished naturalist, well known among scientific men for his laborious and thorough investigations in the natural history of the west coast of North America. This animal is exceedingly pretty when alive and examined with a magnifier; the upper part of the club-shaped tentacles near the head, and the edges of the gill-plumes which resemble delicate fern-leaves, as well as the ends of the short projecting processes around the edge of the body, are tipped with a brilliant orange, and the body, which is of a translucent whiteness, is covered with fine pimples (*papillæ*) of orange. Both *L. festiva* and *T. Carpenteri* were found on the under side of large granite bowlders near the light-house at Point Pinos, Monterey. When visiting the sea-shore, it will well repay the trouble to turn over some of the bowlders, for Nature hides many such beautiful forms as are above described, in just such out-of-the-way places.

California Chestnuts.—At a late meeting of the California Academy of Natural Sciences, Dr. Kellogg said he had just returned from under the shadow of the finest evergreens ever grown. He hoped the Secretary would record the fact that there were in California true Chestnut-trees (*Castana chrysophylla*) from one hundred to two hundred feet high, four to six feet in diameter, and with a clean trunk of from fifty to seventy feet. This fact had hitherto been doubted, although he had stated it before the Academy several times. He had on the trip also met with *Rhus aromatica*. A new plant, described by him, was an *Hibiscus* or kind of wild Hollyhock, having a strong fibre similar to the Ramie; the first ever collected in this State.

THE CULTIVATION OF MUSHROOMS.

BY T. V. MC'EVOY.

The cultivation of Mushrooms is a process in gardening perhaps the most singular and curious of any. In the cultivation of other vegetables, we either sow or plant something material — slip, root, or seed, which we can see and feel; but in the cultivation of the Mushroom, we neither sow nor plant anything visible, at least to the naked eye. Yet it is certain that Mushrooms are produced by germs or seeds which naturally vegetate in the fields at certain seasons, and which may be made to vegetate artificially at any season by a certain process, and by using a proper composition. There is no rule for the time of making Mushroom beds, as it may be done with propriety at any season of the year; nor is light necessary for the production, as Mushrooms may be as successfully raised in a cellar as anywhere else, provided it is not too damp. The only precaution necessary, is to have the beds where you can regulate the moisture.

If you can obtain Mushroom-spawn, and make a bed of moderately fermented stable-manure, about three feet deep, spawn it over when strong heat has subsided, and cover it over with light earth, you can obtain Mushrooms sooner than by the way I am about to describe. But as Mushroom-spawn is not always to be obtained, particularly in San Francisco, I would recommend instead the following method: Make a frame of ordinary boards about twenty inches deep, four to six feet wide, and of any convenient length from ten to twenty feet; and if you can not place it in a situation already covered, you must put a roof over it, so as to prevent it from getting too wet when the winter rains come. If there be no natural drainage under the bed, make a floor of ashes, brickbats, chips, or gravel, so as to keep the bed quite dry and free from underdamp. Now, lay a course of horse-droppings six inches thick. These should be fresh from the stable; they must not be broken, and the drier the better. Collect them daily until the whole bed or floor is covered to the above thickness, and see that they do not heat or ferment. When this course is quite dry, and judged to be past a state of fermentation, cover it with two inches of light, dry, sandy earth. Now, lay another course of droppings, and earth them over as before, when past a state of fermentation; then, a third course, which in like manner earth over. This finishes the bed, which will be a very strong and productive one if properly managed afterward. In forming the bed it should be a little rounded, in order that the centre may not be more moist than the sides; if it be made up against a wall in a cellar, shed, or stable, it may have a slope of a few inches from the back to the front, less or more, according to its breadth. As soon as the bed begins to run, water it. In order to find out this, thrust your hand a few inches deep in different parts of the bed, and examine what you bring up. It ought to smell exactly of Mushrooms, and look like little bits of thread. But generally you will be forewarned of the spawn's running by a previous crop of spurious fungi. These fungi are generally what are called pipes or balls — sometimes a kind of Mushroom of a very bad sort, thin, flat, with white or pale yellow gills. They have all, however, a nauseous, sickly smell, and may be readily distinguished from the true Mushroom, which is thick, hemispheric, with brown or reddish gills.

When by this means you have ascertained that the spawn is fully formed,

water the bed two or three times well, in order to set it growing; for without moisture it will remain dormant, and show no symptoms of vegetation. Give just sufficient water to wet the bed through, and afterward keep the bed in a medium state—a little inclined to be dry.

When your bed gets tired of producing, cease watering for a few months. Then, if you examine as directed before, you will find a new net of spawn on the top, the threads being deep-rooted almost to the bottom. By a hearty watering as at first, a plentiful and lasting supply may be obtained.

In gathering Mushrooms, they should be always *cut*, so as not to disturb the young ones which are forming.

New Use for Flax-Seed.—An English paper contains a statement which would seem to open the door for a new use for the product of Flax-seed, and is of value to the western farmer as tending to enhance the value of this seed, as one of the products of the farm.

The new use is in the manufacture of an article called lineolum, deriving the name from *linum* and *œum*. It is said that it will be a rival to caoutchouc, or as is commonly called, India-rubber. The new article is manufactured of linseed oil by oxidizing it until it is solidified into a resinous substance, as we frequently find it when it has been exposed to the atmosphere. It is stated that "in this state it is combined with resinous gums and other ingredients, whereupon it assumes the appearance and most of the properties of India-rubber. Like India-rubber, it can be dissolved into a cement and used in the manufacture of the material for water-proof clothing. It can be used as a varnish for the protection of iron or wood, or for coating ships' bottoms. It is as good as common cement, having the properties similar to marine glue made from India-rubber and shellac. It is easily vulcanized by exposure to heat, and by this means becomes as hard as the hardest wood, and capable of the finest polish. The great variety of uses to which it can be applied in this form will at once suggest themselves to the reader. The manufacture of lineolum has thus far been made to produce floor-cloth, for which it has proved itself well adapted. Combined with ground cork, it is spread on a stout canvas, the back of which is afterward water-proofed with oxidized oil. The fabric is then printed by means of blocks in the ordinary way. The floor-cloth thus produced is pliable, noiseless to walk upon, washes well, preserves its color, and rolls up like an ordinary carpet. It is very durable, and its component parts will not decompose by heat or exposure to the sun or water, as will India-rubber.—*Farmers' Club.*

Viola Perpetual Yellow.—We have grown all the Violas that have been brought before the public and recommended for bedding purposes, and consider this by far the best of the yellows that we have yet seen. When it was supplied to us it was said to bloom all the year round, and it most certainly does so. It was in bloom all winter in the cutting-bed, and all through the summer it has produced in continuous succession the most extraordinary crop of bloom of any bedding Violet, or in fact any other plant, that we have ever used for bedding; and it looks as little like exhausting its blooming power now as ever. The habit is excellent, and the color a clear and most effective yellow. Not a single plant has given way. —*London Gardener.*

AMERICAN POMOLOGICAL SOCIETY.

In our June number we presented the Address of Invitation of the American Pomological Society. We hope that our horticultural friends will for the honor of California make strenuous efforts to participate in the exhibition. We append the Premium List and Programme of Business:

PREMIUM LIST.

Five hundred dollars has been offered by the Massachusetts Society for Promoting Agriculture, and one hundred dollars each is tendered by the following gentlemen, for Premiums and the promotion of the objects of the Society, viz: Hon. Albert Fearing, President of the Hingham Agricultural Society; John Cummings, Esq., President of the Middlesex Agricultural Society; Dr. Nathan Durfee, ex-President Bristol Central Agricultural Society; William Knowlton, Esq., ex-President Worcester Agricultural Society; Charles O. Whitmore, Esq., and Gardner Brewer, Esq., of Boston. The following prizes will therefore be offered, in accordance with the above generous donations:

Apples.—For the largest and best collection of Apples, correctly named, from any State or Society, three specimens of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Apples, correctly named, grown by one individual, three specimens of each variety: 1st premium, the Society's silver medal and fifty dollars; second premium, the Society's bronze medal and twenty-five dollars.

Pears.—For the largest and best collection of Pears, correctly named, from any State or Society, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Pears, correctly named, grown by one individual, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

Grapes.—For the largest and best collection of named Native Grapes, from any State or Society, three bunches of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of named Native Grapes, grown by one individual, three bunches of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of named Grapes, grown west of the Rocky Mountains, two bunches of each variety: premium, the Society's silver medal and fifty dollars.

For the largest and best collection of Native Grapes, correctly named, grown south of the southern line of Virginia, Tennessee, Missouri, etc., two bunches of each variety: premium, the Society's silver medal and fifty dollars.

For the largest and best collection of Grapes grown under glass, two bunches of each variety: premium, the Society's silver medal and fifty dollars.

Peaches.—For the largest and best collection of Peaches, correctly named, from any State or Society, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Peaches, correctly named, grown by one individual, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

Plums.—For the largest and best collection of Plums, correctly named, from any State or Society, three of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

For the largest and best collection of Plums, correctly named, grown by one individual, three specimens of each variety: 1st premium, the Society's silver medal and fifty dollars; 2d premium, the Society's bronze medal and twenty-five dollars.

Seedling Fruits.—For the best collection of seedling Apples, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling Pears, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling hardy Native Grapes, either from native seeds or hybrids, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling Plums, grown by one individual: premium, the Society's silver medal.

For the best collection of seedling Peaches, grown by one individual: premium, the Society's silver medal.

Figs.—For the best collection of fresh Figs, grown in the open air: premium, the Society's silver medal.

For the best exhibition of dried Figs, grown and cured in the United States: premium, the Society's silver medal.

Oranges.—For the best collection of Oranges, grown in the open air: premium, the Society's silver medal.

Lemons.—For the best collection of Lemons, grown in the open air: premium, the Society's silver medal.

Raisins.—For the best exhibition of Raisins, grown and cured in the United States: premium, the Society's silver medal.

Dried Fruits.—For the largest and best collection of Dried Fruits, with full description and expense of process: premium, the Society's silver medal.

Canned Fruits.—For the largest and best collection of Canned Fruits, with full description of process and expense: premium, the Society's silver medal.

Premiums are subject to the general rule of restriction, that where objects are not worthy, prizes will be withheld. No State, Society, nor individual can compete for more than one premium with the same variety or varieties of fruits.

PROGRAMME OF BUSINESS.

Hours of Meeting.—Wednesday, 10 o'clock in the morning, and 3 o'clock in the afternoon; Thursday, 9 o'clock in the morning, and 3 o'clock in the afternoon; Friday, 10 o'clock in the morning, and 3 o'clock in the afternoon.

Rules for Speaking.—Five minutes, and no person to speak more than twice on the same subject without leave.

Wednesday, 10 A.M. Introductory Exercises; Appointment of Committees, namely, on Credentials, on Nomination of Officers, on Record of Fruits exhibited, on Awards of Premiums. 3 P.M., President's Address; Reports of Committee on Credentials and on Nomination of Officers; Election of Officers; Reception of Treasurer's Report; Discussion in regard to place of holding next meeting; also, in regard to what measures the Society will take to participate in the International Exhibition of 1876, in Philadelphia; and in reference to the policy of awarding premiums by this Society.

Thursday, 9 A.M. Reports of Standing Committees; Discussion of the value of fruits enumerated in the Catalogue, as indicated by stars, to be called by the Secretary, in alphabetical order, as follows: Apples, Pears, Grapes, etc., etc. At the close of each division, statements relative to new varieties will be received.

Friday, 10 A.M. Reports of Committees on Fruits exhibited, and on Premiums; Reception of Essays; Completion of Discussion on values of fruits as per Catalogue, and introduction of names of new varieties. 3 P.M., Resolutions, etc., Adjournment.

ESSAYS.

The following persons were appointed at the last meeting, to prepare Essays, as follows, viz: Hon. W. C. Flagg, Illinois, on Diseased Apple-trees, and their Cause; Wm. Saunders, Esq., District of Columbia, on Theory and Practice of Pruning; Thomas Meehan, Esq., Pennsylvania, on Fungi on Fruit, and Fruit Diseases, as cause, result, or concomitants of one another; P. J. Berckmans, Esq., Georgia, on Cause, Remedy, or Preventative of Pear Blight.

In addition to the above, the following named gentlemen have been invited, and are expected to prepare short, condensed practical essays, or papers, as follows: Professor Louis Agassiz, of Harvard University, Massachusetts, on the Geological Age of Fruit-bearing Plants; Dr. John Strentzel, California, on the Cultivation of the Fig in the United States; Dr. E. S. Hull, Illinois,

on Root Pruning, and how to grow the fairest fruit; Mark Miller, Esq., Iowa, on Fruit Growing, and Varieties, in Iowa and other Western States; Geo. W. Campbell, Esq., Ohio, on Grapes, Culture, Varieties, etc.; C. M. Hovey, Esq., Massachusetts, on Pear Culture; P. Barry, Esq., New York, on How to grow and keep Pear-trees in vigor and shape; Robert Manning, Esq., Massachusetts, Is there a permanent decline in the Apple-tree and its crop in New England?; P. T. Quinn, Esq., New Jersey, on the Exhaustion of Fruit-trees, and the remedy therefor; Josiah Hoopes, Esq., Pennsylvania, on the Influence of the Stock on the Graft, or of the Graft on the Stock; A. S. Fuller, Esq., New Jersey, on Culture and Varieties of Small Fruits; Wm. Parry, Esq.; New Jersey, on the Cultivation and Varieties of the Apricot and Plum; W. C. Barry, Esq., New York, on the Keeping and Ripening of the Apple, Pear, and Grape; F. R. Elliott, Ohio, on the Cherry.

Trees and Rain. — The influence of trees upon rain and the general moisture of the atmosphere, which has been much discussed of late, receives a strong illustration from the island of Santa Cruz, West Indies. A friend who spent the months of February, March, and April last upon the island, informs me that when he was there twenty years ago, the island was a garden of freshness, beauty, and fertility; woods covered the hills, trees were everywhere abundant, and rains were profuse and frequent. The memory of its loveliness called him there at the beginning of the present year, when to his astonishment he found nearly one-third of the island, which is about twenty-five miles long, an utter desert. The forests and trees generally had been cut away, rainfall had ceased, and a process of desiccation beginning at one end of the island had advanced gradually and irresistibly upon the land, until for seven miles it is dried and desolate as the sea-shore. Houses and beautiful plantations have been abandoned, and the people watch the advance of desolation, unable to arrest it, but knowing almost to a certainty the time when their own habitations, their gardens and fresh fields, will become a part of the waste. The whole island seems doomed to become a desert. The inhabitants believe, and my friend confirms their opinion, that this sad result is due to the destruction of the trees upon the island some years ago.—*Popular Science Monthly.*

Sowing Tree Seeds.—We have the following facts and data from Robert Douglas, of Waukegan, Ill., relating to the seeds of timber and useful trees. Mr. Douglas sows and handles more trees than any man in America whom we know, and we give the information relating to the planting and germination, in answer to numerous inquiries.

"All the evergreens (Junipers excepted) may be sown dry, or soaked in tepid water for twenty-four hours before sowing. Juniper seeds will not germinate till the second year. As a rule in sowing, the covering of earth should be governed by the seeds; very light seeds require very light covering, and should be hand-weeded the first season. All evergreen seeds should be sown in beds and shaded either with lath frames or brush shade. Larch seeds require the same treatment as evergreen seeds.

"Apple-seeds should be soaked two or three days, Pear-seeds three to six days, after which they should be mixed with twice their bulk of earth and sand, and placed where they will keep cool and moist or frozen, until time for sowing."—*Western Rural.*

Editorial Portfolio.

We would call the attention of our readers to the valuable facts contained in the article on "The Rainfall at San Francisco and the Agriculture of California," published in this number of the Horticulturist. It is from the pen of one of our citizens best informed on the subject, and having given the matter a most thorough investigation, from a scientific as well as practical standpoint, it carries great weight with it. The vast importance of irrigation to California, and the adaptability of some sections of our rich territory to a highly remunerative system of cultivation from the position of our water-courses, should receive prompt attention at the hands of our people. The opinions expressed in the article are so fully in accord with our own views that we refrain from further comments, only hoping that some feasible plan will be speedily adopted.

We shall look for some discoveries in the domain of Botany through Dr. Kellegg's recent climb among the Yosemites—new and old—with the indefatigable geologist of that region, John Muir. It is the Doctor's first season in that locality. They were accompanied by Mrs. Prof. Carr, and Wm. Keith, the artist. In recent numbers of the *Overland Monthly*, Mr. Muir has given very graphic descriptions of that grand section of our State, and in the future issues of the Horticulturist we purpose to make extracts from these articles, of floral forms found in that locality.

In our next issue, we shall present a colored plate of "The Golden Morning-Glory (*Aniseia aurea*, Kellogg), a new flower, found by Prof. Geo. Davidson, of the Coast Survey, on his recent scientific trip to Lower California, and described by Dr. Kellogg.

Our Academy of Sciences is entering upon a new era of usefulness. It is gaining in strength every day. We are glad of it, and we thank such men as Prof. Davidson, its President, and Prof. Stearns, for the *working* interest they take in its affairs.

We acknowledge the receipt of the *Overland Monthly* for August. The following bit of word-painting we find in the article entitled, "The Great Tuolumne Cañon:"

"This little cañon is a botanical garden, with dwarf arctic-willows not two inches high at one end, bush *compositæ* and wandy half-tropical grasses at the other; the two ends only half a day apart, yet among its miniature bogs, prairies, and heathy moorlands, the botanist may find representatives of as many climates as he would in traveling from Greenland to Florida."

This magazine improves with every issue. It is a most readable periodical. J. H. Carmany & Co., Publishers.

Woodward's Garden.—The energetic and public-spirited proprietor of this pleasure resort never wearies of adding novelties, the latest being a marine aquarium—one of the most artistic and instructive additions yet made. This alone is worth a day's inspection, and certainly adds vastly to the other numerous attractions of the place.

WORK FOR THE MONTH.

BY F. A. MILLER.

The work of irrigation is now occupying a great deal of time, wherever a necessity exists for it. But very few horticulturists in the most favorable localities can do without irrigation, and it is evident that a reasonable and judicious application of water is very beneficial in most cases. Old and well-established orchards and vineyards may yield fruits that present all the good qualities which are characteristic of, and which we expect of them, without irrigation, as their roots have penetrated the soil to a depth where some moisture is always found; nevertheless I am of opinion that the application of water once or twice during the summer season will, by invigorating the trees and vines, improve the flavor, color, and size of the fruit. I have observed trees and vines, which, owing to a want of moisture, have ceased to develop new growth, and have hastened the ripening of fruit; such fruit, however, can not be healthy, nor can it satisfy any reasonable expectations. I would, therefore, insist upon irrigation wherever the necessary facilities are available. In many localities, particularly along the foothills of the Sierra and in the more northern portions of the coast, where fruits of all kinds ripen later, irrigation is more necessary, and should be attended to during the month of July, without fail. Besides supplying the required moisture, irrigation also is a good fertilizer. But the process of irrigation does not cease with the application of water. Within a day or two after irrigating, the ground should be worked with a hoe, to prevent the soil from baking and forming a hard crust, which is injurious in all cases. If you have any straw, litter, or branches close at hand, it will be well to throw some of them over the newly worked ground, in order to retain the moisture, which is apt to evaporate now more freely without this precaution.

In young orchards and vineyards irrigation is still more desirable. Frequently I have seen young trees and vines perishing from want of moisture, and if some of them do keep alive during the first or second year after transplanting, their miserable existence shows no vigor of growth. On the other hand, trees which had been irrigated two or three times during the summer months, had made a healthy and vigorous growth, promising to bear a good crop within three or four years from the time of planting. Thus, several years may be gained by irrigating judiciously.

Most of our ornamental evergreen-trees require some water during the first summer after transplanting, unless it has been done very early in the autumn, and with proper care; but even then an occasional watering, say once a month during the early summer, is highly beneficial, and advances the growth of the trees in a remarkable degree.

Pines, Cypress, Cedars—in fact, most of the coniferous trees—may be transplanted with safety in autumn, and will live without irrigation if the ground has been well prepared, and if they have been mulched; but an occasional watering helps these also mightily in making new growth. After the first year they will do without irrigation.

Although I have seen a few of the Australian Acacias grown up to large and fine trees without irrigation, I would treat them to an occasional watering once or twice during the summer; for I have seen five and six year old trees perishing for the want of moisture.

The Australian Gum-tree seems to be

able to withstand our dry summers without irrigation. During the first summer after transplanting, they should be mulched, and if two or three good waterings can be given them, it will be a great help. In all cases, trees which have been transplanted early in autumn will do best, having an opportunity to establish themselves fairly during the rainy season.

When water can be had, I would advise thoroughly irrigating all ornamental trees which have been transplanted during last winter, at least once or twice during the summer, and as the most important time when this should be done, I would name the present month of July.

Nursery stock, such as young seedlings, young grafted stock, cuttings, etc., must be irrigated, unless the soil be naturally moist. I would sooner venture to plant a tree or cutting grown by irrigation, than one that has been grown without it, unless, as said above, the soil in which it is growing, is naturally moist.

There are various ways of irrigating. Underground irrigation is undoubtedly best, wherever it is feasible, and where the necessary expense can be easily met. It is also the most economical way, as it does not require the ground to be worked over after the watering.

The seeds of some of our herbaceous spring and summer flowers now begin to ripen, and it is always a good move to save at least as much seed as you may require yourself. The seeds of Pansies, Candytuft, Larkspur, Primulas, Cinerarias, Sweet Alyssum, and early flowering Stock, may now be gathered and stored away in an airy, cool room, where mice and rats can be kept out.

If you wish to have Cinerarias in bloom, in February, March, and April next, you should sow the seed now.

This is a good time to propagate Pinks by cuttings or layering, which will make fair plants for the coming winter and spring.

While the dust is flying so abundantly during our summer months, an occasional syringing and sprinkling of all plants, in and out of doors, becomes a necessity. Plants can not thrive well if their foliage is coated with dust, which also gives them a very unsightly appearance.

The present month offers a very good opportunity for propagating Azaleas, Rhododendrons, and many other choice shrubs and plants, by cuttings. Some of our wise men say that Azaleas and Rhododendrons can not be grown here successfully from cuttings. My opinion is decidedly at variance with theirs. There is no reason why they should not do as well here as anywhere else, under proper treatment.

If Gladioli are desired in bloom next October and November, they should be planted now. There is yet time to plant Tuberoses for late flowering.

Camellias have mostly made their first growth, and buds are forming. Keep them in an airy place, and water less. If you continue to keep them in a warm place, and water them freely, they are apt to make a second growth, by which you will lose your buds.

If Mignonette is expected to flower well during next autumn and winter, the seed should be sown this or next month. Water the soil thoroughly, cover with good old manure, dig over the whole, and then sow your seed in rows or broadcast; cover up lightly with finely pulverized soil; and if any branches can be spared from some trees or shrubs, the ground may be shaded for a few days, which would help materially.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Even in this specially favorable climate for raising so many varieties of fine fruit, the demands of civilization and for the promotion of health, comfort, and longevity, call for a still greater abundance and a freer use of them, and more especially for some sorts that are as yet comparatively scarce, and are therefore too high-priced for the masses. This observation relates chiefly to the cultivation of the Cherry and the Raspberry, planting of which varieties seems to have been enterprised the latest of all the small fruits. It is the augmented use which has been progressively increasing of late years, which alone secures a continuation of profits to the fruit-grower; and the increase of our population by immigration alone offers good encouragement for people to plant fruit-trees, shrubs and plants of this character in every kind. The new processes of drying, canning, and especially the latest improvement—the Alden method—demand also that this progressive increase in production should be maintained. In the older fruit sections it is found that a year of cheap fruit is invariably followed by an increased demand for it—as a larger number of people acquire the habit of using it. In fact, to families of all ranks once fairly habituated to its use, fruit becomes a necessity. And as the demand, so the prices become permanent and remunerative. How much this habitual and abundant use tends to lessen the evils of intemperance and other vices and extravagances, would form an interesting subject for the social statistician, could the facts be ascertained. Luxury of some sort is the sure concomitant of wealth and leisure; but how much more rational the refined extravagance of the amateur horticulturist—the luxury of indulgence in rare and costly fruits, flowers, and landscape adornments (all kindred employments)—than the exciting pleasures of the wine-cup, the too often distinctive indulgence in narcotism and debauchery, and the fashionable fascinations of modern midnight and late-hour gaieties and dissipation.

The question of profitable fruit-growing, resting as it does, not on the exaggerated profits of isolated localities or varieties, but on its universal consumption and general cultivation in all sections and in all parts, elevations, and depressions of our State, calls for continued trial and careful introduction of every species and variety of fruit which may be capable of filling new uses, or supplying deficiencies of the older sorts. And it is always pertinent to inquire what new species of fruits give promise of the best adaptation to California. It is quite likely that there are many new and valuable dessert, cooking, canning, drying, and fancy fruits that might be easily and beneficially introduced among us, from the older sections of our own country, as well as from the world at large.

The quality and comparative excellence of these new fruits when introduced from abroad, or from our own seedlings, should be ascertained by actual trial by our *Bay District Horticultural Society*, through a committee appointed for the purpose, or by those who have practiced testing fruits and are known to be reliable judges. And all useful or promising fruits should receive from our Horticultural Societies, wherever situated, fair trials and most candid comparisons. This, we have no doubt these Societies will always give them, and we trust when we arrive at

this desirable method, the results therefrom will prove as beneficial to us all, as the movements already made by the Horticultural Societies of the State have been honorable, liberal, and patriotic.

New Figs, of fine quality and size generally, appeared in our markets for the first time this season on the 6th of June, selling at 50c. per pound.

Apples came in at the beginning of June in fair supply, but as usual, at first were mostly green and of poor quality. Unripe Pears also made their appearance about the same time, but by the time our present number appears, both Apples and Pears will be beginning to be mellow and of good quality.

Peaches are coming in rather sparingly at the present time.

The second crop of Strawberries are in, in much finer ripeness and condition than they were ten days since. They are, of course, falling off, and on account of the advent of a pretty large quantity of Raspberries this season (chiefly on account of its continued coolness till within these last few days), there is no pressing demand for them; and the quantity sent in has been, for a month past, ample for all wants. It is calculated that nearly a million and a quarter pounds of Strawberries have been consumed already this year.

Currants, Cherries, and Gooseberries are still in great abundance.

Large consignments of Plums are now coming in.

Two or three cargoes of Tahiti Oranges have come to hand since the first of June.

Chile Strawberries sell for 40 to 50c. per pound, while the common red obtain only 10 to 20c.

In addition to our quotations above, we give the following: Cherries, 15@20 cts. per pound for common, and 25@35 cts. per pound for choice; Raspberries, 20@25c.; Apricots, 8@20c.; Currants, 10@12c.; Gooseberries, 10@12c. for small, and 20@25c. for the English description; Wild Blackberries, 20@25c.; Whortleberries, 25c.; Cherry Plums, 20@25c.; French Prunes, 25@35c.; California Prunes, 12@25c.; Brazil and Filbert Nuts, 25c.; Walnuts, 15c. for Chile, and 20c. for California; Smyrna Figs, 25@35c. per pound; Bananas, 75c. per dozen.

The first Watermelons of the season arrived on the 19th of June.

As to vegetables, Tomatoes are much more plentiful, and therefore much cheaper. Cucumbers, also, keep declining. Egg Plants are increasing fast at 20@25c. per pound. Green Corn sells from 10 to 30c. per dozen, according to quality. Green Onions are quotable at 20@25c. per dozen bunches; Spinach and Rhubarb, 6@8c. per pound; Green Okra, 50c. per pound; Windsor Beans, 5c. per pound; Sugar and Marrowfat Peas, 5@6c. per lb.; Summer Squashes, 4@5c. per pound: cultivated Mushrooms, 50c. per pound; Mint, 10@25c. per bunch; Lentil, 12c. per pound; Chile Peppers, 25@50c. per pound.

Watermelons from Suisun made their appearance on the 25th of June.

The first Nectarines came to hand on the 26th.

Bloodgood Pears, about the same time—a great improvement upon the Madeleine.

Grapes from Solano County—the Zinfindel—on the 27th of June—though inferior for the table.

Strawberries and Raspberries were still in plenty in the latter part of June.

Cultivated Blackberries are now in plentiful supply.

Cantaloupe Melons are becoming also plentiful. Also Peaches in great abundance.

Editorial Gleanings.

Setting out Trees by the Roadside.—The growth of timber to take the place of our rapidly disappearing forests, has led farmers in some sections to set out trees. While it may not be convenient or desirable for all to adopt this plan, every one can set trees by the roadside along his own land. There are many advantages to be derived from them, which can be seen at once to more than pay for the trouble. They beautify the premises, and give a better appearance to the landscape. And if the trees are Maple, which is one of the best, and most easily raised, when grown they will furnish a large yield of maple sugar. If Butternut or Walnut, the nuts are, in a measure, a compensation for the labor of setting them out. There is to be in the future such a demand for wood, that it will not answer to cut down and not replace in some way. In Baden, and in other German States, as well as in some of the departments of France, the law obliges a person to plant a tree in the place of every one cut down. In this way, miles of rows of shade-trees line the roads, making pleasant shaded walks through all the towns and villages. It is a fact not generally known, that trees increase their wood-making capacity in about the ratio, as the square of the number of years indicating their age. The third year they make nine times, the fifth year twenty-five times, and the tenth one hundred times the amount of wood they make the first year. The trees grow more rapidly as they get older, and we can not afford to cut them down until they get their growth.

Some towns in this section have already formed associations for beautifying their sites by planning parks and setting out trees by the roadside. If this is not done, individuals can, with but little trouble, and without expense, procure trees and set out in front of their own lands, and stimulate their neighbors to do the same, so as to make a uniform and continuous line of shade-trees along the roadside.—*New England Homestead.*

Charcoal on Flowers.—A correspondent of the *Revue Horticole*, says that not long ago he made a bargain for a Rose-bush of magnificent growth and full of buds. He waited for them to blow, and expected Roses worthy of such a plant, and of the praises bestowed upon it by the vender, but when it blossomed all his hopes were blasted. The flowers were of a faded hue, and he discovered that he had only a middling multiflora, stale color enough. He, therefore, resolved to sacrifice it to some experiments he had in view. His attention had been directed to the effects of charcoal, as stated in some English publications. He then covered the earth in the pot in which the Rose-bush was, about half an inch deep with pulverized charcoal. Some days afterward, he was astonished to see those which bloomed of as fine a lively rose color as he could wish. He determined to repeat the experiment, and, therefore, when the Rose-bush had done flowering, he took off the charcoal and put fresh earth about the roots, and waited for the next spring, impatiently, to see the result of this experiment. When it bloomed, the Roses were at first pale and discolored, but by applying the charcoal as before, they assumed their rose-red color. He then tried the powdered charcoal in large quantities upon Petunias, and found that both the white and violet colored flowers were equally sensitive to its action. It always gave vigor to the red or violet colors, and the white Petunias

became veined with red or violet tints; the violets became covered with irregular spots of a bluish or almost black tint. Many persons who admired them thought they were choice new varieties from the seed. Yellow flowers appear to be insensible to the influence of charcoal.

Forest Trees.—One of the hard things for our prudent, thrifty people to learn, is the climate value of forest trees. The first thing the old settlers did was to destroy the forests; and their descendants in most places still value trees solely for the wood they will yield. But the more enlightened agriculturists begin to see the fatal mistake made in robbing the hills of their natural covering, the sources of moisture, and attractors of rain. The forests are not only fertilizers, but also the irrigators and reservoirs of a country. In New England, and some parts of the West, farmers are planting trees to restore the fertility of the soil, and prevent the distressing droughts of summer. The history of the Isthmus of Suez has taught us a striking lesson in this respect. A few years ago, the whole region through which M. de Lesseps' famous canal now passes hundreds of richly laden vessels, was a sterile desert —the rain-fall amounting often to less than an inch during the year. There were no trees to be seen far or near. When the energetic Frenchman began his gigantic enterprise, he at once directed thousands of trees to be planted in proper localities; they grew up, thanks to careful irrigation, and now the astonished eye of the traveler beholds blooming prairies and stately forests, where once all was waste and wild desert. But a still greater change has come over the climate; rain now falls frequently and abundantly, the soil produces richly; and if that man is to be counted a benefactor, who can make a blade of grass to grow where none could be raised before, true glory belongs to him who has thus created, as it were, a fertile land, capable of maintaining thousands of industrious and happy citizens.—*Exchange.*

Chiccory.—There is considerable attention given to the production of this root in California. There are now three companies at work, one in Sacramento County, another in Yolo, and a third in San Joaquin. The Sacramento company commenced last spring by planting 70 acres, and will next spring plant 180. The average yield is fifteen tons of green, and three of the roasted root, to the acre. In Yolo, 100 acres are cultivated, and we suppose San Joaquin must have still more, for the Stockton *Independent* estimates the entire crop of the State for this year at 5,000 tons, implying the occupation of not less than 300 acres. The Stockton factory pays $15 per ton for the green roots. Heretofore we imported largely of Chiccory, but two years since we raised a surplus across the bay and shipped considerable to New York. During the current year imports to a limited extent were renewed. The *Independent* says: "The manufacturers express the opinion that the growth and development of this interest and source of wealth will be slow in this State, from the fact that the action of the last Congress in reducing the duty on the imported article from Europe, not only brings the California producer into direct competition with the foreign laborer, but actually places the Pacific coast venture at a positive disadvantage. Chiccory raised in the German States can be laid down in New York for $12 per ton freight,

whereas the freight on the California product laid down in the city, is about one-third more than it is from Germany. It is contended, therefore, that the production and manufacture of Chiccory in California, under existing circumstances, will be limited to the supply of the home demand."—*San Francisco Commercial Herald.*

Sulphur to Kill Vermin.—It is well to know that the powdered sulphur of the druggist is the cheapest, handiest, and best thing yet discovered for killing parasites that infest sitting hens, and find their way to fresh pastures upon the chickens as soon as the latter are hatched. Many times the people complain that when the chickens are a week or two old, they drop or die from the attack of large lice, which literally cover the heads of the birds. If examination is made earlier, it will be found that the insects have taken up their abode upon the chickens' heads while still in the nest, for they forsake the hen, preferring the chickens. It is bad business to have to catch the chickens for treatment after they have left the nest, when the remedy can be applied with so little trouble before hatching begins. A week or so after the hen has been given her clutch of eggs, sprinkle them and the whole of the nest and straw, for a little distance around, with the sulphur, when the hen is off. The night following, attend to the hen herself, by lantern-light. Disturb her just enough to make her bristle her feathers, and then dust sulphur well down to their roots. Go over her whole body thoroughly, excepting the parts in contact with the nest, and lift each wing and scatter a pinch; attend to the head, neck and tail. It will not injure the hen in the least, nor the chickens when they are hatched. We repeat the operation at an interval of a week—though perhaps one application is sufficient—and have never found the slightest trace of vermin upon hens or chicks afterward. Use two small handfuls. It costs little either in money or trouble. Tobacco, snuff, grease, carbolic powder, etc., are not to be compared with sulphur for this particular purpose, and the best dust-bath privileges for the hen are not to be relied upon alone.—*Exchange.*

Compost Heaps.—It is often recommended that when manure is thrown into heaps in the field, it should be covered with a layer of earth, to prevent the escape of the ammonia. The experiments of Dr. Voelcker, at the Royal Agricultural College, at Cirencester, in England, have established the fact that evaporation of ammonia from large heaps of manure goes on but slightly; for the reason that during the decomposition of the manure certain organic acids are formed at the same time the ammonia is evolved, and these immediately unite with the ammonia, forming non-volatile compounds.

There is an active escape of ammonia from the interior of large heaps, where the heat is too great for the chemical change above referred to; but, as it approaches the exterior part of the heap, where the heat is very much less, the ammonia is completely taken up by the organic acids and retained.

There will be but a trifling escape of ammonia, while there is sufficient moisture to retain it, for water absorbs and retains many hundred times its bulk of ammonia gas at ordinary temperature. These non-volatile compounds, from being highly soluble in water, are liable to be washed away at every rain-storm, giving the well-known color to the

drainings of manure heaps.—*Maryland Farmer.*

Mesquite Gum.—M. F. Kalteyer, Treasurer of the Agricultural and Industrial Association of Western Texas, says the Mesquite gum of that region is almost identical with gum-arabic, having been in use there for medicinal and other purposes, especially in the preparation of mucilage, gum-drops, jujube paste, etc. The past year it has become an article of export, some 12,000 pounds having been gathered in Bexar County, and as much more between that and the coast. No gum is gathered west of Bexar, though the drought was favorable to a large crop. This gum is hardly known east of the Brazos. It exudes from the stem and branches of a Mimosa, several species of which grow in Texas, New Mexico, and Arizona. One of these species, *Algarobia glandulosa* (Torrey and Gray, N. A. F., 399), is rarely met with below the mountain region of western Texas. The species most common in Bexar County grows from twenty to forty feet high and eighteen inches thick. From it charcoal is manufactured. It is generally used for picket-poles, being very durable. It is also made into handsome furniture, the grain being very fine. It grows where no other fruit-tree would live. It was favorably noticed in the last annual report of the American Pharmaceutical Association.

How to age Wines and Brandies.—There have been various methods and processes suggested and tried, to give the qualities of age to brandies and wines. One process consists of heating the wines or brandies; and another, of freezing them. One consists of pumping air into the wine; while another pumps it out. Each and all claim perfection for their processes; but those who have tried them thoroughly have condemned all these expedients, as entirely inefficient in producing the benefits promised. The only change effected was a vapid softness, that in no manner resembled the qualities acquired by age. Age develops the flavor through a long, slow, and gradual change of the natural ingredients of the wine; and when this flavor has become fully and agreeably developed, it is called bouquet. There is no artificial process yet invented which can produce this result. It is much to be regretted that many of our wine-makers are so enterprising, because they have been, and still will be, victimized by every sanguine process-inventor who comes along. Thousands of gallons of good wine have thus been spoiled annually, by people who wish their wines to acquire all the qualities that age alone can communicate. But we learn as we grow older; and the good days of these would-be inventors are passed. We are fast coming to the conclusion, that Nature's laboratory, managed by Time, is the most perfect of all; and man can follow closely, but not excel, nor even equal, Nature's silent work.—*Overland Monthly.*

Result of Forest Extermination.—Sardinia and Sicily, once the granaries of Italy, have suffered the penalty of their thoughtlessness in exterminating their forests. Two thousand years ago, those lands were celebrated for their wonderful productiveness, and were said to be the most beautiful in the world. In 1800, Humboldt visited Venezuela, South America, and was informed by the natives living in the valley of Araguay that they had noticed, with great astonishment, that a lake

which lay in the middle of the valley had decreased in volume every year; the cause of this is clearly traced to the felling of a great number of trees which grew on the surrounding mountains. In Hungary, the periodical droughts are universally attributed to the annihilation of the forests. In Cairo, lower Egypt, a great many years ago, rain fell but seldom, only once in three or four years; but since the time of Mohammed Ali, twenty to thirty millions of trees have been planted, and the result is now that the people have from thirty to forty rainy days every year. Surely these few of the many examples are warnings sufficient to put us on our guard.

Coffee-making. — Professor Leibig, the German chemist, says good coffee should be rich in two principles, extract and aroma. When boiled a long time, coffee is rich in extract but deficient in aroma; and when boiled only a short time it is rich in aroma but deficient in extract. In order to obtain both of these properties, Professor Leibig directs to take two-thirds of the ground coffee needed for a meal, put in the water and boil briskly a considerable time, and when the meal is nearly ready, take the coffee from the fire and add the remaining third of ground coffee; stir it well, let it stand a few minutes and serve.

The above directions will not avail much if the coffee is not properly roasted. Roast often, and in small quantities at a time.

According to M. Schadler, only half the quantity of finely ground coffee is needed, in order to produce the same strength of beverage obtained by the ordinary coarse-ground article. If, after the Oriental fashion, the ground coffee is crushed fine in a mortar, only two-fifths of the coarse is needed. Infusion, boiling or filtering through a bag, all have the same result as regards strength, except that by filtering, the aroma of the coffee is better preserved.

Keeping Apples in Plaster.—A writer in the *Rural New Yorker* says: "I have been experimenting the past few years with Apples, and find those packed in plaster keep much longer than any other way I have tried. I use flour barrels, and find them preferable to apple barrels, as they are made tighter. I first cover the bottom of the barrel with plaster, then a layer of Apples, then cover with plaster, and so on till the barrel is full; then put the head in and drive the hoops tight. The plaster being of a cold nature, keeps the fruit at an even temperature, and being fine and dry, packs so close as to keep the Apples air-tight. I had Northern Spy and Swaar almost as fresh in May as when they were picked, and found no decayed ones, and think they would have kept till early Apples where ripe, had we not used them. Shall put up several barrels for next spring and summer use, as I am satisfied that our best varieties, such as Steele's Red Winter, Wagner, and Seek-no-further will keep several months longer than putting them up without any plaster, and will retain their flavor much better besides."

The Guano Islands. — The stock of guano on the islands near Peru is nearly exhausted, and it is estimated that the supply from these sources will fail within four years. A Peruvian journal, published at Lima, says, however, that immense guano beds have been discovered on the mainland, north of Callao,

of a quality superior to that found on the celebrated Chincha Islands. The discovery is the result of an exploration set on foot by Henry Meiggs, the great railroad contractor. Another expedition sent to a place near Pisco, where it was reported there were large deposits, ascertained that no guano was to be found there. The beds north of Callao, where it is said that millions upon millions of this valuable fertilizer lie within easy reach, are the resort of sea-lions in immense numbers.—*Exchange.*

As an offset to this, an exchange gives the following, which we hope to be true:

It is said there are in Russia no less than 50,000,000 acres of land, which will yield 5,000 tons of phosphate of lime to the acre. This contains 20 per cent. of phosphoric acid. The decay of the guano trade is evidently destined to have little effect upon the agriculture of the world, for that manure will be replaced by artificially prepared phosphates.—*Farmer and Gardener.*

Value of Forest Leaves.—The New York *Tribune* says: "Every farmer has within in his reach material, which, if gathered and mingled with the more easily decomposed matter, will furnish for his crops food of the richest description. Of these, the first in importance are forest leaves. These rapidly decay and contain a much larger proportion of the most valuable fertilizers than the wood. While the dry wood contains from one-tenth of a pound to four pounds in the hundred, of potash, dry leaves and young twigs contain from half a pound up to ten pounds of potash in the hundred. Almost exactly the same relative proportion holds good in regard to the phosphoric acid contained in these substances. A hundred pounds of leaves of the mixed forest growths, common in the United States, will yield nearly two pounds of this most indispensable fertilizer.

Filberts.—The *Turf, Field, and Farm* has the following in reference to the cultivation of Filberts: "We were surprised, on visiting one of our Broadway fruit-shops, to find fresh Filberts, imported from Kent, in England, selling with their heavy green husks on for 80 cents per pound, and this has been the average for several years. Why should not our farmers in the Middle and Southern States grow Filberts? The climate which will produce good peaches will also produce Filberts, and all of our light tobacco lands in the basin of the Chesapeake are as well suited to their growth as the soil of Kent, and certainly at the prices now ruling in New York, or at even half these prices, Filberts would prove the most profitable product within the whole range of agriculture. Nor is the adaptation of the soil and climate of our Middle States to the growth of these nuts at all problematical, for they have been grown in a small way on some of the old homesteads in Virginia for more than a hundred years."

Coffee.—For reasons not revealed, there is a growing deterioration in Coffee from every source of production. It is probably the same cause that deteriorates all fruits and other products, viz., confining cultivation to constant selections without variation. In time, like intermarrying cousins, this breeding-in runs out all vegetable stock. The world is being relieved of worn-out Tea-plants, by new growths in new soil—in India. That country is going very extensively into Coffee culture. Already we find in English papers praise of In-

dia Coffee that rivals Mocha, Java, and Jamaica. Coffee in India is becoming an important article of agriculture and export. In the southern counties of California, Coffee can be grown. We understand that this is demonstrated; and we are assured that, once in bearing, the Coffee-trees demand little care and insure large profits. — *Willamette Farmer.*

Substitute for Grafting-Wax. — I had no regular grafting-wax, and yet wanted to graft some Apple-trees. I tried various substitutes, but none of them answered. I thought of covering some cotton with a thin solution of resin and grease, making, in fact, a sort of sticking-plaster of it. This I did, and cut into strips about three-quarters of an inch wide, hanging them on a little pole for use. After cutting and fitting the grafts, I took about ten inches in length of these strips, and bound the graft round and round, using the sticking part next to the tree. It answered splendidly, and the grafts were retained in their position as rigidly as if they grew there. The weather could have no perceptible effect on them, as the grafting-strips stuck fast to the graft, and were perfectly water-tight. The speed with which each graft was made was something worth noticing; and to prevent the cotton sticking to the fingers, nothing more was requisite than to use a little grease on the operator's hands.—*Science of Health.*

Cranberry Culture.—If your peat bed is so situated that it can be drained at will and the surface is sandy, it is the best possible location for Cranberries. When the surface is not sandy, it is usual to cart on sand for the purpose. In this way some of the best Cranberry-beds East have been made. It prevents the vines growing too strong, and keeps down weeds until the vines cover the ground. Upon a pure peat or muck bed, we should not plant. Of course, Cranberries can be raised from seed; but since the Cranberry roots easily from the vine, it is far better and in the end cheaper to buy cuttings with which to make your plantation. Besides, if you can make your plantation from cuttings or roots, and buy of responsible parties, you get the variety you wish to grow. There are now several superior varieties in cultivation.— *Western Rural.*

Plant Trees.—Every citizen who has no trees about his residence, should see to it and plant shade-trees. To estimate the value of groves and shelter-belts in this country would be as difficult as to estimate the value of good health in dollars and cents. No man knows how to appreciate either, until, having enjoyed one or the other, he is deprived of the blessing. The benefit to be derived from a grove in summer is that of shade and protection from flies; while the belt of timber, if properly arranged, will protect the farm from devastation by the storms of winter. They will furnish protection to both man and beast from the chilling winds, and add fifty per cent. to the value of the place.—*California Farmer.*

India-Rubber. — The belt of land around the globe, 500 miles north and 500 miles south of the equator, abounds in trees producing the gum of India-rubber. They can be tapped, it is stated, for twenty successive seasons without injury; and they stand so close that one man can gather the sap of eighty in a day, each tree yielding, on

an average, three tablespoonfuls a day. Forty-three thousand of these trees have been counted in a tract of country a mile long by eight wide. There are in Europe and America more than 150 manufactories of India-rubber articles, employing 500 operatives each, and consuming more than 10,000,000 lbs. of gum a year; and the business is considered to be still in its infancy. But, to whatever extent it may increase, there will still be plenty of rubber to supply the demand.—*Cincinnati Price Current.*

Perfumes.—The English magazine, *All the Year Round*, contains an interesting article upon the manufacture of perfumery, of which we learn that, from the middle ages up to the last century, musk, civet, ambergris, and lavender sum up the best known and most popular perfumes. It is only of comparatively quite late years that the art has made so much progress, and been enriched by so many new ingredients, as we find at present. Nevertheless, and in spite of all additions, the base of European flower-scents is contained in six flowers only, namely, orange-flowers, roses, jasmine, violets, acacia, and tuberoses. Others that have been tried are found of small use, and their special odor is best given by imitative compounds; as heliotrope is imitated by vanilla dashed with almonds, and so on. Add to these six bases, geranium, lavender, rosemary, thyme, and some other aromatic herbs—the last three growing chiefly upon the mountains around Grasse, Nice, and Cannes, which are the principal European centres for the manufacture of perfumes; add also the peel of bitter oranges, of which the fruit goes to make curaçoa; the peel of citrons and bergamots, of which the fruit goes to feed the cows of the district, and is good for the milk; add musk, sandal-wood, ambergris, and gum benjamin; of later days add the leaves of the patchouli, from India; wintergreen, from the United States; various of the andropagons, called by us goats' beard, from Ceylon; ihlang-ihlang, from the Philippine Islands; vanda, an orchid, chiefly from Java, but from other places too in the Indian Archipelago; frangipani, from both the East and West Indies—and we have some of the principal sources whence our scent-bottles are filled, and the delicate soaps and pomades perfumed. But still, wheresoever the material is to be found, the French always remain the greatest producers; and, save as regards a few exceptional perfumes—as attar-gul for one, eau-de-cologne for another—are the best manufacturers of the sweet scents which pervade the world. They do an immense trade in perfumery, and England is their best customer, as Russia is their worst. England took, in 1867, 424,500 kilogrammes of perfumery, valued at 2,546,000 francs; Russia only 13,300 kilogrammes, at the value of 79,800 francs. After England comes Brazil, then Belgium, and then Spanish America; but even Brazil does very little more than half the English trade, and Spanish America less than half. The United States took 57,400 kilogrammes, valued at 344,400 francs; and Austria only 14,600 kilogrammes, paying for them 87,600 francs. Germany, in spite of her own especial industry at Cologne, took 107,800 kilogrammes, spending 646,800 francs upon her purchase; but it would be interesting to know what amount of her own perfume she exports, and which of her numberless Jean Marie Farinas has the largest business connection. England does a good trade in her own lavender water, but by far the greater proportion is ex-

ported; perfumes, like prophets, not having much honor in their own country, all that is foreign being instinctively preferred to what is home-bred, and the question of comparative excellence counting for nothing in the choice.

Killing Weeds in Lawns.—The American *Rural Home* says: "Dock, Canada thistles, horseradish, dandelions, and other strong-rooted varieties, are frequent tenants of the grass-plot. They obstruct the lawn-mower, and, when shaven as close as the grass, spring quickly into prominence again. Perhaps the best way of killing them out is to use a narrow-bladed spade, or a strong knife, which will cut the root deep enough under the surface, when it can be pulled up, and in most cases will not grow again. This, however, is not the case with strong-growing and extremely vital plants, like horse-radish, thistles, and dock. These require more frequent treatment, and perhaps something additional to cutting. If a little salt, or what is much better, kerosene, can be applied to the cut surface of the roots, it generally kills them completely.—*Exchange.*

Protect the Trees.—In setting out young shade trees it is a good idea to place around them such protection as will insure them from injury. This frame, or whatever it may be, should be of such a nature as to do more good than harm, and should be removed as soon as the trees have attained sufficient stability to care for themselves. We notice a large number of trees in town that had been boxed up when young, and, the boxes not being removed when the trees grew up, are now suffering because of the owners' carelessness. The boxing around large trees should be removed, and that around young trees should be so fixed as not to damage the trees.

Product of the Osage Orange.—The wood of the hedge-plant known as the Osage Orange (*Maclura aurantica*), if boiled in water, yields a handsome yellow extract, which is used in Texas as a dye. From it a large percentage of tannin is obtained. The seed of the fruit also yields a valuable oil, abundant, bland, and limpid, resembling olive oil, and burning with a steady flame in an ordinary lard-oil lamp.—*Rural Southland.*

Effect of Oxalic Acid on Seed.—An English scientific journal states that oxalic acid promotes the sprouting of seeds, so that seeds forty years old will germinate by its application. The method is to soak the seeds for one or two days in a solution of oxalic acid, till they commence to sprout, when they are taken out and planted.—*Exchange.*

METEOROLOGICAL RECORD,

For the Month Ending June 30th, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 508 Battery Street (opposite the Custom-house.)

BAROMETER.

Mean height at 9 A.M.		30.11 in.
do	12 M.	30.10
do	3 P.M.	30.09
do	6 P.M.	30.08
Greatest height, on the 27th at 12 M.		30.29
Least height, on the 4th and 30th at 6 P.M.		29.93

THERMOMETER.

(*In the shade and free from reflected heat.*)

Mean height at 9 A.M.		59°
do	12 M.	64°
do	3 P.M.	63°
do	6 P.M.	59°
Greatest height, on the 17th and 23d at 12 M.		70°
Least height, on the 12th and 14th at 9 A.M.		55°

SELF-REGISTERING THERMOMETER.

Mean height during the night	42°
Greatest height, on night of 16th	48°
Least height, on night of 8th	37°

WINDS.

North and north-west on 5 days; south and south-west on 5 days; west on 20 days.

WEATHER.

Clear on 16 days; variable on 13 days; cloudy on 1 day.

RAIN GAUGE.

June 16th	0.08 inches.
Total rain during the season	18.02 "
Average rain-fall during the past 24 seasons	23.80 "

THE GOLDEN MORNING GLORY.

(*Aniseia aurea*—KELLOGG.)

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. AUGUST, 1873. No. 8.

THE GOLDEN MORNING-GLORY.

(*Aniseia Aurea.*)—KELLOGG.

This new native golden Glory was found by Prof. George Davidson, of the United States Coast Survey, on his recent expedition to Lower California (at San Juan del Cabo, twenty-five miles west of Cape San Lucas, latitude 23° 03′) to establish or verify the former site of the ancient observatory of the transit of Venus.

The genus *Aniseia* was formed from plants separated from the old *Ipomœa* and *Calystegia* species of *Convolvulaceæ*, owing to the unequal size of the scales of the green cup of the flower. This is therefore one of the many forms of Morning-glories, so well known to florists. These twiners possess rare beauties and graces, as do all plants that prettily wind and festoon the shrubberies and lattice-work of rural retreats. White and blue, pink and purple are the prevailing hues of this family of flowers, yellow being relatively a rare color. This has also the diversity of a deep dark purple eye and tube, together with unusual size, as seen in the figure. It has the appearance of being a perennial, which in our genial winter clime of the coast, would prove ornamental most of the year round. These points, apart from the generous hand-shaped leaves it holds out to us, must commend it to the attention of florists. Trained with or in proximity to the common native Cloak-cup Morning-glory (*Calystegia sepium*), it would form a charming bower or screen of ceaseless glory, in gold and royal purple, pink and white flowers, exhibiting a rare combination of lasting beauty.

Fewer specific details are required when a good figure enables one to seize at a glance the strong points that discriminate one species from another, even the rarest novelties. Still, some features are not always manifest; besides, a focal review ever aids and brightens, as it perfects, knowledge.

Strictly speaking, it might be said that the stem twines from right to left against the sun, or opposite to the way that orb appears to revolve. The alternate leaves are digitate by fives; the axils are turned topsy-turvy or reversed—that is, the flower-stems are sub-axillary (by reversion); the proper flower-stem, it will be seen, is jointed close below the flower, with two or three very minute bract-like scales at the articulation. The green calyx, or flower-cup, is formed of five or six unequal scales, the first

series of three outer or lower; the three others, successively higher, form the second series, which are larger, except the fifth scale or lobe, which is narrower; and the sixth, or inmost and highest set, is a mere sharp, delicate membrane, scarcely one-fourth the length or size of the others. The outermost lowest rudimentary scale is not included. The upper flower is laid open, and a scale removed, to show the short proper purple tube; the short smooth purple central style, which is two-lobed; the five filaments or threads, bearded below, with long anthers, which in the dry state twist from left to right, or the contrary way to that of the stem (that is, from east to south to west, or just the way the sun does. The seed-vessel is two-celled, with two smooth seeds in each cell. The medical properties will be referred to hereafter.

Hard and Soft Water.—All housewives may not know how materially the effects of hard and soft water differ in the cooking of various vegetables. While one species of vegetables requires hard water, another species becomes sensibly deteriorated by it. For instance, Peas and Beans cooked in hard water, containing lime or gypsum, will not boil tender, because these substances harden vegetable caseine. In soft water they boil tender, and lose a certain raw, rank taste, which they retain in hard water. Many vegetables (as Onions) boil nearly tasteless in soft water, because all the flavor is dissolved. The addition of salt often checks this, as in the case of Onions, causing the vegetables to retain their peculiar flavoring principles, besides much nutritious matter, which might be lost in soft water. Thus it appears that the salt hardens the water to some degree. For extracting the juice of meat, to make a broth or soup, soft water, unsalted and cold at first, is best, for it much more readily penetrates the tissue; but for boiling meats where the juice should be retained, hard water is preferable, and the meat should be put in while it is boiling, so as to seal up the pores at once.—*Zion's Herald.*

DESIRABLE PLANTS OF RECENT INTRODUCTION.

BY F. A. MILLER.

Every year new plants are introduced; some of them prove valuable acquisitions to the garden or the greenhouse, while others are of little merit and should be cast on the rubbish heap. Catalogues which are sent out annually from the large establishments of the East and from Europe, present to the reader long lists of new plants, and the flower-loving community are often misled by brilliant descriptions of plants which in reality have no merit about them. Our florists here in California import annually from the more extensive floral establishments of the East and of Europe, plants, which according to description promise to be meritorious; but too often they meet with disappointment in this respect, receiving plants such as prove to be of no value in our climate. A nurseryman here considers himself fortunate if one out of every five plants he imports is meritorious and desirable for our market. Out of the list of plants imported within the last two years, the following have proved excellent additions to our already extensive collections, and may be safely recommended to every lover of plants and flowers. They are deserving of extensive culture, are easily taken care of, and may be now obtained of our most

prominent nurserymen and florists. I will begin with the *Eranthemum Tuberculatum*, which was first introduced here in the spring of 1872, and flowered during the same summer. Its blossoms are pure white, star-shaped, delicate and pleasing, resembling the well-known Jasmine, one of our most popular greenhouse climbers. It flowers with me continually, summer and winter; its habit is dwarfish, neat and compact. As a house plant I can strongly recommend it, and I am quite sure it will give general satisfaction. It thrives well in almost any soil, and does not require large pots. It is easily propagated by cuttings.

Torenia Asiatica is an exceedingly pretty flowering plant of recent introduction. Its flowers are trumpet shaped and of a very rich velvety blue with a dark shading. With me it has flowered continually, and is admired by every one who sees it. It may be made available for baskets also. In well-protected places, and in a warm exposure, I am inclined to believe it would thrive well in the open air. If grown in pots, the soil should be well drained with charcoal to keep it from becoming sour. It is readily propagated from cuttings, and the young plants will flower freely soon after being rooted.

Streptocarpus Rexii, a native of Australia, was brought here two years since, and of all the house plants it is one of the most remarkable for the profusion of flowers which it produces at all times. It is a gesnerious plant, and its flowers are similar in shape to the Gloxinia, but smaller, of a bluish white color, blotched and striped with lilac. Unlike the Gloxinia, it does not require any rest; plants which I have under cultivation have never stopped growing and producing flowers in great abundance continually. This is one of the most valuable acquisitions, and will prove most popular with florists as well as amateurs.

Begonia Weltoniensis was brought to California last year, and has proved to be the very best of the flowering Begonias ever introduced. Its habit is excellent. Of dwarfish and dense growth, its shining, crimson stems and leaf-stalks, its vividly bright green foliage, and its delicate, waxy pink flowers, make it one of the most attractive of flowering and foliage plants for the house. It flowers freely all the year round, and does not seem to be at all particular about soil or treatment. Keep the plant moderately moist, and you can not fail to be successful with it.

In connection with the above I would mention two more varieties of Begonias of recent introduction: *Begonia Boliviensis*, a tuberous-rooted variety, producing very showy bell-shaped flowers of large size and of a bright red color, very distinct from all others, and quite a striking novelty. *B. odorata*, a plant of excellent habit, handsome foliage, and unusually large spikes of pure white flowers, which are deliciously fragrant; one of the most desirable varieties of flowering Begonias.

Eucharis Amazonica, a bulbous-rooted plant, is a native of South America. Although introduced into European gardens several years since, it may be considered new in this country, as but very few plants have found their way into the floral establishments of California. It promises to become one of the most popular flowering plants under cultivation. The flowers are of a pure waxy white color, and have a most delightful perfume. It may well be said to rival the Camellia for bouquets. Although the flower may neither be so effective nor so pleasing to some as the Camellia, its fragrance fully makes up this deficiency, and when we bear in

mind that the Eucharis produces an abundance of flowers throughout the different seasons of the year, after the plants have become sufficiently strong, its value as a florist's flower can hardly be overestimated. The cultivation of the *Eucharis Amazonica* is not attended with any difficulties, and in any ordinary greenhouse it will thrive well in this climate if kept moist. It should be encouraged by an occasional manure watering, and should be allowed plenty of pot room. A warm and shady position is desirable; it is also important that the soil should be well drained. At this time the stock of plants is small, and but very few specimens are for sale, but I hope that in another year plants may be obtained at a reasonable rate.

There are, of course, many other new plants under cultivation here, and many of them are promising, such as the different varieties of the Clematis, the White Grape-myrtle, Ferns, some most remarkable and beautiful tender ornamental foliage plants, Roses, etc., but as they are too numerous to mention in this article, I will endeavor to speak of them at some other time.

Within the last two years the importation of new and rare plants has largely increased. It is for our flower-loving amateurs to encourage our nurserymen in their efforts to keep pace with the progress which Floriculture has made and is continually making in the Old World and in the more settled Eastern States.

A CORRESPONDENT of the Santa Barbara *Press* writes thus:

"The English Walnut shows itself as a stately, magnificent tree, with clean, grayish bark, and widely-spreading branches. It is, like our own black walnut, a tree of slow growth, and does not begin to bear until seven or eight years of age. In twelve years, with thorough culture and irrigation, it bears from 50 to 75 pounds of nuts; at fifteen years, from 100 to 160 pounds; thirty trees may stand on an acre, and it is customary here to plant Almond trees between the rows of the Walnut, which pay the cost of cultivation and a handsome profit, and are cut down when the Walnuts begin to cover the ground. Nuts sold this year for 12½ cents per pound in Los Angeles. A little arithmatic will tell you that, at 100 pounds to the tree, which, for an orchard fifteen years old, would be, everybody tells me, an under-estimate, the yield would be $375 per acre. The only expense is the cost of cultivating and irrigating; one man could easily care for thirty acres. The nuts fall when ripe and are picked up and sacked as Hickory-nuts with us. It is asserted that the tree is absolutely free from disease or enemies in the State; it needs no pruning, and it may be safely transplanted when three years old, so that the planter would get a crop in seven years. At twenty years trees have borne 250 pounds of nuts. Two English Walnut trees near Santa Barbara, thirty years old, have yielded $50 worth of nuts each per annum for several years past."

TO GET TENDER HORSE-RADISH.—An English gardener says: "It may not be generally known that if leaves or litter be placed on the tops of Horse-radish crowns, two feet or so thick, the plants grow through them in the course of the summer, making small white roots the thickness of one's finger, which are as tender as spring Radishes, and much to be preferred to the tough, stringy stuff usually supplied with our roast beef."

SOWING SEEDS—TRANSPLANTING AND PRICKING OUT.

BY E. J. HOOPER.

There is often complaint made that some kinds of seeds will not vegetate. This is often owing to sowing them too deep, and this evil of deep sowing is not confined to the open garden. One cause why seedsmen get such bad names when seeds will not grow, is owing to this too-deep covering, or placing of seeds in soil so water-logged that, though they swell, the air can not get at them and decomposition is the result. As a general rule, small seeds in pots should seldom be more covered than the thickness of their own size. A little shading, before the seedlings appear, is far better than a thicker covering. In the case of all seeds, and especially those a little old, it is always safest to place them in soil a little moist, and to allow the seeds to absorb moisture from it gradually, instead of watering the soil, except after some time, as in our California springs and summers, and then only rather sparingly. In general cases, and especially in the case of small seeds, the necessary moisture should be given by watering the pots well before sowing, after draining them well, and filling them with the light, sandy, proper soil, and then waiting a day or two for the soil in the pot to become a little dry on the surface before sowing. When covered afterwards, according to the size of the seed, and the mouth of the pot covered with a square of glass, and that shaded from sunshine before the young seedlings appear, hardly a good seed will fail to grow. Even then careless watering overhead will ruin myriads of tender plantlets. It is safer to communicate moisture from below, or flood the surface by pouring the water on a piece of crock held close to the inside of the pot. The whole of the young tender plants may thus be moistened without coming immediately in contact with fluid from the rose of the watering pot, upon their tops. The previous moistening of the pots before sowing is sufficient, in most cases of nicety, to supply the requisite moisture until the young seedlings are past danger. Care should also be taken in sowing tender things in pots, that the soil should be from a quarter of an inch to half an inch distant from the rim. When pots are filled more full than that, a careless rose-watering will often send the seed out of the pot. Frequently when I have found, in my practice in the East, a pot empty of seedlings, I have discovered them in abundance among the ashes in which the pots were plunged. If these little matters were attended to, I feel confident that less blame would be thrown on the shoulders of seedsmen, most of whom make it a point of honor to do their very best for the gratification of their customers.

Another cause why seeds saved by amateurs and others refuse to vegetate, is, that after cleaning they are often left in a place thinly spread out, and exposed to the full force of the sun. The carbon, or starchy matter, becomes so fixed, or indurated, that it will not change into a sweet, sugary substance for the nourishment of the embryo. I have known five kinds of cucumber seeds much injured by exposure to the sun for months, or weeks, on the open shelf of a hot-house. A few days would have done them no harm.

TRANSPLANTING AND PRICKING OUT.

When seeds are sown thickly in a bed out of doors, the young plants are injured when they stand for a long time thick in the seed-beds, and are greatly

improved by being pricked out; such vegetables for instance as Cabbage, etc., as well as some flowers, should be set out two or three inches apart in intermediate beds. This is even more necessary with all tender things, sown in pots, and placed in a higher temperature than the open air. If these are left long in the pot, and especially if at all thick and drawn up, however carefully watered, there is a great likelihood that many of the plants will rot and shank off at the surface of the soil. Mere thinning will not prevent the evil. The least carelessness will sometimes present you on a morning with a surface of slimy, decaying matter, instead of the lively, brisk little seedlings you admired yesterday. I have even had something of this, when, as I thought, I had seen that moisture, air, and a gradual hardening off were sufficiently attended to. I confess I have been sometimes nonplussed to assign the right cause for the disappointment. Pricking off, however, is the great preventive. In the case of small things, like Lobelias, Calceolarias, etc., there is no necessity to prick them individually; for, if moved in little tufts and placed in other suitable soil, in pots, pans, or boxes, the danger of fogging off will be next to thoroughly obviated; and when these little tufts increase in size, then you can prick out the largest first, and thus go over them all ultimately. The chief requirement in these prickings out is to have nice, light soil, suitably heated before using. When watered, use water quite as warm as the temperature of the house and pit, and place the pricked-out plants, for a time at least, in as high a temperature as the seed-pots stood in. Where room is scarce, the pricked-out plants need not occupy much more space than the seed-pots, if thus pricked out in patches half an inch apart; and the greater safety of the seedlings will more than compensate for the labor. Even thinning the seed-pot, and stirring the surface of the soil, and covering it with charcoal dust, though useful processes, have not such a salutary tendency as pricking the plants off, either singly or in little patches.

(To be continued.)

ALFALFA FOR CATTLE.

It has frequently been stated that no pasture could be found better adapted to the sustenance and fattening of cattle than Alfalfa. Its merits are based on several distinct facts, established by experience. First, it is more nutritious than ordinary grass; second, it produces more abundantly; third, it requires but little attention; fourth, it is good either for pasturage when green, or hay when cured. These conclusions were arrived at in a debate held the other day before the Farmers' Club of Napa County. Mr. Cornwell stated that he had twenty acres in Alfalfa, seeded in 1854, and although it had suffered greatly from the depredations of gophers, he regarded it as the most profitable piece of land he owned. It yields three times more feed for cattle than any other pasture. In sowing, he first seeded with grain, and when it was half an inch high sowed the Alfalfa and brushed it in. He gave the grain a start so that it would protect the Alfalfa from frost. He understood that seed raised here is not as tender as that which comes from Chile. The seed is worth from 25 to 30 cents per pound. The second year after sowing his, he cut it down five times. Loose soil is more favorable than heavy.

Mr. Trubody has a neighbor who sowed three or four acres of Alfalfa on

low, close land, and cut from it seven tons to the acre. He thought there was no trouble in producing it, if it was safe beyond the danger of frost. Mr. McIntire had a similar experience to relate. Alfalfa, he said, does well when it is properly cultivated. One of his neighbors has drained and plowed twice before sowing; another has plowed and harrowed well, and both pieces were fine. The former was seeded on the 10th of April. Mr. Lane, near St. Helena, has ten acres from which he cut two crops of hay before August, and then kept stock on it till late in the fall. Thought spring sowing best. Had sowed with Barley, but thought it better to sow Alfalfa alone. This concurrence of testimony ought to be satisfactory as to the superiority of Alfalfa as food for live stock, and secure it more popularity with farmers than it has hitherto possessed.

Lux & Miller, who are among the largest cattle-raisers in the State, for beef, own extensive ranges of land on the San Joaquin and its tributaries. Of late they have seeded large tracts of land with Alfalfa, which flourishes to such an extent as to make one acre of land supply as much food for cattle as was formerly yielded by twenty acres. More than this, the Alfalfa land supplies food for cattle the year round, whereas hitherto the same land furnished grazing only five or six months in the year. The general introduction of Alfalfa into grazing regions will not only improve the quality, but increase the quantity of beef, and besides enable the graziers to dispense with the use of three-fourths of the land now occupied by them.

You may glean knowledge by reading, but you must separate the wheat from the chaff by thinking.

California Flower Season.—A correspondent at San José, California, writing early in January says: "In this balmy western land, we sit to write by open windows, inhaling the perfume of Heliotrope and Mignonette. Daisies sparkle in the sun after the early shower. The fall-sown Italian and lawn grasses have covered the brown soil with tenderest green. Springing wild grasses are clothing the distant hills. Singing birds at this sweet morning hour fill the evergreen Oaks with melody. Down the street, door-yards are bright with Pinks and Pansies. Hundreds of porches are festooned with delicately tinted Roses. Scarlet Geraniums and Fuchsias climb luxuriantly through fences and over walls. Petunias, Verbenas, and the royal Calla Lily are as common as Morning Glories were in the States twenty years ago. In the gardens and on the lawns of the wealthy, we find the golden blossoms of the Acacia, the scarlet berries and graceful foliage of the Pepper-tree, and fine Oleanders in a perfect blaze of roseate bloom. Our busiest spring time of seeding and planting is here. Farmers are busy with plow, harrow, and drill; the orchardist and the vintner with knife and shears."—*Horticulturist.*

Congressional Aid to Forest Tree Culture.—Although we have not yet seen the act, yet definite information is now obtained of the fact that our last U. S. Congress passed an act to the effect that anyone who will plant and keep in growing order for five years, not less than forty acres of trees, shall be entitled to one hundred and sixty acres of the public domain to which the planted quarter or section belongs. It is said that the act only specifies that the trees shall not be more than eighty feet apart.

WEEDS.

[Continued from page 204.]

"One of the most interesting features of the subject of the distribution of plants on the earth, is the way that some plants invade a region they are carried to, but where they are not native. Three of the most common forage plants of California (and there called *native plants*) are plants that have no value in the countries whence they came. They are natives of the region about the Mediterranean, where they may be called harmless weeds, not troublesome, and not particularly useful. One of them, the Wild Oats (*Avena sterilis*), is found from Palestine to the Atlantic, but I never heard that it is of any value there. But in America, it clothes the plains of California, and western Mexico; also parts of South America, and the Island of Juan Fernandez. Great areas of hundreds or even thousands of square miles together are seeded with it, and millions of animals feed on it. So with the two others alluded to, Burr Clover (*Medicago denticulata*), and Alfilerilla (*Erodium cicutarium*). They are nutritious and valuable forage plants, from Oregon to Chile; yet, in their native lands they have little value. These plants have spread precisely as foreign *weeds* do, only they are valuable ones, and they illustrate the principle. And whether a harmless plant here may be a troublesome one somewhere else, is beyond the power of man to guess. That is a thing to be established by experience alone; neither science nor previous experience can tell with certainty. Twenty years ago some farmers wished me to visit a locality where they thought they recognized a bad weed. They were from Eastern New York, where the Snapdragon is a vile pest, and thought they had recognized an old foe near their new home farther west. I examined it; it was the Snapdragon, yet no one tried to exterminate it. It was by the roadside, and it seemed no one's particular business to do so. Fifteen years or more later I saw it again; it had scarcely extended at all; it was simply in an uncongenial region, and there it did not flourish; it was a weed still, but a very harmless one. In our brooks and streams, here and there, is a little water plant, more common perhaps in Canada than here; not rare here, however, and I have never heard that it was very troublesome. It was accidentally introduced into the waters of England, where it has spread so rapidly as to interfere with navigation. It costs thousands of pounds sterling every year to keep it out of the canals. A story that it had been put into a river by a noted botanist called down on his head the direst complaints; the plant was named from him, and it is now extensively known there as "Babington's Curse." He was not guilty, but even if he had been, no one could have predicted that it would have been such a *curse* in English waters. I give these as but illustrations, which might be extended to many more cases than I could cite in one lecture.

"As an example, right here at home, of a plant called a vile weed, which is usually harmless, I have an illustration before me. A few months ago the Report of the Department of Agriculture gave a list of some native plants that might be cultivated for ornament. Among them was one, rather common in New England, known to botanists as *Potentilla fruticosa*. Immediately your secretary protested. In Litchfield and Berkshire counties, and regions adjoining, it is a vile shrub, especially injurious to moist pasture land, and is called *Hardhack*. Another shrub is usually

known under that name elsewhere, but with you this is so much worse than the genuine article that it has stolen its name. (I inquired of the farmers at this meeting, and all agreed that this is a vile pest of the pastures and meadows, but I have not heard that it is troublesome elsewhere).

"In short, weeds are not only troublesome, but they are also very capricious. The most abundant, and perhaps the most widely-spread plant on the earth, the common Brake (*Pteris aquilina*), is not hard to eradicate, and will not thrive at all if cultivated."

THE HAZEL—(CORYLUS ROSTRATUS.)

BY DR. A. KELLOGG.

"The Hazel Bush o'erhangs the thrush,
The spreading thorn the linnet;
Thus every kind their pleasure find,
The savage and the tender."—*Burns.*

Who will say why the wild woods woo so gently, or who may tell all their charms? Let us consider the Hazel, among many, for a moment, ere we pass on. Freshening the breath of spring with enlivening odor, the soft, velvety, new leaves of the Hazel spray forth archwise in clean and lively green. Note the delicate, doubly-fringed border—twigs tasseled and powdered in tags, and beset with pretty pink female flowers—anon in sober summer dress of russet-brown fruit, and final glory of yellow, autumn-crowned. A diadem of useful deeds, in the triumphant cycle of its season. Does not that thicket please most that modestly coquets the sylvan visitant, gently caressing while it obstructs, our pathway; yet never so entangling as to forbid the final entrance? 'Tis thus with the witching Hazel. The pet squirrel and the favored child may gather nuts from its boughs; but we will speak of the use of the body and boughs themselves.

Few can realize the value this shrub subserves in an economical point of view. Would any one be apt to suppose that on a wilderness coast like ours, we have been in the habit of importing, if one may say so, from the East, hoops and splints for barrels, and bands for boxes, packages, etc., to a very great extent? But an enterprising citizen of San Francisco has developed

a new source of wealth on the coast, that already gives employment to more than 150 men as collectors, apart from middle men, and final employés. The faggots are split and dressed ready for use, bound in bundles of 50 to 100 each, 4½ to 8 feet in length, as seen in the market. During the year 1872, about 2,250,000 Hazel hoops of the sizes named were used in this State. For want of proper cultivation, we are informed that these young growths are diminishing, and that if better attention were paid to raise this article of commerce it would pay handsomely in the future. Sonoma and Marin counties, in the State of California, produce the

largest number of hoops, while Olympia, Steilacoom, and Seattle on Puget Sound, and Vancouver, W. T., on the Columbia River, are next in order of production. Not one of the woods on this coast except Hazel is adapted for this purpose, and all importations from other countries have ceased.

Thus we see, in the ultimate industrial details of *one citizen only*, how much we owe to industry in the small—which is the greatest industry of all, if allowed the jingling proverb.

A GOOD LIST OF ROSES.

Each season lists of Roses are made out by the respective florists for the gratification of flower-lovers, and they all get into print, and none of them agree. We observe that every florist's idea of a good list of Roses is gauged considerably by the question: Are they easily propagated? If so, he can sell them, and, of course, indorses them. It has become so much the rule now for every florist to recommend as best only those sorts which he can propagate easily, that we must beg pardon for saying we can not trust their interested opinions altogether. The following list was made out by an amateur who considers the list a very good one because the flowers are good, and in climate south of 42° are all good growers. We doubt if the list can be excelled:

Best six ever-blooming Roses for General Use. 1. Giant of Battles, crimson. 2. General Jacqueminot, scarlet crimson. 3. Indica Alba, white daily. 4. Glorie de Dijon, yellow, copper centre. 5. Appoline, bright Rose. 6. George Peabody, purplish crimson. These are all fine-blooming Roses, and *hardy*, which is a great thing for standards. There are, however, numerous others equally as fine, which other people would designate as *their* favorites.

Best three Roses for Circular Beds for Permanent Effect and Continuous Bloom. —1. Safrano (Tea), Apricot color. 2. Hermosa (Bourbon), pale pink. 3. Washington (Noisette), white. These are fine-blooming Roses, but those who like darker colors would prefer Lord Raglan, dark crimson, but not a free bloomer; Charles Martel, another superb crimson, and Cardinal Patrizzi, very dark crimson, good bloomer.

Two Varieties for a Rose Hedge.—1. Herbemont Cluster, bears a profusion of white clusters, and blooms till December. 2. Appoline, a most lovely fall Rose, growing in good ground from ten to fifteen feet, and glorious from September to November. It blooms profusely during the summer, but as the fall advances its color is of the most vivid pink.

Bouquets in Paris.—Americans can not appreciate the almost universal custom in Paris and London of button-hole Bouquets. As an evidence of their immense use, a French journal asserts that the average annual sale of bouquets of Violets in Paris is 5,825,000. While in London it is so much the custom that at entertainments a gentleman appears singular without one.—*Horticulturist.*

The *Gazette des Campagnes* says that Mr. Hueghe has succeeded in changing the common Cowslip from its natural yellow to an intense purple by merely transplanting it into richer earth. The color of plants can be readily varied by mixing certain substances with the soil. Wood charcoal will darken the hue of Dahlias, Petunias, and Hyacinths. Carbonate of soda turns the last-mentioned flowers red, and phosphate of soda alters greatly the shades of many plants.

GUM PLANTS.

The following gum-producing plants are worthy of notice as being indigenous to, or susceptible of, successful cultivation in California. Their products are of high commercial value:

Gamboge.—This gum resin is yielded by several plants. That known as Ceylon Gamboge is obtained from *Garcinia Morella*, a fine tree with glossy foliage, somewhat like that of the evergreen Magnolia. This plant is supposed to be a native of Siam, but has been introduced extensively into other tropical countries. The gum is obtained by making incisions in the bark, or by breaking the branches and collecting the juice as it drops. It is used as a pigment in the arts, and medicinally as a purgative. American Gamboge is obtained from *Vismia Guianensis*, a shrubby plant found in Surinam and Mexico, which abounds in a yellow, resinous juice, resembling in its appearance, as well as other properties, the Gamboge of Ceylon. There are other species found in Brazil and Guiana that yield similar resins.

Benzoin. — Sometimes called Gum Benjamin, is obtained from the stems of *Styrax Benzoin*, a native of Borneo and other Indian islands. Incisions are made in the bark, from which the juice exudes, but adheres. When dry it is removed with a chisel or blunt knife. The gum which exudes from the natural fissures is considered the most valuable, having a stronger perfume than that produced from wounds in the tree. It is used medicinally, by perfume-makers, and as a compound in the mixtures used as incense.

Caoutchouc or India-rubber.—One of the principal plants furnishing this substance is *Siphonia Brasiliensis*, a common tree in the forests of Para, Brazil. This gum exists in the tree in the form of a thin, white milk, and is obtained by making incisions in the trunk, from which it exudes, and is collected in vessels, and afterward converted into the homogeneous, elastic mass, familiar to us as India-rubber, by pouring the milk upon molds, and immediately holding them over a dense smoke. As it solidifies, another coating is formed over it, and the process is repeated until the required thickness is secured. *Siphonia elastica*, *Siphonia lutea*, and *Siphonia brevifolia* also furnish India-rubber of good quality. Others of this genus yield an inferior, brittle gum.

Gutta Percha. — This is the dried juice of *Isonandra gutta*, a large forest tree, reaching a height of sixty or seventy feet, with a trunk two or three feet in diameter. It is a native of the islands of Southern India, especially of Borneo and Sumatra. *Balata* gum is an elastic gum obtained from *Mimusops balata*, a native of British Guiana, where it forms a tree of large dimensions. The milky juice is obtained by incision of the trunk. It dries very quickly on exposure to the air, if the air is dry, and can be molded into shape by being first softened in water. This gum seems to be of a character intermediate between India-rubber and gutta percha, possessing the elasticity of the one and the ductility of the other, without the intractability of India-rubber or the brittleness of pure gutta percha. It is successfully employed as an insulating medium for telegraphic purposes.—*Exchange.*

To Exterminate Insects in Gardens.—Mix with three or four gallons of warm water one pound of black or white hellebore, add eight or ten pailfuls of cold water, and syringe the plants infected.

MANAGEMENT OF THE SURFACE-SOIL.

BY ROBERT WILSON.*

A narrow strip of ground along either side of a fence erected on my own premises last spring, having been trodden down and the surface thoroughly impacted by the feet of the workmen engaged in putting up the inclosure, was found to be quite damp when dug into along in the summer, while the ground by the side of it, which, like this strip, had been deeply spaded up during the preceding winter, was perfectly dry as far down as it had been disturbed. I was engaged in tree-culture in Santa Cruz, and had there a very different experience, having found that the more loose and open the surface-soil was kept the greater its capacity for absorbing and retaining moisture. The explanation of these different results is found in the fact that the atmosphere in the vicinity of Santa Cruz, owing to proximity to the ocean, retains even in the summer a large share of humidity, which the porous condition of the ground enables it to readily absorb, keeping it thereby in a constant state of moisture; whereas, ground near Vallejo, being too far inland to be much affected by the sea air, is in better condition to retain the moisture with the surface somewhat impacted. Hence the advantage of passing over it a heavy roller after it has been sown or planted. Bearing this fact in mind, cultivators of the soil, whatever branch of husbandry they may be engaged in, will be governed accordingly; the principle here enunciated is all-controlling, and should never be lost sight of; being equally applicable to the raising of vegetables, Wheat, or other cereal crops, as to the culture of plants and trees. The soil should, of course, be thoroughly pulverized in all cases, the surface alone being impacted with the roller where the drought is such as to indicate this mode of tillage.

* This gentleman is a practical arboriculturist, having a small nursery near Vallejo, and communicates to us the following fact. We want just such men, who learn by experience, to send us facts from all parts of this coast.

FORESTS AND RAIN-FALL.

The "Bulletin of the Torrey Botanical Club" for February contains a letter from Mr. Fred. Hubbard, which gives a series of facts respecting the relation of rain-fall and forests as exemplified in some of the West India Islands, which we regard as important, and from its bearing on this somewhat disputed subject we think its reproduction here will be useful.

The introductory remarks refer to some previously published statements by Mr. James S. Merriam, of New York:

"Your brief published statement concerning the diminution in the rain-fall of the island of Santa Cruz is in the main correct, save that it gives the idea of a more rapid change than has probably taken place. At my former visit, twenty-seven years ago, the desiccation had undoubtedly made some progress, but not sufficient to make itself manifest in a very marked degree. The change from fertility to barrenness, which at first must have been almost imperceptible, is no doubt taking place in an accelerated ratio.

"Every new plantation swallowed up by the onward march of desolation, augments the cause and renders the arrest of the evil more and more hopeless. This movement is from the east (the windward end of the island) toward the west, and is now quite conspicuous.

Every few years an estate, formerly green with cane-fields, becoming incapable of producing further crops, has to be abandoned to the graziers, whose cattle find a meagre pasturage upon it a few seasons longer. These are in turn driven off, and the land is entirely abandoned. Henceforward it becomes, if not quite a desert, at least a barren waste, producing only a sparse and prickly vegetation, over which a few arborescent cacti reign supreme. A narrow belt of green lines the sea-shore of this region, consisting of cocoa-nut palms, the poisonous manchineel, the sea-side grape, and a few shrubs, whose natural habitat is along the high-water mark; but inland cultivation is impossible without constant irrigation. As there are no streams upon the island, with the exception of a few rills chiefly near the western end, and the wells are failing, no means remain to force life from the unwilling soil. Some attempts were at one time made to arrest this insidious advance, but too late to be effectual. A planter, I was told, not long since set out a thousand trees upon his estate and lost every one. It is probable that had this remedy been universally adopted in time there might be a more hopeful future for Santa Cruz. But the final depopulation of this beautiful island seems now to be written indelibly among the decrees of fate.

"St. Thomas, an island lying thirty miles distant, is similarly affected. This island, however, being loftier, and having scarcely any level land, seems to attract to itself a rather more liberal amount of moisture from the clouds.

"About fifty miles westward of these islands, and in the same parallel, lies the large island of Porto Rico. The land here is almost wholly mountainous, the eastern ridges rising to 3,000 feet. A large portion of the interior is still covered with primitive forest, a tangled tropical vegetation of vivid perennial verdure. The rain-fall is abundant, and the soil yields bountiful crops of coffee and sugar, with a great variety of fruits.

"The contrast between neighboring islands so similarly situated is most striking. The sad change which has befallen the smaller ones is, without any doubt, to be ascribed to human agency alone. It is recorded of these that in former times they were clothed with dense forests, and their oldest inhabitants remember when the rains were abundant, and the hills and all uncultivated places were shaded by extensive groves. The removal of the trees was certainly the cause of the present evil. The opening of the soil to the vertical sun rapidly dries up the moisture, and prevents the rain from sinking to the roots of plants. The rainy seasons in these climates are not continuous cloudy days, but successions of sudden showers, with the sun shining hot in the intervals. Without shade upon the surface the water is rapidly exhaled, and springs and streams diminish. There is also, as many believe, an electrical action produced by the points of leaves upon the atmosphere, compelling it to yield up its moisture. However feeble may be this effect from a single tree, the myriad spears of a whole forest presented to the sky undoubtedly do exert a marked and powerful influence. It is probably from such a combined action that the drying up of the soil from the removal of the trees, destroying the balance of nature, goes on with ever-increasing rapidity.

"An equally marked example of the effect we are considering is seen in the small island of Curaçoa, lying in lati-

tude 12° north, sixty miles from the coast of Venezuela. I visited this island in 1845, and found an almost perfect desert, where, according to the testimony of the inhabitants, had once been a garden of fertility. Abandoned plantations, the recent ruins of beautiful villas and terraced gardens, and broad arid wastes without a blade of grass, showed how sudden and complete a destruction had fallen upon this unfortunate little island. The cause was the cutting down the trees for the export of their valuable timber. The effect followed even more rapidly than at Santa Cruz, as the island lies five degrees farther to the south, and the heat is more intense. The rains have almost entirely ceased, and fresh water is among the luxuries. Almost within sight of Curaçoa is the coast of the Spanish Main, covered with the rankest vegetation, over which the burdened clouds shower down abundant blessings."

Fruit in our Rooms.—We should be chary of keeping ripe fruit in our sitting rooms, and especially beware of laying it about a sick-chamber for any length of time. The complaint which some people make about a faint sensation in the presence of fruit is not fanciful, for two German chemists have shown that from the moment of plucking Apples, Cherries, Currants, and other fruits, they are subject to incessant transformation. At first they absorb oxygen, thus robbing the surrounding air of its vital element. Then they evolve carbonic acid, and this in far greater volume than the purer gas is absorbed, so that we have poison given us in the place of pure air, with compound interest. Temperature affects the rate of changes, warmth accelerates it.

The poppy originated in the East.

MILLET AS A FORAGE PLANT.

As the unfenced and free ranges for stock are, year by year, becoming more circumscribed, and lesser herds of improved breeds of animals are rapidly taking the place of native stock that formerly, in such countless numbers, ranged over the broad plains and valleys of our State; and in view, as we believe, of the very general adoption of the no-fence law, at no very distant day, compelling owners to provide for their stock upon their own premises, it becomes important to know which are the best forage plants for cultivation, as yielding the largest quantity of nutritive food per acre.

To a very great extent we must rely upon cultivated forage, our uncultivated grasses being entirely inadequate to the production of sufficient forage to maintain the requisite stock on a given number of acres, in the proper condition of flesh. It is this that has prompted us heretofore to discuss the merits of Alfalfa, the Clovers, the Malva, Rape, etc., as desirable forage plants, and now of Millet, with the same view.

Indian Millet is identical with the Dourah Corn of Africa, and known in the United States as Dourah Corn and "Tennessee Rice." There are two varieties — the white and brown. The brown is the most productive; said to yield four times as much seed per acre as the white; but the meal or flour of the white is much lighter, and nicer in appearance. Millet will do well upon very poor soils, but the product is largely increased upon dark, rich lands, like the alluvia of rivers.

It is usually sown broadcast at the rate of a bushel to the acre, in March, April, or May. Care should be had in securing good seed, as when procured from abroad it is very likely to be weevil-

eaten. It is important to get a good stand, but once up, it will grow in spite of frost, rain or drought, being a very hardy grass, and will make a crop in spite of every disaster. It is sometimes cut green and fed to cattle in the stall, and if not cut too close to the root, will grow again from the stubble, and in this way can be cut several times in a season.

Its seed product takes a wide range, from 10 to 100 bushels per acre in ordinary seasons. It is also cut and made into fodder for winter's use, and does not require to be made as dry as most other grasses, and when housed quite green, does not ferment or spoil, even when closely packed or baled. It is a frequent practice to turn all manner of stock into Millet-fields when half the grain has ripened, and in a short time all will get fat on it, and still leave the ground covered knee-deep with the stalks, which cattle and sheep eat greedily quite into winter.

The whole plant, seed and stalk, is considered healthy and nutritious, and animals eat it from the time it comes up, till the last stalks are consumed in autumn or winter. Besides serving as food for fowls and animals, it is used in Egypt, India, and China as food by the inhabitants. A failure of this crop in Arabia would be as great a calamity, almost, as that of the Wheat-crop. It is their food and fuel, and grows by scanty irrigation on land that can scarcely produce any other grain. It is ground into flour and cooked alone into cakes and bread, or mixed with rice-flour and other food. In many parts of Germany it is substituted for Rice, and sells for about the same price.

There are, besides the white and brown, other varieties of Millet, and among them the Hungarian, or, as it is sometimes called, Hungarian Grass. This makes an excellent forage crop, though not as prolific in seed as the African variety. D. B. Dixon, of Muscatine, Iowa, in a report to the Agricultural Department, speaks of the Hungarian Millet as follows:

"It is luxuriant in its growth, and produces hay of the finest quality. Horses and cattle eat it with avidity. Farmers in every part of the county should give it their attention, as it will make more and better feed than any other kind of grass now known in the United States. Our western farmers in particular should learn its value; for its destiny is to change the agricultural product of this portion of the Union, and substitute cows, horses, mules, and sheep in place of hogs. We have raised hogs, heretofore, from necessity, simply because our only reliable crop was Corn, and other domestic animals required hay, or its equivalent, which we could not produce with cheapness and certainty.

"A good crop of the Hungarian grass is about three tons of hay and thirty bushels of seed to an acre, while it will often go beyond, and seldom fall below this. Such crops were grown last season, notwithstanding the drought.

"It should be put into the ground in the same manner as Oats, harrowing before and after sowing. The time for cutting is when the seed is nearly ripe, and the whole plant of a fine yellow color. If cut too early, the seed will not be perfect, and if too late, it will shell out in curing, the stalks will also be too woody. It may be cured in the same manner as other hay. As fodder, after thrashing, it is fully equal to Timothy; and when fed out with the seed in, as it generally should be, it is better than good sheaf-Oats.

"I am sowing, this season, 100 acres of this grass, from which I expect to

raise at least 3,000 bushels of seed."

Taking into consideration the fact that it will yield more green food, more hay and grain, on a greater variety of soils and with less labor in any season, and return more litter to the land if fed off upon it, than any other grain or grass, and being a universal food for man and beast, in all tropical or semi-tropical climates, it may be justly considered one of the most valuable of the cereals, and well worthy the attention of California stock-growers.—*Press.*

CULTURE OF THE MUSHROOM.

The Mushroom (*Agaricus campestris*), named after a kingdom of Sarmatia, belongs to the twenty-fourth class of Linnæus, ninth order and tribe.

A writer in the *Canada Farmer* says many persons regard the culture of the Mushroom as a great mystery, but it is not so. On the contrary, it is as simple as growing a crop of Corn, cultivating a Grape-vine, or raising a bed of Cabbages, and can be done in any out-of-the-way place, taking up little room and requiring little attention. It can be raised in winter, when no other crop can be cultivated, and a regular supply obtained for family use; or, if conducted on a larger scale, with a view to disposal in our city markets, there is nothing to hinder, and a most profitable business may be made out of it. All farmers keep horses and cattle and have plenty of manure, and it may be mentioned that the quantity used for Mushroom-beds is not lost, for when new beds are formed the old may be returned to the manure pile. There is no occasion for building a place to grow them in: they can be grown almost anywhere in an inclosed place, even in the kitchen or sitting-room, but the best place is a close horse-stable, or even a mild cellar, etc., where the soil can be kept from freezing. For the mode of culture, take a box ten or twelve inches in depth, and as long and as broad as the space will permit or may be desired, pack it down with six inches of horse droppings broken somewhat fine, on this three inches of dry cow droppings made fine; *moisten* this, but do not wet or deluge it, with a strong brine of nitre or saltpetre water. In the cow manure plant the spawn, which can be had at the seed stores in the form of a brick. This should be broken into moderate sized pieces as large as a walnut, and should be set in a triangular form, thus, ***, and covered from an eighth to a quarter of an inch (not more than the latter) with fine, dry soil; cover the whole with an old carpet, or any heavy cloth, so that the light will be excluded. Of course no sun is needed, but just the contrary, perfect darkness is required. I have not tried the above, but suggest that it may be useful to some of the Horticulturist's readers.

A Subscriber.

Vine Disease Spreading in Portugal. A cable dispatch announces that the vine disease has spread into Portugal. A few weeks ago it was stated that the Grape-crop in the south of France and in the champagne districts of that country was a comparative failure, while not very flattering accounts were received from the wine-making regions of Austria. Spain is in too disturbed a condition to give the vine-crop the attention it demands. The prospects are, therefore, that the wines of California will have the opportunity of obtaining a footing in the European market during the coming season, such as they never have had before.

TRENCHING.

Trenching is an expensive operation, but nothing is so expensive and troublesome as an ill-prepared soil. This process is found to be of great advantage in England, where there is no lack of moisture, and still more so by the market gardeners of the Northern States; while in our own dry, warm climate, it is, as I know by experience, absolutely indispensable. Ground thus prepared is not so liable to wash away, as it will readily soak up the rain, no matter how heavy, if properly terraced. There is no point of greater importance than this in gardening, for without a well-prepared soil there is no success. Poor ground deeply moved is better than rich with shallow tillage. And when the ground has been prepared once in this manner, it is good forever afterward. Increasing the depth of the soil in this mode, is to all intents and purposes increasing the size of your garden, for a quarter of an acre thus prepared will yield in a dry season as much as an acre will with shallow tillage, and the growth of plants in a season will be fully doubled. Trees, especially, will be admirably benefited, and all fruit gardens should be thus prepared. No matter how deep you may work the soil for trees or plants, their fibres will penetrate it and feel the good effect. The fall is the most suitable time for the operation. The manner of performing is to commence at one side of the piece of ground intended to be trenched, measure from five to six feet, or more, in width from the fence or boundary, and from three to four feet in depth, and remove the soil to the other side, or where you intend to finish, so that you will have some soil to put in the last trench. It must be borne in mind that the top surface goes into the bottom, and it would be still better if there was manure of some kind to be had to put in the bottom. When the whole plat is trenched, it should be leveled, and a coat of decomposed manure dug into the surface, and with a light top dressing of a good compost in the spring, before planting, you will have a piece of ground serviceable to posterity.

A SUBSCRIBER.

TIMBER LANDS AROUND LAKE TAHOE.—The value of accessible mountain timber land generally has increased very much within the last two years, along the line of the Central Pacific Railroad. Much of the timber adjoining that road from Clipper Gap to Reno has been cut down, and roads and shoots are constantly being opened farther back, north and south, by means of which the greatly increasing demand for lumber is being supplied. The sawmills around Lake Tahoe now pay an average of $1.25 a thousand for lumber in the tree. Each tree averages 2,000 feet, and each acre 23,000 feet of lumber, which, at the price first named would place the value of each acre of timber land at $28.75. Of course there is not much land in which all of the trees would be large or good enough to be worth cutting. Five dollars each is often paid, however, for large trees. There are yet millions of acres of timber land around Lake Tahoe, at least one-half of which is owned by the Central Pacific Railroad, and is held firmly by the Company at $10 to $20 per acre.

Two parties lately offered W. W. Lapham a contract to lay down six million feet of logs at Tahoe City, at $5.50 per thousand. His land is at the southern end of the lake (Lake Valley.) He would only have to pay for the cutting

and towing across the lake, a distance of twenty-five miles. Fifty cents per thousand is charged for towing. The mill at Glenbrook pays $5.12 a thousand for logs delivered there. The timber around the lake can very easily be shot down to it, because the land all slopes down to the very edge of the water, even in Lake Valley, where the nearest approach to level ground is found.

Insects in Orchards.—In the discussion on insects at the late meeting of the Minnesota Horticultural Society, many interesting facts were elicited concerning insects in that State. Much trouble has been experienced with leaf lice, borers, moths, curculios, etc. A number of remedies were given for these pests. For leaf-lice, a decoction of tobacco is sometimes successful, when applied at the proper season. A wash composed of three pounds of sal-soda dissolved in a pailful of rain-water, is another remedy, and also three ounces of whale-oil soap to a pailful of water; apply upon the first indications of the lice. The trees will be injured if much soap is used. Carbolic acid will kill trees if not carefully used. Mr. Gideon binds ashes around the affected parts to kill borers. Others cut them out with a sharp knife, or punch them with a wire. Moths are destroyed in various ways. Several kinds of traps have been invented, some of which are very successful. The idea is to furnish a hiding-place for the moths where they can be destroyed. Bands of hay or old rags are sometimes bound around the trunks of the trees to serve as moth-traps. Mr. Mendenhall stated that there are 1,600 kinds of leaf-lice, and 400 kinds of curculio.

Tobacco is a native of Virginia.

Mulching.—In placing mulch or moist litter of various kinds upon the surface of the soil of newly planted trees and shrubs, a little earth should be thrown upon it to keep it in its place. This is neater than exposing it on the surface. It is used to prevent moisture from evaporating; it also prevents frost from penetrating to the roots, and should be also applied where drought is prevalent. Strawberries thinly mulched, the crowns left uncovered, are much more productive, and continue longer bearing. Potatoes produce more abundantly, and of better quality. English Peas are thus kept longer in bearing, and Rhubarb and other plants requiring a cool soil can be more readily raised. Fruit-trees, by being thus treated, are kept in better health and vigor. It wards off drought by keeping the ground moist, and by the decay of the mulching substance a great deal of nutriment is conveyed to the roots of the plants. A supply of small, fibrous roots are thrown out at the surface, by which tap roots are obviated in a great measure, which are inimical to the production of blossom buds. But the great benefit of mulching is, that a steady permanency of moisture is retained in the soil in spite of adverse circumstances and without stagnation. The coat of mulching ought to be three or four inches in thickness, and from two and a half to three feet in diameter, in proportion to the size of the plant. It should not touch the collar of the plant. The foregoing should be practiced by many on this coast.—*A Subscriber.*

The Petaluma *Argus* notices favorably a new shade-tree raised in that county from the seed. It is known as the Australian Stringy-bark, a species of Gum-tree, and grows rapidly.

Editorial Portfolio.

THE AQUARIUM.

How vast is the field opened up to the enthusiastic study of the naturalist, the philosopher, and man of science, by this magnificent accession to the appliances of the student of nature; what an invaluable adjunct to their means of observation! But a very few years since, the most prominent naturalists of the present age were scarcely conscious of the existence of the immense varieties of animal and vegetable life which are now the objects of careful study by thousands of earnest observers.

The taste for the study of natural history has been of late marvelously on the increase, and the aquarium has doubtless wonderfully assisted in developing this interesting pursuit. The diversity of life in brook, in river, in lake, in bay, and in the vast ocean itself, is now in course of enthusiastic investigation by scientists of every grade in all parts of the world, and the results of their studies and the interchange of their observations and discoveries will afford highly interesting and instructive reading matter in all our periodicals in every part of the globe.

Among many other instructive lessons exemplified in the development of the Aquarium, is the great system of compensation, by which the equilibrium is preserved between animal and vegetable life, and the mutual necessity of the two great departments of animated nature, the one to the other, unmistakably established—not only for the ordinary functions of life, but for the more occult necessities of their several existences. Animals absorb oxygen from the medium in which they live, and throw off carbonic acid in exchange; so do vegetables, but these take up carbon in much greater quantity than they exhale it; and during the season of their most active growth they give out more oxygen tahn they consume at all other times. This is the great basis upon which successful management of the Aquarium depends, and however its requirements may be temporally evaded or audaciously modified, they can not be ignored with impunity.

The first Marine Aquarium was established about 1842, in London, by Dr. Johnstone. Of course, it was on a small scale, a mere experiment; but Lavoisier, De Saussure, Priestly, Inglehouse, and Ellis, had already established both philosophically and chemically the great balance of life. And particularly was this subject elucidated by Prof. Daubeny, in 1833; subsequently, Dr. Lancaster, Mr. Ward, Mr. R. Warrington, and Mrs. Thynne contributed their experiences, while Mr. Gosse established himself as a high authority in this branch of science. To these and many other ardent students of nature is to be awarded the honor of advancing this study to the position it holds in the scientific world, and its general popularity. Still later the labors of Mr. Lloyd have largely contributed to the advancement of this highly interesting research into these hitherto occult departments of nature.

Within the last few years, Aquariums on a very large and magnificent scale have been established in several of the great cities of Europe; among them may be enumerated those of Hamburg, Berlin, Paris, London, Havre, and Brighton; in these the science has been prosecuted with untiring energy, and its popularity has proportionately advanced; but in the United States little advancement has been made, and the Marine Aquarium established by Mr. R. B. Woodward, in his delightful Gardens at San

Francisco, is the only one yet constructed on this continent. This last achievement of the very enterprising and public-spirited proprietor has lately been thrown open to the public, after a very protracted delay attributable to the difficulty of procuring suitable material and sufficiently skilled labor, and also to a multitude of annoying misadventures which further experience will obviate. The opening took place on the 4th of July, and was preceded on the 2d by an inaugural inspection by a numerous party of scientific men and representatives of the press, to whom invitations had been issued, and who partook of a bountiful and *recherché* collation in the reception hall of the Aquarium. The guests were evidently much gratified, and since the opening the concourse of visitors has been very great. The specimens exhibited are very numerous and above average representatives of their several families, many are very curious, and some quite rare—all are new in their present relations to the public. No systematic arrangement has as yet been attempted, as owing to the difficulties of getting the establishment into efficient working order, and sundry misadventures, the mortality has been very considerable, but eventually due attention will be given to the classification.

THE RAIN-FALL AT SAN FRANCISCO.

In the last number of this magazine we offered for the perusal of our readers an excellent article on the above subject. There are many points in it worthy of the deepest consideration by not only the cultivators of the soil, but by the public in general; and as this subject bears intimate relations with those of Forest-tree Culture and Irrigation which we have so frequently and earnestly advocated in our magazine, in a future number we shall endeavor most forcibly to point out their identity with the prosperity of this and neighboring States, and the necessity for energetic action in relation to them.

Professor John Muir's Idea of a Bouquet.—Had I been able, in descending this one small side-canon, to "pluck up by the spurs" one of each of the mountain pines that I met, together with one of each of the other cone-bearing trees, my big resiny bouquet would have consisted of, first, the short, straggling *Pinus flexilis*, then *P. contorta*, *P. ponderosa*, *P. monticola*, and *P. Lambertiana;* two spruces—the elegant drooping *Abies Hookeriana*, and the noble *A. Douglassii;* the burly brown-barked *Juniperus occidentalis*, the grand *Libocedrus decurrens*, and the two silver firs, *Picea amabilis* and *P. grandis*. Had we gathered the shrubs, we would have had two maples, four willows, two dogwoods, two honeysuckles, three manzanitas, one kalmia, one mountain-ash, one amelanchier, one vaccinium, one ledum, two ceanothus, one bryanthus, one cassiope, two spiræas, one rose, two brambles, one azalea, one kamnus, three currants, and a few others.—*Overland Monthly.*

Wheat Yield.—The average yield of Wheat in different countries varies remarkably. In Austria it is 14 bushels per acre; in France and Prussia, 17; in Spain, 23; while in Britain the average yield is from 28 to 30. The yield of Barley in France is 21 bushels per acre; in Prussia, 25; and in England from 35 to 40 bushels per acre; in Manitoba from 40 to 60 bushels per acre by merely plowing without any artificial manuring.

WOODWARD'S GARDENS.

There is much to entertain and instruct both adults and the rising generation in this very deservedly popular place of resort. The conservatories and greenhouses are in excellent condition and resplendent in magnificent specimens; with a rich reserve which only awaits the opportunity for display. The Zoölogical Department is continually improving in number, condition and variety. Many valuable animals have recently been added; especially is this noticeable in the amphibia. But decidedly the most attractive department at the present time is the *Aquarium*. Of this department we shall speak more fully at some other time. In the Plant-houses we notice *Bananas Cavendishii* in magnificent foliage; *Mangifera nuxifera* in bearing; *Zingiber officinale* (Ginger), and *Z. cassumunar*, in vigorous growth; *Maranta discolor; M. zebrina; M. alba linearis; M. rosea linearis*, in very fine condition; *Gesneria alba*, *G. amabilis*, *G. magnifica*, *G. zebrina*, *G. cinnabarina* in flower, and *Gloriosa superba;* also *Achimenes* and *Gloxinias* in variety.

The *rex* varieties of Begonia are in fine leaf, and the Colei are in elegant foliage. The orchidaceous or parasitical plants are also displaying their flowers. Among the Ferns, we particularly noticed *Pulu*, *Lomaria gibba*, and *Alsophylla excelsa*.

CATALOGUES RECEIVED.

Wholesale Catalogue of California Native Bulbs, Seeds, and Plants, selected and for sale by Miller & Sievers, 27 Post street, San Francisco. We are in receipt of this important and interesting catalogue. It will be welcome to dealers and nurserymen both at home and abroad. This same firm proposes to publish catalogue number 2, of rare seeds of California, Australia, Japan, Chili, and other countries, in October; and catalogue number 3, which will be a general descriptive catalogue of plants, etc., under cultivation, and will be published in December next.

Ornamental Catalogue of T. C. Maxwell & Bros., nurserymen of Geneva, N. Y., together with a special circular of new Evergreens of their introduction—a well-prepared catalogue, select yet copious. We observe that the *New Golden Arbor Vitæ, Luteæ* (George Peabody) has received from the Royal Horticultural Society of London a first-class certificate: "We can not avoid saying, after careful tests of its merits, that it is the finest variegated evergreen America has yet produced."

Vick's Floral Guides, II and III, are very acceptable, well got up, and illustrated, and contain a large amount of useful information. The article on "The Seed Business and the Post-office," in No. 3, is an important one.

FAVORS RECEIVED.

We beg to acknowledge the receipt of two beautiful chromos—"The Strawberry Girl," and "Mischief Brewing"—from Messrs. Orange Judd & Co., of 245 Broadway, New York, the enterprising publishers of *Hearth and Home* and *American Agriculturist*. The subscribers to these two well-known papers for 1873, will be presented with these two exquisite pictures, which are well worth framing.

The *Overland* for August, a very interesting number, in which "Explorations in Tuolumne Cañon," "South of the Boundary Line," "California Indians," are particularly readable papers; "Etc." with its "Chinese View of the

Pigtail Ordinance," and "Current Literature," generally, are well worthy of perusal.

We are in receipt of the *Premium List* of the Kansas City Industrial Exhibition and Agricultural Fair, with the Rules and Regulations and List of Premiums. This Fair will be held from the 15th to the 20th of September inclusive. The list of premiums calls for an extensive display. We wish the managers every success.

The Poultry World. Hartford, Ct. Published by H. H. Stoddard. Monthly. $1.25 per annum. This is a neat magazine, which can not fail to be welcome to the poultry raiser. It is filled with excellent hints, advice, etc., for those who keep fowls of any kind, either for pleasure or profit, and is profusely illustrated.

FAIRS AND EXHIBITIONS.

Autumn Exhibition of the Bay District Horticultural Society.—Notwithstanding the reverses which the Horticultural Society met at their last Spring Exhibition, it was decided at their last regular meeting to hold another exhibition this autumn. In this undertaking the Society has been encouraged by the number of public spirited gentlemen who have become life members of the Society during the past two months. The exhibition will open on Tuesday, Sept. 30th, and close on Saturday, Oct. 4th. It will be kept open for five days only. It is thought this will induce a greater number of nurserymen and fruit-growers to exhibit, as the loss of time and stock has always been considerable on account of the long duration of the fair.

We most sincerely hope that this next exhibition will be a success. We believe the public appreciate these exhibitions, and we confidently trust that a proper support will be given.

The management is in good hands, and no effort will be spared to make the exhibition attractive, instructive, and entertaining. We are aware that there exists a growing taste for flowers, and a fair appreciation of the horticultural products of California; these are so thoroughly represented in our fairs that a liberal support should be given them. The premium list has come to hand and can be had of the Secretary. It is varied and prepared with care, offering over $1,500 in prizes for the various horticultural products of the State.

Effects of Vegetable Perfumes on Health.—An Italian professor has made some very agreeable medical researches, resulting in the discovery that vegetable perfumes exercise a positively healthful influence on the atmosphere, converting its oxygen into ozone, and thus increasing its oxidizing influence. The essences found to develop the largest quantity of ozone are those of Cherry, Laurel, Cloves, Lavender, Mint, Juniper, Lemons, Fennel, and Bergamot; those that give it in smaller quantities are Anise, Nutmeg, and Thyme. The flowers of the Narcissus, Hyacinth, Mignonette, Heliotrope, and Lily of the Valley, develop ozone in closed vessels. Flowers destitute of perfume do not develop it, and those which have but slight perfume develop it only in small quantities. Reasoning from these facts, the professor recommends the cultivation of flowers in marshy districts, and in all places infested with animal emanations, on account of the powerful oxidizing influence of ozone. The inhabitants of such regions should, he says, surround their houses with beds of the most odorous flowers.

NEW AND RARE PLANTS.

A NEW ŒNOTHERA.—A charming novelty has been introduced in Ireland, which in the opinion of the *Irish Farmer's Gazette*, has strong claims to be regarded as A 1, among the charms of hardy flowering plants.

We allude to a new dwarf Œnothera, from Utah, which we saw in flower at Glasnevin last year, and for the introduction of which, as of so many other choice plants, we are indebted to Dr. Moore. Calling at the gardens one evening last summer, while walking round with Dr. Moore, he asked, had we seen the new Œnothera? Being answered in the negative, he led the way to the lock-up garden or sanctum, where one is sure at all times to meet something new, very rare, or of much botanical interest. On this occasion, however, all else was forgotten in admiration of the lovely little transatlantic gem to which Dr. Moore introduced us. Looked at in the quiet stillness and shadows of a summer evening's close, with its circlet of large pure white flowers, raised vertically above the foliage, on long, slender tubes, and expanding their broad fair bosoms to the cooling moonbeams, this lovely plant presented an appearance altogether unique and striking.

This plant is altogether unique among its congeners as regards habit and appearance. The best of the latter, as for instance, Œ. Missourensis, Œ. Lamarkiana, etc., though showy as regards flowers, are of a gawky, straggling habit, which detracts much from their value. The plant to which we now direct attention is just the opposite, being single-stemmed, compact, and dwarf, flowering when not more than six inches high, and at the end of the season nearly doubling that height. But to come to particulars. The stem is short, stout, some eight or ten inches high; the leaves runcinate, having long foot stalks, which, together with the midrib, in the lower leaves are white, in the upper red or pinkish. Commencing at the base, the flowers issue in long succession from the axils of the leaves, and are elevated vertically over remarkably slender tubes fully a span in length, in a way to produce a beautiful effect. The flowers, as compared with the plant, are of great size, pure white, the limb of the corolla consisting of four very large obcordate petals, at the base of which the anthers are placed, round the mouth of the tube, which here expands considerably, and is of a greenish yellow color. The stigma is cruciform and considerably exserted. The above description, we are quite aware, is very imperfect, and conveys a still more imperfect idea of this fine flower. As yet, as far as we are aware, this Œnothera is without a specific name. It comes from the Territory of Utah, United States, and was communicated to Dr. Moore by his friend, M. Roezl, of Zurich. When we saw the plant at Glasnevin it promised to seed freely, and we hope ere long to see it widely distributed, and taking a prominent position in the choice herbaceous border, or cutting a figure in some phase of subtropical gardening, for which its dwarf habit and exotic appearance seem to render it eminently suitable.

AQUILEGIA LEPTOCERA LUTEA.—We can indorse what is said of the following in the *Garden*, as we saw it in flower in a garden near Philadelphia last summer. It is about two weeks after *Aquilegia canadensis* in blooming, and continues through most of the season:

"We are much pleased to notice the introduction of a new yellow-flowered

Columbine (*Aquilegia leptocera lutea*), which is thus described in the catalogue of Messrs. Backhouse & Son, York, just received by us. 'This is unquestionably one of the finest perennials we ever introduced. Its large golden-yellow, long-spurred flowers are produced in great abundance from densely-tufted plants, which maintain a long succession of bloom. This species has not yet flowered with us; but magnificent dried specimens of the blossoms have been forwarded to us from North America. These are not unlike very large examples of *A. cœrulea*, with long straight horns. So far as we can ascertain, this plant has nothing whatever to do with *A. aurea* of Roezl, of which the flower is scarcely half the size, of a sulphur yellow shaded with green.'"

A New Style of Pansy.—The London *Journal of Horticulture* says: "M. E. Benary, a horticulturist at Erfurt, announces a new Pansy, which has large flowers of a splendid ultramarine blue, with a well-formed eye of very deep violet-purple. They are also of good substance, have strong stalks, and stand well above the leaves. M. Benary has named it "Viola tri-color, var. maxima Emperor William," and states that the variety reproduces itself with certainty from seed."

How to Water Plants.—From careful experiments, Mr. Mechi discovered that plants slightly watered every day often perish, and always become dwarfed; whereas a good soaking, given twice a week, almost invariably proved very beneficial. He says:

The sum of our experience in watering amounts to this—that thorough soaking of the ground two or three times a week is much better than the same amount of water applied in driblets daily, only sufficient to wet the upper surface, but not the under strata of earth contiguous to the roots. Cold spring water should, before applying it to a heated soil, be allowed to stand exposed to the sun and air for a few hours. The colder the water is, and the warmer the soil, so is the necessity of applying it in abundance; for it is evident, though we cannot explain it, that the result produced upon plants by applying cold water to the soil, when at a high temperature, unless so copiously applied as to saturate the soil completely, is fatal to tender or weakly plants, and often less or more injurious to strong or healthy ones.

Permanence of Orchard Grass.—A writer in the Philadelphia *Press* says: We have a field of it, on a strong, sandy loam, which has stood for more than thirty years. It has been cut for soiling; it has been cut for hay; it has been pastured; it was first sown with Red Clover and Timothy, which is long ago run out, and, although the White Clover and Blue-grass venture their presence to a limited extent among it, the Orchard-grass maintains its supremacy, and, breast-high at maturity, lords it over its diminutive trespassers in a bounteous crop, while its humbler attendants, good, in their place, modestly fill up a great nutritious undergrowth at the bottom. No grass which we have ever grown has yielded so heavy swath as this, nor one from which so much cattle-food to the acre can be grown, aside from Lucerne, which our American climates will not consecutively, year after year, produce.

Manganese and cobalt make a fine blue for coloring glass.

WORK FOR THE MONTH.

BY F. A. MILLER.

Most of the time of our fruit-growers will now be taken up in gathering fruit, in packing and shipping to the market, in preserving and drying, and in preparing for wine-making. Very little other work can be expected of them. In regard to picking and preparing fruit for market, but few seem to care in what condition it reaches their customers; and the result is, that, particularly in San Francisco, three-fourths of all the fruit received is of very inferior quality and in bad condition. Fruit-growers may imagine that this is immaterial to them, as long as they realize a fair profit; but I am inclined to believe that they are likely to be the greatest sufferers. It is true that some fruits have to be picked and shipped before they are fully ripe, in order to arrive at their destination in good condition; but this is now carried to extremes, fruit being offered for sale in this market which is positively unfit to eat. I noticed in particular this year, that Nectarines were of very poor quality on account of being gathered while green; they arrived here perfectly hard, and were allowed to soften on the stand, but their softening was only the result of decay. Such fruit must be unhealthy, and should not be allowed to be sold to consumers. If the law does not provide for a fruit-inspector, as it does for meat inspectors, it is certainly very deficient in this respect.

The same may be said in regard to Pears, Apples, and Plums. I saw during the first week of August, Bartlett Pears on most of our fruit-stands, which were absolutely unfit to eat. Most of the Plums, particularly the German Prunes, reach our market in green condition; and certainly these could be shipped after having almost completely ripened upon the trees. Let fruit-growers bear in mind that three times as much fruit would be consumed if the article was offered in good condition. While we have to deprive ourselves here of the great luxury of healthy and fine-flavored fruit, the grower suffers the greatest loss by not finding as good a market as might otherwise be obtained. I hope most sincerely that at least some of our intelligent fruit-growers will improve on their present system, and give us an opportunity to appreciate their products; until such is the case, many will do without fruits altogether.

In the vegetable garden, but very little is done in California throughout the summer months, the cause of which is the fact that vegetables of all kinds can be procured as cheaply and of excellent quality, much better in fact than I find are raised in our private gardens. However, it is pleasant and agreeable to have an opportunity of gathering from our own garden. This is a good time to plant Lettuce for autumn and winter use; also, a few Cabbages, Cauliflowers, Kale, and Black Radishes for winter use; also, Beets, Rutabagas, etc., are very desirable, and if planted now and taken care of for a month or two, will take care of themselves after the first winter rains, and be useful throughout the whole winter season.

The lawn requires particular care during the month of August, thorough watering and frequent cutting are very essential points in keeping the sod in good and uniform condition. Evergreen and deciduous ornamental trees outside of the lawn do not require any more irrigating now. The Cypress, Thujas, and Acacias may be brought into proper and uniform shape by clipping off the rank shoots which have

grown out of proportion. If compact and dense growth is desired, a general cutting back of the young growth will have the desired effect.

Roses have made their summer growth; cut the leading branches back, work up the soil around them, and their new growth will produce an abundance of flowers during autumn and winter in our mild climate.

Hyacinths and Tulips may be taken up and stored away in a dry, cool, and airy place until winter or spring, when they may be planted again.

Dahlias should receive thorough watering and a good hoeing, to produce perfect flowers; do not allow them to make much undergrowth or many side branches, or the flowers will be inferior.

Plant some Gladiolus bulbs for autumn flowering, and retain some for another planting in September or October for winter flowering.

Many of the Lilies have done flowering; if it is desirable to propagate them, let it be done now. This is done by taking off the sound scales and planting them in sandy soil, so that about one-third of the scales are covered with soil.

If Mignonette, Candytuft, Stocks, and Pansies are desired to bloom during autumn and winter, the seed should be sown during the latter part of August.

In the greenhouse all rooted cuttings should be potted in small pots, shaded for a few days and then placed close under glass. Hardy plants may be planted in the open ground, but this should be done carefully, as the young roots break very easily. Water well after planting, and if they can be shaded for a few days, it would be a help to them.

He who is never satisfied with others, may learn, if he chooses, that nobody s ever satisfied with him.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

There are every year complaints from many of the cultivators of fruits for the market, that they are not paid for the expense of raising them. There are often gluts in the market, also, which bring prices down to a very low figure. The cause of fruit-raising being unprofitable in the majority of cases, is, that the expenses of carriage from distant places is too great to afford a fair return in cash to the proprietors or renters of land. No doubt there is much truth in all this, but there are also other causes for failure in the objects sought. One reason is, that there are by far too many inferior varieties of fruits planted, and those which are good are not well managed afterward. The trees are improperly and unskilfully pruned, and their produce not sufficiently thinned out when the crops are heavy in order to permit those which are allowed to remain to attain superior quality.

Many persons recommend that canning establishments be erected for disposing of the great quantities of surplus fruit which can not be sold; but at present prices, taking into consideration the vast quantity of inferior fruit, the best remedy is not to raise any more of that poor fruit, to get rid of which it will be necessary to incur the expense of the canning or drying processes. If people can not raise such Peaches and Pears, or Apricots and Plums, as are marketable at a dollar a bushel, it will be better to cut the trees down and put in superior varieties, or something that can be made to pay better. Unless farmers and fruit-raisers mean to take sufficient pains to raise the best Peaches, Pears, Apricots, Plums, etc.—all large and

high-colored, and without any defects —then the most sagacious course is to grub the trees up. It costs no more to raise the best fruit than the most inferior, and it is the true policy to raise the finest fruits of all kinds, or else go out of the business altogether. Do not flood the market any longer with worthless fruit, which not only will not pay the cost of handling, but breaks down the price for good fruit.

There is this season an increased amount of small, inferior and juiceless Peaches on the market, which have to be sold at any price, however small; and great numbers of bushels have rotted; this can not be at all attributed to our dry climate. I would say to all cultivators of fruit, raise the kinds which will sell, and then send them to market in the most attractive shape. It is also highly important to deal fairly with one another. The top of every basket or box of fruit should be of the same quality with that in the interior, or on the bottom. If the whole basket is filled with small Peaches (if you send any small ones at all), by all means put small Peaches on top; if with fine Peaches, put fine ones on the top. Be strictly honest in packing. This will operate better in the end for both yourself, the commission merchant, and the customers. What right has any one to expect fair dealings from another, unless he himself deals fairly? If growers will cheat in putting up fruit in boxes or baskets, which do not contain what they seem to do, and want their commission man to cheat his customers, how can they expect him to be honest in dealing with them?

Owing to the exceptional coolness of the spring and summer, Raspberries have been in very much greater plenty, and for a longer term in market than for several years past. They are now, however, getting to be scarce (1st of August).

Blackberries are also holding out well this season, and for the same reason as the Raspberries. Many of this last fruit are picked too often before perfectly ripe. This will answer well enough when intended for stewing, but not for use in their natural state. They are wonderfully fine and productive in some of our coast valleys.

The Apricot season is just about closed. Fresh Figs are selling at from 20@25c. per pound; Smyrna, 25@35c. per pound.

Peaches are still in immense abundance—the majority rather small and inferior in quality.

Plums of several varieties are now coming forward in liberal quantities, and meet with ready sale for cooking, especially till they are riper.

Strawberries, as well as Raspberries and Blackberries, are prolonged in their yield on account of much cool weather, and, in consequence, some precipitation of moisture.

Red Currants are gone entirely. Common Apples and Pears are plentiful and cheap, but Bartlett and other choice Pears are commanding good prices.

Whortleberries, Black Currants, Mangoes, and Los Angeles and Sicily Lemons are out of season, and there are none to be had in the market.

Water-melons are rapidly increasing, and their price, of course, lowering. The same with Musk and Cantelope Melons.

Pomegranates are about 5 cents each. The market presents the usual display of tropical fruits (4th August).

Immense shipments of Tomatoes from Sacramento River and elsewhere, have most materially reduced prices. Green Corn from across the Bay is also much more plentiful and greatly lower. Ow-

ing to the abundance of nearly all sorts of fruits, Rhubarb meets with dull sale. Potatoes are low in price and of excellent mealy quality, generally. Our comparatively cool nights in California suit them well.

Green Okra has also declined, and is now quoted at 20@25c. per pound; Egg Plant is quotable at 6@10c. per bunch; Salsify, 10 cents per bunch; Artichokes, 25@35c. per dozen; Summer Squashes at 5c. per pound.

Editorial Gleanings.

Hardhack and Potentilla fruticosa.—Since the publication in the December report of Mr. T. S. Gold's remarks on *Potentilla fruticosa*, several correspondents have expressed their apprehension that he may have meant the *Spirea tomentosa*, which is well known throughout the eastern States as "Hardhack." This, however, was not the case, as Mr. Gold sent a specimen of the plant he alluded to, and it was the true *Potentilla fruticosa*, which seems also to have received the name of Hardhack in that part of the country. This illustrates the great difficulty which often arises in identifying any plant by the common or local name. Botanical names, although sometimes hard to learn, have the virtue of being precise, and of always and everywhere meaning the same plant.

In confirmation of Mr. Gold's statement that the *Potentilla fruticosa* was one of the most formidable weeds of that section, we publish the following from Mr. D. F. Smith, of Goshen, Connecticut.

"I have wondered whether the 'Hardhack' referred to by Mr. Gold is not a different shrub from that referred to by Mr. Beardslee, of Ohio, and others. I would say with all possible emphasis that what we in these western counties of Connecticut and Massachusetts know as 'Hardhack,' and which Mr. Gold identifies as *Potentilla fruticosa*, is a very great nuisance, having caused damage in this town, and in other single townships, that would require thousands of dollars to represent. Hundreds of acres in this town, that twenty-five years ago were good pasture land, have been rendered worthless by the rapid spread and dense growth of what we call 'Hardhack.'

"There need be no difficulty in discriminating between these two shrubs; the *Potentilla fruticosa* has pinnate leaves, and bright yellow flowers, while the *Spirea tomentosa* has single ovate or oblong leaves, and rose-colored or nearly white flowers. *Spirea tomentosa* is more erect and less branching, with the small flowers densely crowded into a spike which terminates the stalk."—*Monthly Report of Department of Agriculture.*

How I Strike Cuttings.—All "half-hardy" (as they are termed) bedding plants may at this season be struck with great facility without heat. I take a box of any convenient size, say one foot by one foot and a half, with a pane of glass to cover it. I cut down the sides and one end, so as to make it slope a little from back to front, so that water may run off. Having some fine sandy soil ready, I place in the box as much as will cover the bottom to a depth of three inches, leaving a space between the soil and the glass of three or four inches at the back. Should there happen to be no cracks in the bottom of the box, I bore a few gimlet-holes, to allow the surplus water to drain away. Having smoothed the surface of the soil, I give it a gentle watering from a rose, and then prepare the cuttings in

the usual way. I prefer the points of healthy shoots that are not too gross, but rather under than over the medium of strength. I take off one or two pairs of the lowest leaves, and cut the end smooth immediately below a joint, leaving the cutting about two inches in length, working at only one variety at a time, and never keeping the cuttings exposed longer than necessary; indeed, if the weather is dry, I generally dip the foliage in water to prevent it from flagging. As soon as a batch is ready, I take some clean and dry sand and cover the surface of the soil to the depth of an eighth of an inch; this is a great safeguard against damping, which cuttings are liable to if the weather is dull, though not absolutely necessary. I then dibble in the cuttings thinly to the depth of half or three-quarters of an inch, making them firm: give a gentle watering, put a label with the name to them, and cover them up till the next batch is ready, proceeding in a similar manner until the box is filled. I place the box in a greenhouse, a frame, or even in a sheltered place out of doors, shading carefully all day, more especially in dry, sunny weather. I take off the glass and examine the cuttings every morning and evening, removing all decaying leaves or cuttings that have failed, and gently sprinkling with water to prevent flagging, though if the weather should be dull, very little is required. When the cuttings have begun to form a callus, the shading is made daily less, and, as they progress, air is given and increased by degrees, to prevent them from becoming drawn. When fairly rooted I dig them carefully out, and put each into a small pot; otherwise I gradually harden them off, until they can bear full exposure, and leave them in the boxes until spring, when they are transferred directly to their places in the flower garden. In this manner I strike more sorts of plants than I can at present remember, including fuchsias, verbenas, petunias, shrubby calceolarias, ageratums, salvias, and, in fact, all kinds of soft-wooded plants. —*Gardeners' Chronicle.*

Alfalfa as Hog Feed.—There is no doubt as regards the adaptability of alfalfa, in its green state, to the successful feeding of swine. Old and young alike are fond of it; and with little or no other vegetable food, can be kept in a fine growing condition till they have attained to full size; but to fatten them for the butcher requires a more oily or saccharine food. In feeding with alfalfa exclusively or nearly so, it must be borne in mind, that if it is intended to continue the field to alfalfa the following year, every hog must have a ring in the nose, or every root of alfalfa will be rooted out and eaten. The animal seems to be even more fond of the root than the top, and will do heavy work to get it, rooting the ground completely into a condition of perfect pulverization and to a greater depth than plow and harrow can go. It is, therefore, one of the best fallow crops that can be given to the land, and should have its place and year, in all systems of rotation in a climate like ours, allowing the hogs to eat and root their very best. It would simply surprise some of our hog-growers to see how easily five hundred animals, old and young, can be kept in a perfectly thriving condition on a few acres of alfalfa on suitable ground; and we would recommend a trial of the same as worthy their attention, always bearing in mind the necessity of an abundance of pure water accessible to the herd at all times.—*Exchange.*

The Thermometer.—The thermometer, or heat-measurer (from the two Greek words, *therme*, heat, and *metron*, a measure), varies considerably in different latitudes and altitudes. Zero, according to Fahrenheit, who never had the opportunity of experiencing an extra severe climate, was supposed to be the coldest point the mercury could show; but the experiments of Celsius, Reaumur, and other thermometrical *savants*, have shown that the quicksilver can be forced to fall thirty-nine degrees still lower, and that then it freezes. The thermometer being affected by the altitude of the place, the radiation of solar rays, the "lightness of the air," or the density, so to speak, of "the blanket of the atmosphere," it follows that so many degrees above or below zero, in Denver, for instance, is merely a relative indication of the heat or cold indicated by the same rise or fall in Black Hawk or Empire. The temperature being the same, the thermometer falls 20° for every mile of elevation. Hence, though that ingenious instrument indicated 23° below zero one morning last winter in Central, it shouldn't follow philosophically that it was, abstractly speaking, colder there than at the same time here, when our thermometer indicated a much higher figure.—*Exchange.*

Minnesota Wild Rice.—In many of the lakes of Northern Minnesota, and in the marshes at the head waters of the Mississippi, there are extensive beds of wild Rice. The Indians have long been in the habit of gathering it for use as food; taking their canoes into the Rice swamps when the grain was ripe, and beating it out with their paddles until the canoes were loaded. The Rice is about as valuable as that of the East Indies, and not so good as that of the Carolinas. Whether it will ever be profitable to turn these wild Rice fields into use, or to reclaim them for cultivation or not, is a question that can not be decided at present; but while Rice is worth 7 cents a pound, and the Southern fields are so full of malaria of so deadly a character as to prohibit white men from inhabiting them, it would seem as though these fresh fields of the North, so salubrious and so convenient of access, were worth at least an attempt at reclamation.—*N. Y. Tribune.*

The Largest Farm in England.—The largest farm in England consists of 3,000 acres, and belongs to a man with the Yankee name of Samuel Jones. In its cultivation he follows the "four-course" system, the whole extent of the farm being divided into four great crops: 750 acres to wheat, 750 to barley and oats, 750 to seeds, beans, peas, etc., and 750 to roots. His live stock is valued as follows: Sheep, $35,000; horses, $15,000; bullocks, $12,000; pigs, $2,500. The oil cake and corn produced annually amount to $20,000, and artificial fertilizers about $8,000. The entire cost of manure in various forms, used annually, is about $15,000. Sheep are claimed as the most profitable stock he keeps, and from them are realized about $20,000.—*Exchange.*

The Jerseys.—The island of Jersey has 12,000 head of horned stock (all "Jerseys,") which is about one to every two acres of agricultural land. The farms of the island rarely exceed 40 acres, and the feed of the cattle is mainly roots and grass, with some straw in winter. The prosperity of the Jersey farmers is said to be unequaled, in the same class, either in Europe or America.

Remedy for the Mildew on Vines.—A correspondent of a leading English horticultural work writes: "I read, a short time since, in a popular periodical, that 'irrigating the vine with dilute bisulphate of lime is a simple and complete remedy for the vine disease' (mildew). Is this so? And in what way, and in what quantity and proportions, ought the solution to be applied? My vines are completely conquered by mildew in spite of sulphur liberally applied. In 1870 I had very few bunches, although in former years I had good crops; and last year, 1872, I had not a grape. Leaves, stems, fruit, and all, were all eaten into and destroyed by the mildew. What can I do?" If by bisulphate of lime be intended the liquor made by boiling lime and sulphur together, we should think it a very dangerous application to a living plant; but, whatever the preparation intended is, it could have no effect on the vine-mildew if applied to the roots of a vine. The vine-mildew is a fungus attacking the leaves and stems of the vine, and the remedy must be applied to the parts affected. The spores of this fungus may be considered as everywhere present, but it is only when they meet with favorable conditions that they flourish. There is little doubt that a cold and damp atmosphere is one of these. But a vine out of health, like an unhealthy animal, is predisposed to the attacks of parasites, both animal and fungoid. As 1870 was a hot and dry season, it is probable that R. E.'s vines suffered from want of water, a very common cause of mildew; though the opposite—as cold, wet borders—by weakening the constitution of the vine, will render it liable to be attacked. After the vines are pruned, let them be dressed with sulphur, clay, and a little soft soap (4 oz. to the gallon of water will be enough of the latter), using soft water to mix them with. Let this be used of the thickness of thin paint, so as to cover the bark well over. As soon as the foliage appears next season, dust it well with sulphur, not waiting till mildew is seen before applying it; and repeat this application several times during the season, giving plenty of air, but keeping a warm, growing temperature. Before the vine-mildew is apparent to the unassisted eye, the foliage of the vine may be seriously injured, and the microscope will show the under side of a leaf covered by the mycelium of the fungus before its presence has been suspected. We use a machine, on the principle of a winnowing-machine, to dust a fine cloud over the vines when in a damp state; though every part is dusted, the quantity of sulphur is so small that it is hardly perceived. This is the only known remedy, and is always effectual. —*Exchange.*

M. Loiseau recommends that the usual method for striking cuttings should be altered. When, he observes, a cutting is put in perpendicularly, the sap, the natural tendency of which is to rise, is expended in pushing forward a new bud instead of forming a root. But if a cutting is laid horizontally, or even with its lower end higher than the upper, that is not the case; the sap prefers to move toward the higher end, or at all events is evenly distributed between the two extremities. This causes the callus to form so rapidly, that if the cuttings are put into a warm place eight or ten days are enough to secure its formation, or even that of the roots. Autumn cuttings taken off a little before the sap ceases to move, and treated in this manner, form the callus so quickly that they are ready for planting out before winter. In winter it is nec-

essary to put in cuttings in a gentle heat, or beneath leaves deep enough to keep off frost, and even then a callus will be found to have formed by spring time.—*Gardeners' Chronicle.*

A BARREL of flour weighs one hundred and ninety-six pounds; a barrel of rice, six hundred pounds; a keg of powder, twenty-five pounds; a firkin of butter, fifty-six pounds; a tub of butter, eighty-four pounds. The following are sold by weight, per bushel: Wheat, beans, and clover-seed, sixty pounds; corn, rye, and flaxseed, fifty-five pounds; buckwheat, fifty-two pounds; barley, forty-eight pounds; coarse salt, eighty-five pounds.—*Exchange.*

A NEW FODDER.—We want new grasses in California now that irrigation is beginning to interest us. They are now introducing into Great Britain what is called the prickly comfrey, a native grass of the Caucasus. It yields, in several cuttings, thirty tons to the acre. The grass is propagated from the roots and is perennial. Cattle eat it readily and thrive upon it. There is reason to believe that it will suit our climate.

FOR PRESERVING GARDEN STAKES.—A correspondent of the *Country Gentleman* considers the following the best way for preserving garden stakes made of pine: Boil the parts which are to be set in the ground for a short time in water to which blue vitriol has been added in the proportion of two pounds to the gallon. After long use they will be found as sound as the day they were made, while other stakes prepared with coal tar have failed.

ANT'S NESTS IN GARDENS.—F. M. G., in *Nature*, says: I have found a very effectual remedy for the annoyance of ants nesting in the garden paths and borders. A strong solution of carbolic acid and water poured into the holes, kills all the ants it touches, and the survivors immediately take themselves off. Care must be taken in its use, as it destroys animal and vegetable as well as insect life.

A SUBSTITUTE FOR GLASS.—Take equal parts of ale and linseed oil and four ounces of white resin (mix some sugar of lead with some of the oil), then mix the whole together, and wash plain calico with the composition, it will be found to resist the action of the weather for a long time.

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING JULY 31ST, 1873.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 508 Battery Street (opposite the Custom-house.)

BAROMETER.

Mean height at 9 A.M.		30.06 in.
do	12 M.	30.06
do	3 P.M.	30.05
do	6 P.M.	30.04
Greatest height, on the 24th at 9 A.M.		30.17
Least height, on the 1st at 6 P.M.		29.86

THERMOMETER.

(*In the shade and free from reflected heat.*)

Mean height at 9 A.M.		58°
do	12 M.	64°
do	3 P.M.	64°
do	6 P.M.	60°
Greatest height, on the 26th at 12 M.		75°
Least height, on the 11th at 9 A.M.		54°

SELF-REGISTERING THERMOMETER.

Mean height during the night	44°
Greatest height, on night of 15th	48°
Least height, on night of 1st	38°

WINDS.

North and north-west on 3 days; south and south-west on 9 days; west on 19 days.

WEATHER.

Clear on 10 days; variable on 16 days; cloudy on 5 days.

RAIN GAUGE.

July 22d	0.02 inches.
July 28th	0.01 "
Total	0.03 "

Map showing Irrigation

Canals in Fresno County, Cal.

THE

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LILY OF THE VALLEY—(CONVALLARIA).

BY F. A. MILLER.

"The Lily of the Valley" is one of those popular tuberous-rooted plants which are so rarely met with in our gardens or conservatories, and in almost all cases where its cultivation has been undertaken on this coast, it proved a failure. This is not very encouraging, and the question arises, what has been the cause of this want of success? To cultivate the Lily of the Valley in the open air may present difficulties which are not easily overcome, but I see no reason why we should not have them in our conservatories in their full glory.

The Lily of the Valley in its native country grows under the shade of trees, in the woods and forests, and produces its beautiful white bells in the month of May, filling the air with its delightful fragrance. The weather then is mild and warm, the atmosphere is filled with moisture, in just such a climate as we experience in California during our pleasant winter months; and this is an indication that even in the open air, in sheltered and shady places, the Lily of the Valley could be grown successfully with us. The greatest mistakes have been made in not giving it a proper place, and in expecting too much of the young and weak roots which have been from time to time imported, and have arrived here in a very doubtful condition.

In Europe, the Lily of the Valley is offered in the market in two different conditions: in clumps and in buds. The strongest roots, of course, are the so-called clumps, which are rarely brought to this coast. These would undoubtedly do much better here for out-of-door culture, if proper shelter, shade, and moisture were given to them; while the buds would answer the purpose of conservatory culture.

We generally receive the roots from abroad in autumn, and if they are intended for the conservatory, greenhouse, or window, I would suggest the following points for observation. In purchasing buds, select those which present a full and roundish top or sprout, as these only can be expected to flower during the coming season. Five or six of these may be planted in one five or six inch pot. If pots can be obtained of more than ordinary depth they will be preferable. The soil should be of a light and porous nature, otherwise its quality does not matter much; the best and most convenient soil would

be two-thirds of light and sandy loam and one-third of old manure and leaf mold. Plant the roots deep enough to cover the tops with soil. Water them well, and then sink the pots up to the rim in a shady and sheltered place in the open air; if the pots can be sunk in sand it will answer the purpose best. Over the surface place a thick layer of moss, which is apt to keep the roots warmer and also retain the moisture without being compelled to water frequently; a light sprinkling once a week will keep the roots sufficiently moist. As soon as the young shoots make their appearance, those which are expected to flower first may be taken into the conservatory or into the house. The growth and development of the plants may now be much encouraged by placing a flower-pot loosely filled with moss up-side down, over each, and closing up the hole. In about three weeks, the covering pots should be removed. The foliage will present a yellow appearance, but on being exposed to the light will soon attain its fresh green color. In four to six weeks the Lily of the Valley will have produced its charming flowers. The plants while growing should be placed close to or under the glass, kept well shaded, and liberally supplied with water.

Clumps of the Lily of the Valley may be treated similarly, if used for conservatory or window culture, but if intended for the open ground, they should be planted at once in a warm, sheltered, and shady place, and the surface covered with a layer of moss. Throughout the mild regions of California they may be expected to flower in the open air in March and April.

There are now several varieties of the Lily of the Valley under cultivation. The oldest and most popular is the *Convallaria majalis*, (Maiblume, May-lily), a native of Germany; of this, the following varieties are known:

Conv. maj., flore pleno, producing double flowers.

Conv. maj., var. alba marginata, the foliage of which is bordered with white.

Conv. maj., flore roseo, with rose-colored flowers, single.

Conv. maj., flore roseo pleno, same as above, but the flowers are double.

We also hear of the *Conv. multiflora*, a taller and more shrubby-growing species.

Conv. polygonatum (Solomon's Seal), similar in habit to the former.

By following the above method for the greenhouse culture of the Lily of the Valley, it may be had in bloom at almost any time during our winter months. All the varieties may be treated alike, and plunged in the open ground, and can then be taken into the house in succession, as they are required. After flowering, they may be put out of the way under the shelves of the greenhouse, or in a shady place in the garden, where they will not require any further attention until they are wanted again the coming year.

HOW TO GROW POND LILIES.

A Reading, Pennsylvania, lady gave the following directions for growing the white Water Lily — the common Pond Lily of our small inland lakes:

The roots, having been procured in the fall, were kept damp during the winter in flower-pots. In the spring a tub was made by sawing a substantial barrel in two; this was set on brick feet, out of doors, and one-third filled with garden soil, sand, and well rotted manure. The roots were planted in this mixture and covered. Water was added in small quantities, and at intervals of a

day or two—but so gently as not to disturb the earth—until the tub was full. Very soon the handsome round leaves, four or five inches in diameter, made their appearance and filled the tub. The loss of water by evaporation was made good from time to time, and ere long the blossoms appeared, delighting everyone with their beauty.

When winter approached, the water was allowed to dry off almost entirely, and the tub and contents put into the cellar and watered at long intervals. In the spring, the roots were separated, and about half the increase returned to the same tub, in a fresh mixture of earth.

They were brought out earlier than before (about April 1), and blossomed more profusely. The flowers were as perfect as the Camellia, and delightfully fragrant; closing at night and re-opening in the morning, as is the habit of Water Lilies. The blooms were about two inches in diameter—not quite as large as some of the specimens in the pond from which the roots were taken, but equally beautiful and fragrant.

But, unless nurserymen can supply orders for the roots of this lily, it would be interesting to those proposing to cultivate it to know how to get a supply of the stock. They grow generally in deep water, where only amphibious creatures can be expected to operate; while to build a coffer-dam on purpose to get the roots would hardly pay. Who can suggest a way for surmounting these practical difficulties?

It is stated that by a careful analysis it has been found that apples contain a larger amount of phosphorus, or brain food, than any other fruit or vegetable, and on this account they are very important to sedentary men, who work their brains rather than their muscles. They also contain the acids which are in need every day, especially for sedentary men, the action of whose liver is sluggish, to eliminate effete matters, which, if retained in the system, produce inaction of the brain, and, indeed, of the whole system, causing jaundice, sleepiness, scurvy, and troublesome diseases of the skin.

WEEDS.

[Continued from page 237.]

Much attention has been paid to the distribution of plants in various countries, and let me cite one place of study, because the facts are interesting, as showing how hard it is to actually eradicate weeds, and also how slowly changes sometimes take place in them.

At Montpelier, in South France, there is an old university, and nearly 300 years ago a botanic garden was founded. From that time to this, it has been a place where plants have been studied, both in the gardens and in the fields. It was then an old region; that is, it had been in cultivation for many centuries. Catalogues of all the plants found in the vicinity, good, bad, and indifferent, were made out. Successive botanists have studied and written on the matter. The great Linnæus went there to botanize. So the ground has been gone over again and again, and the plants noted. The present professor of botany there has, within a few years, examined it over again, and published the results. Each century there were efforts to bring in new plants. In the seventeenth, many were planted; again in the eighteenth century, again in this. Two botanists have left records of 900 foreign species that were planted in the places where it was believed they might

live without man's care. But it can not be seen that a single one of the whole 900 grows there without man's care and cultivation.

Then, again, many plants are cultivated in the botanic garden. Have any of these escaped cultivation? Very few, indeed. Some grew for a time as weeds, within the grounds, and two or three species became naturalized outside, but none of them as troublesome weeds.

Again; in the vicinity there is a port in the Mediterranean where foreign wools are washed and dried. The drying grounds where the wool is spread have been watched by the botanists for more than half a century. The total number of foreign plants coming up there from seeds brought in the wool amounts to 468 kinds. They came from Europe, Asia, Africa, Australia, and both the Americas. Of all this number, only one has become established, and I do not understand that it is troublesome, yet many of them were weeds where the sheep originally pastured.

Weeds of cultivation, as they are called, exist there, as they do everywhere; but they are mostly of the kinds that have been there from very ancient times. Of those known three centuries ago, not one is extinct there now. Man has fought them for that time—is fighting them still, but they are not *eradicated*. Checked they may be, but they are not exterminated. Five species of plants have become extinct, but none were *weeds*. And what have been the additions during this time? These are limited to six species; five of them from America are common now in the vineyards round about the place. Here we have a land, cultivated continuously since the days of the old Roman Empire. All these centuries man has been fighting weeds—hoeing, pulling, weeding, in that land of vineyards; and for three hundred years, at least, he has not absolutely exterminated a single noxious weed. Their relative numbers may have changed, but he is still bravely fighting the same foes that his ancestors have fought all these many generations. He may subdue them, but not entirely conquer them. And, in the meantime, a few fresh ones have been added to his fields, to give him more variety.

I have seen other cases where certain foreign weeds were established slowly, or at least spread slowly.

I have seen weeds near Mannheim, in western Germany, left by the Russian army in 1812–13, where they followed Napoleon in his famous retreat. I visited the locality forty-three years later; the Cossack weeds were there still, but had not spread widely. Not so, however, here. Since I have been to this meeting, I have heard that the Ox-eyed Daisy was left in this (Fairfield) county by the British soldiers in the Revolution, and here it will doubtless remain as long as the republic lasts, perhaps longer. And usually, if a foreign weed spreads at all, it spreads rapidly.

Egypt, a land cultivated we know not how long, has its old weeds. It is probable that the Egyptians of to-day are fighting some of the same species that the children of Israel had to dig and pull before the days of Moses, and which Egyptian slaves cursed even earlier.

Put Agreements in Writing.—How many misunderstandings arise from the loose ways in which business matters are talked over, and when each party puts his own construction on the conversation, the matter is dismissed by each, with the words: "All right; all right." Frequently it turns out all wrong, and becomes a question for lawyers and the courts. More than three-

fourths of the litigation of the country would be saved if people would put down their agreements in writing and sign their names to it. Each word in our language has its peculiar meaning, and memory may, by the change of its position in the sentence, convey an entirely different idea from that intended. When once reduced to writing, ideas are fixed, and expensive lawsuits are saved.—*American Rural Home.*

FORM AND OUTLINE OF CERTAIN OLD TREES, SHRUBS, EVERGREENS, ETC.

BY E. J. HOOPER.

Without presuming to rival the powers of the painter, perhaps it may not be altogether inappropriate in the HORTICULTURIST to point out the peculiar character possessed by some of our old trees, evergreens, shrubs, etc., with reference to their aptitude or eligibility for adorning parks, ornamental grounds, etc., as we commonly find them.

First, then, of the Cedar of Lebanon, and the Yew (whose character of growth is somewhat similar); neither of them shrubs, however, but real trees. What style and outline! What words can express them. Dignified, massive, graceful! How important these trees anywhere; but more especially in burial grounds, and in the vicinity of architectural structures. Then again, by way of contrast, let us look at the old Lombardy Poplar. I am aware that painters do not scatter the form of this tree (as some do similar forms of the *Eucalypti* tribe) over their canvas at random; but, there are cases when, for the sake of powerful contrast, they are fain to seek its aid. But we must recollect that we can not be confined strictly to the laws of painting, in making comparisons, however correct the principles. We must remember this one thing—all important—that we can not walk "in and out, and round about," as the poet says; we can not walk about the picture or painting as we walk about the pleasure-ground, every step bringing fresh associations and aspects; and surely this is a reason for departing occasionally from the painter's ideas. This, indeed, is an important consideration at all times; and thus we find that persons imbued with good taste and some experience do not choose to judge from one point of view, nor yet even from a second; but pace up and down, considering the bearing of this or that feature from various points of view. Although the Lombardy Poplar, and like shaped trees, as used for contrast of form against the flat or horizontal lines of the Yew and Cedar of Lebanon, are of much value, yet they are meddlers with landscape, and can not be allowed to spring up anywhere. They need placing, if we may so term it.

Let us consider the old Holly, of time-honored memory. Setting aside Christmas associations, as chiefly observed in Europe and in the eastern part of the United States, what a fine thing a well-grown, good-sized Holly-tree is—or a large Holly-bush, if you will. Most of my eastern readers, at least, have seen a huge woodland Holly; bold in outline, massive, dark, and rich—a match for the most imperious storm. We want time in California for such things. On seeing such, we feel assured that a century would be no particular consideration with such a fine old fellow. And of what importance in our parks, cemeteries and shrubberies are trees and shrubs of such character of growth and thick, glossy foliage. Take, indeed, the Holly and its associate form in many other trees

and evergreens, from the pleasure-grounds of both Europe and America, and one-half their dignity is destroyed at once.

Another fine and most elegant evergreen I may point to — the Hemlock Spruce, or *Abies Canadensis*. No tree can boast of more grace and elegance than this; it is one huge waving plume, from the summit to the very turf. It delights in a rather naturally damp, and partially, if possible, shaded situation, and loves a soil somewhat unctuous and adhesive — if of a dark character, so much the better. Fortunately, in California, we have some fine Australian and other evergreens of this nature and shape, in some respects.

The Deciduous Cypress, too, is a most elegant tree, when in foliage, although when in a leaf-denuded state it is a most pitiful affair; but there is an airy elegance about the foliage which not many other shrubs possess. It is more like some Tree-fern than any other shrub. And the old Stag's-horn Sumach is a fine figure of a tree, when it has attained any size. The foliage is boldly pinnated, and the marking of the whole outline very sharp and lively. The blossom, moreover, has a very handsome effect; of a dull, rather deep red; and it is a free bloomer when comparatively young.

The Red Cedar is a fine tree, of the spiry, or what may, perhaps, be called the columnar class. I have seen them more than thirty feet in height, clothed from the soil to the summit, and as compact as a column. A finer object can scarcely be seen. Our young Giant Sequoias, wherever they have space, are assuming this shape and appearance, but their foliage is not quite so dense.

The old China Arbor-vitæ has a most dignified effect when it attains some size, and is grown compact. The Ilex is a tree of very grave, sombre, and massive appearance, and it succeeds well in California — as what does not? There are no hard winters here to break up its character, if not totally to destroy it. Neither has the Red Cedar, nor the Ilex, nor, in fact, any other of our numerous hardy or tender evergreens in this State, any snows, except in the high mountains, to make sad havoc with them when they get old, as they do in the East.

The Deodar is a tree which is now, like many others, becoming thoroughly domesticated among us. Few gardens but possess Deodars. To speak of its extreme gracefulness is almost superfluous; it is praised by all. It may not possess the stern dignity of the Cedar of Lebanon; it has, however, such intrinsic merits, irrespective of all associations, that it may claim a kind of pre-eminence on that score alone. Only observe what sharp etchings it produces as a sky-line. What other tree can give the same effect?

Another class of plants I would here point to, as of much importance in ornamental scenery. I mean the Yucca family. The *Yucca gloriosa* is, perhaps, the most highly esteemed; and a finer object when in blossom can hardly be conceived. It is majestic, bold, and even grand. The Irish Yew is another most distinct and significant tree, wherever stiff formality or deep contrast is desired. And then its color is so good; perhaps one of the darkest shades of green we possess.

It is a strange affair that the Sycamore, which, when young, is the most common-place tree imaginable, should, when old, become so very picturesque. When young it is a mere lean stripling; but as it attains age it becomes gathered in bold masses, and the general

outline carries most marked indentations. But the same may be said of the Scotch Fir, and indeed of some other trees.

Many more trees might be pointed out, but space will not permit. But if some of our old shrubs, evergreens, and trees will bear high commendations, what shall we say of all the new accessions to our list in California from all parts of the world, and nearly all doing admirably well? Look at the Conifers alone — a host in themselves. But I do not think it invidious to mix up these older acquaintances with modern introductions. I would fain have their due meed of merit awarded to them, and that, too, in the very presence of their most formidable rivals, who, no doubt, want to push them off their pedestals.

If the reader wishes to see specimens of many fine and various shrubs and evergreens, both native and foreign, of excellent forms, in fine health and well-grown, I would direct his attention to the public grounds of Mr. R. Nolan, and Mr. W. F. Kelsey, in Oakland, and the private garden of Mr. James Otis, Sutter Street, San Francisco.

HEDGES, OR LIVE FENCES.

Many species of plants have been pressed into the service, to do duty as apologies for hedge-rows in small as well as around large gardens in the colony, and not a few attempts have resulted in utter failure, while numerous instances of very partial success occasionally meet the eye in suburban as well as in more remote districts. But where can one see anything approaching to the luxuriant and well-kept hedges of old England? Does not the Hawthorn thrive in this climate splendidly, and grow luxuriantly, with its white pearly blossoms and its fragrant perfume? First and foremost, then, may be placed the White Thorn as a popular hedge-plant; it stands without a rival for such a purpose, and requires cutting only once a year, whereas other substitutes need no end of attention — such as the *Acacia lophantha*, which impoverishes the soil wherever it is planted. *Acacia armata*, or prickly Acacia, has been largely patronized, but it has a tendency to get patchy and bare, and now presents a very sorrowful aspect around many a country and suburban garden. The Arbor-vitæ, when duly attended to, does much better. The New Zealand *Pittosporum eugeniodes* forms a very beautiful garden hedge, and bears clipping remarkably well. The various kinds of Cypress, such as *erecta*, *torulosa*, *horizontalis*, and *Lambertiana*, as well as the Olive and Ceanothus, have all been used with more or less success, according as attention has been bestowed upon their cultivation. The common Furze forms a capital live fence, but as it gets very dry, and susceptible of easy ignition when a little old, it is rather a dangerous subject to deal with in this hot climate. Then there are the Privets, deciduous and evergreen, which make a very beautiful and ornamental fence; the Cape and Prickly Broom are also used for such a purpose, as well as the Chinese *Enonymus japonicas*, and *variegatas*, which also stand clipping well. The famous Osage Orange (*Maclura aurantiaca*) and *Gleditschia*, both from America, form fine strong hedges — many preferring the former to the Hawthorn. Certainly the Osage Orange makes a very substantial fence. *Bursaria spinosa*, a native of this colony, which flowers in January, is a very pretty ornamental shrub, and adapted for a garden hedge.

As already stated, however, there is

no plant like the Thorn so suitable for forming a hedge, and not only for small gardens, but boundary fences for fields, and forest plantations. It takes well with richly prepared soil, and amply repays any extra labor in the due preparation of the ground for their reception, which ought to be well trenched, and incorporated with a good supply of well decomposed manure. Any quantity of young seedlings can be obtained at the nurseries, but three-year-olds, twice transplanted, having fibrous roots, may be relied on as very satisfactory. When put in about six inches apart in the hedge-row, and headed down to within two inches from the ground, the following season numerous shoots will have burst forth. The erect mode of planting is preferable to the horizontal method, so commonly pursued in the old country. For a couple of years the plants may be left to their natural growth, but the third season brings round the trimming process, which may then afterward be pursued according as the will of the practitioner may suggest.

The most usual form adopted is the wedge shape, being by far much more easily performed with the hedge-bill than the other modes that sometimes find favor. It is of paramount importance, in order to be successful, to see that the ground is always kept in good order on either side of the hedge. In former times, the blooming Hawthorn was suspended from every English door on the first morning of May, being brought in from the woods with much ceremonial pomp; but, as such a custom had its origin in the superstitious rites that the heathen paid to Flora, our reforming forefathers almost "stamped out" May gatherings, and other kindred sports, then so popular among the people. —*Australian Town and Country.*

THE COCKSPUR THORN.

Englishmen who settle in this country naturally wish to have Hawthorn hedges, and those of our countrymen who have seen the "quick" hedges abroad, or have read of their beauty, become impressed with the idea that the Hawthorn is the proper hedge-plant. When these enthusiasts try the Hawthorn hedge they are sadly disappointed. It puts out its leaves late and drops them early; under our hot suns the leaves soon get a burnt and rusty appearance; and worst of all, they find the hedge attacked by all the insects that infest the Apple, Pear, and related trees. In our climate the Hawthorn—so identified with English rural scenery, and so interwoven through English literature—is practically useless. We are far from commending any Thorn as a hedge-plant, but there is no one of the large genus so well adapted to the use as the Cockspur Thorn. This is an indigenous shrub or small tree, found from Canada to the Gulf, and extending west of the Mississippi. As ordinarily met with, it is a shrub, but under favorable conditions it forms a handsome round-headed tree fifteen or twenty feet high. It is distinguished from other species by the exceeding neatness of its habit. The leaves are obovate—broadest toward the extremity—varying considerably in shape, serrated on the edges except near the base, very thick, bright and shiny above, and conspicuously veined below. The flowers are in clusters of from two to six in a simple corymb, and are larger than in most of our native species. They are succeeded by a small bright red fruit. The thorns of this species are slender, and from two to two and a half inches long. There are several native forms that have received names as species from the ear-

lier botanists, and a number of garden varieties have been produced in Europe, some of which are only about two feet high. While we do not advise the use of this or any other Thorn as a hedge-plant, we can commend it as an ornamental shrub or tree, and it bears clipping as well as the other species. As is the case with other native and foreign Thorns, the seeds of this do not germinate until the second year.—*American Agriculturist.*

ODORS OF FLOWERS.

Much of the importance attached to flowers by people generally, says the *Pacific Rural Press*, is owing to the odors they exhale. The Rose has long been cultivated by amateurs, no less for its grateful fragrance than for its beauties of form and color; and those which combine these qualities are the favored objects of the florist's care. The cause of the odors of plants is, no doubt, the disengagement of a volatile oil, which, in some cases, is easily obtained, and made subservient to the use of man; in others it entirely eludes every effort to confine or preserve it, being as evanescent as light, which is the agent of its production.

No one can go into the country in those places where vegetation of many kinds is abundant, without having the olfactory nerves excited and refreshed by the odors of thousands of plants, leaves and flowers. These odors are considered most health-bearing, and full of ozone. This is like continually inhaling the scents of a colossal and natural bouquet. The fragrance is all around us. We enjoyed this especially lately, in a visit back of Saucelito about nine miles, near the ocean, in Marin County.

Odors are distinguished into *permanent*, *fugitive*, and *intermittent*. *Permanent odors* are such as are inclosed in the tissue of the wood and bark of plants in a concentrated form; and, either from being slightly volatile, or contained in close vessels which prevent exhalation, they remain for a long time, giving to the organs in which they are contained their peculiar odor. There is, probably, no part of a vegetable absolutely destitute of permanent odor. Every variety of wood, under certain circumstances, exhibits it. We found this nearly general in smelling the specimens of Dr. Stivers' collections of the woods of the coast, as well as his foreign specimens. Some of these woods, nearly scentless otherwise, become strongly odorous when rubbed or heated. The Pine, Oak, Redwood, Beech, and Cedar, are striking examples of this kind. Others are odorous for a long time after being cut, under ordinary circumstances; of this kind are the Rosewood of Teneriffe, the Cedar, and Sandalwood (*Santalum Album*) of India, so highly esteemed in Eastern Asia for its fragrance. The slight volatility of the oil to which these species owe their odors, and the compactness of the wood, enable them constantly to yield their fragrance for an indefinite length of time.

Most visitors to this coast notice how remarkable and pleasant are the odors of the wood with which the cases of libraries, etc., are made.

Some woods are fragrant when first cut, but lose this property in a very short time, as is the case with Cinnamon and Cassia, the fragrant substances being volatile and the wood porous; both causes concurring to render the wood in a short time scentless.

Fugitive odors are such as belong to organs of short duration, as the leaves and flowers. We have been in the

South during the season of the bloom of Magnolias, when the woods and swamps were perfumed by the odor of their flowers. This odor is but little during the direct action of the midday sun, but at sunset, when there is dew, the air is loaded with their fragrance. A shower produces similar effects.

Intermittent odors are such as are given off at particular times; and the plants which yield them are entirely destitute of such odors at other times. Many *Orchidaciæ* are perfectly scentless during the day, but during the night are fragrant. A remarkable example of this class of odors is exhibited by the *Cacalia septentriolis*, which, it is said, emits a strong aromatic odor only when the sun shines. The Night-blooming Cereus gives out flashes or puffs of perfume, as its intermittent odors are called. Many other cases we might cite of similar singular phenomena, which would properly come under this head.

Odors have been classed, from their similarity of effect on the human system, into aromatic, stimulating, penetrating, and sweet, but the difficulty of fixing definite limits to the application of these terms renders the classification of little use.

It is observed that white flowers are most odoriferous and agreeable, the yellow and brown most disagreeable.

Ammonia for Verbenas.—The sulphate of ammonia is an excellent manurial liquid to apply to Verbenas, or any other flower, giving to the foliage a dark green, luxuriant and healthy appearance. It is economical, clean, and easily applied. Prepare it in the evening before using, by dissolving one ounce of ammonia in two gallons of water. It may be applied once a week.

Indigo Culture.—Indigo was once a most important crop in South Carolina, and proved equally prolific in Louisiana. Enough might undoubtedly be raised in the United States to supply the home market. Some Indigo produced at Baton Rouge was pronounced to have been equal to the best Caraccas, which sells at one dollar per pound, and experience has proved that one acre of ground there will yield sixty pounds; that it requires only from July to October for cultivating it, and that there is not connected with it one-third of the expense or time that is generally required for the cultivation of Cotton.

The plant is somewhat like a fern when grown, and when young is hardly distinguishable from the lucerne grass; its leaves in general are pinnated, and terminated by a single lobe; the flowers consist of five leaves, and are of the papilonaceous kind, the uppermost petal being longer and rounder than the rest, and slightly furrowed on the side; the lower ones are short and end in a point; in the middle of the flower is formed the style, which afterward becomes a pod containing the seeds.—*Rural New Yorker.*

Watermelon Vinegar.—Perhaps it is not generally known that a fine white vinegar can be made from the juice of Watermelons. We had a large quantity of melons last season, and, after we had cut out their crimson cores for eating, scraped the shells, from which we gained a large amount of juice. This we carefully strained, and put into jugs with small glass bottles in their mouths. We set the jugs out into the sun, and in time had a fine-flavored, clear, strong, white vinegar. The vinegar at a certain stage will be very bitter; but, when perfected, loses this, and acquires true vinegar taste.—*American Agriculturist.*

PEACH FUNGUS.

BY DR. J. STRENTZEL.

Two years ago, in the orchards along the Sacramento River, was first observed the extended growth of a new fungus or lichen on Peach-trees, covering the fruit in ash-colored blotches, and the ends of growing shoots in detached masses, spreading from a cottony tuft of a growing germ. The leaves on the affected part drop off later in the season, and the end of the shoot generally dries up. The growth of the fruit is not apparently checked, but the thin-skinned varieties, on ripening, get a puckered-up, pocky, disgusting appearance. The earlier varieties are most affected; the yellow, among them the Crawford, not so much. None was noticed on the Snow Peach. The present year the disease has appeared in an extended circle, and is causing a greater injury to the fruit.

It is not pretended to assign a cause for this anomalous growth, beyond that the peculiar atmospheric condition was favorable to its rapid development. The trees may have been also depleted of vitality, or this having been an unpropitious year for the "curled Peach-leaf" the superabundant sap found a new parasitic consumer. But it can be reasonably hoped, that some of the usual means employed for the destruction of kindred growths, will be serviceable in this case. That the disease will certainly spread to all parts of California can be fully apprehended. The losses thus incurred would be severe to horticulturists. Thus it is of importance that every experience should be brought to public knowledge, and every means of extermination at once tried. The burning of the pruned off-shoots should be rigidly followed; the ground around the trees scraped and limed, and the whole orchard repeatedly fumigated, early in spring, in favorable weather, by keeping up numerous smoldering fires of spent tanbark, or damp straw mixed with asphaltum or coal-tar. These are the most available means for the destruction not only of varieties of mildew, but also of innumerable noxious insects.

NEW FRUIT-DRYING PROCESS.

Fruit-drying has been carried on to some extent, both in Santa Clara and other counties, during the last year, and promises at no distant day to become a most important industry. In some places the fruit is dried by means of artificial heat; in others, by the heat of the sun. In the neighborhood of Santa Clara may be seen an apparatus fitted up for drying fruit by artificial heat. On the premises is a steam-engine of fifteen horse-power, used for sawing lumber for boxes, for grinding apples for vinegar, and for other purposes connected with fruit-packing. Close to the engine is a wooden cylinder about five feet long and three and a half feet in diameter. In the cylinder, placed in close proximity to one another, are six hundred brass tubes, into which the air is forced by a fan worked by the steam-engine. The waste steam from the engine is conveyed by a pipe into the top of the cylinder, and, after becoming condensed, runs out at the bottom, heating, in the mean time, the air in the brass tubes. The heated air rushes out at the other end of the cylinder, and enters the bottom of what looks like a large chest of drawers, thirty-two feet long, ten feet high, and seven feet wide. This is the kiln. The kiln is divided into eight compartments, into which are fitted galvanized iron screens for holding the fruit. There

are in each compartment forty-two screens, on each of which twenty pounds of fruit can be dried. In the face of the kiln there are several horizontal doors placed one over the other, so that in handling the screens only a small portion of the kiln is exposed to the cold air. The kiln is capable of drying over three tons of fruit at once. Some of the fruit, preparatory to drying, is cut by hand, but more by machinery. Apples dry in seven hours; pears, tomatoes, and plums, in eight or nine hours. Grapes require about twenty-four hours. The process could be completed more rapidly, but the result would not be so satisfactory as when sufficient time is allowed. It takes about seven pounds of apples, seven pounds of pears, twenty pounds of tomatoes, six pounds of plums, and five pounds of blackberries to make one pound of each kind of dried fruit. During last year were prepared and sold at this establishment 12,000 pounds of dried pears, 8,000 pounds of dried apples, 3,000 pounds of dried plums, and a large quantity of grapes, blackberries, and other fruits. Sent East by rail were forty-four car-loads, each containing 17,500 pounds of fruit. Some of this was purchased from other fruit-growers.

According to a fruit-grower who dries his fruit in the sun, from four to seven pounds of plums will make one pound dry. The process of drying lasts from four to ten days, and the estimated cost amounts to three cents for each pound of dried fruit. It is sold in San Francisco for twenty-five cents a pound. The grapes dried by this process in different parts of the State were exhibited last year at the agricultural fairs, and were, in general estimation, superior to the imported raisins. The quantity of lumber required on which to dry the fruit is considered the greatest impediment to the success of this process. In some places the grapes are dried on the vine. This process is carried on in the interior valleys, where they have little dew or fog, and where the thermometer ranges from 80 to 115 degrees. Though no one of the persons engaged in fruit-drying has had much experience to guide him, yet the results are highly encouraging.—*From Overland Monthly for September.*

Irrigation.—*The San Joaquin Valley Argus*, in speaking of the advantages of irrigation, says: We rode over a portion of the country on the west side of the San Joaquin River recently, and had an opportunity of seeing the advantages of irrigation, by comparing the sterile waste on one side with the lands on the opposite side of the great canal, which were under the fertilizing influence of the abundance of moisture afforded. The lands irrigated have given to the thrifty farmers an abundant harvest of wheat, or are covered with growing and maturing crops of corn, alfalfa, vegetables, and fruits in great variety and abundance, making the people's homes attractive and the people themselves contented and happy. The Canal Company having made terms with the farmers in the valley below the present terminus of the canal at Los Baños, are preparing to extend their great work down through the valley to the Point of Timbers, and will soon have a heavy force engaged in enlarging the channel at the upper end and reducing the fall so as to make the canal available for navigation as well as irrigation.

Rye flour boiled in water, with a little alum added while boiling, makes an adhesive paste almost as strong as glue.

VALUE OF PLANTING ORNAMENTAL TREES AND SHRUBS IN HOME GROUNDS.

The question of actual profit in dollars and cents, in planting ornamental trees and shrubbery, is not to be so exactly shown as it has been with fruit trees, yet there is a vast profit herein, not limited to the immediate advantage of the planter or purchaser of the property so embellished. Who can have failed to note that when a piece of real estate is offered for sale, its ornamental trees and plants (if well selected and in good culture) always add a charm, which finds recognized value in the increased price paid by the buyer? Is there no profit in planting and caring for good trees and plants for ornament? Every farm and orchard, every street and highway, every public square, park, or cemetery, needs its ornamental planting, and all property adjacent is increased in value where it is done. On the farm, near the orchard and near the house, and on the highway, ornamental (not less than useful) screens of deciduous or evergreen trees, are more or less necessary (if Nature has not provided in advance) as protections from wind and storm. Any farm, orchard, or vineyard so protected will yield a larger annual return, and will come earlier into ripening, and consequently the value of the property be increased. A dwelling embowered in trees, is manifestly more comfortable in all seasons of the year, and must be more healthful in consequence of the equalized temperature produced thereby, and of course enhanced in value by this important aid.

It has become a common subject of remark and study — the influence of trees on climate and crops, as evinced by the destruction of our native forests by the woodman's axe. On the western prairies we now see forests and groves springing up, and carefully cultivated to protect farms and houses from the effect of storms and blighting hot winds, and to furnish timber and fuel. Who can tell of the great increase of value to accrue from these young groves, and from the vast lines of beautiful hedges now growing up in the West, to take the place of unsightly fences?

Every homestead requires its arbor of vines, its screens of evergreen trees, and its beautiful hedge-rows, for the seclusion they afford, and to keep out of sight objects not proper to admit to the public eye. Every porch, and every approach to the home, claims the grateful shade of some over-arched tree, or the welcoming smiles of plants, of beautiful foliage, and fragrant flowers.

The healthful effects and profits of the various fruits of garden or field have their due importance, yet the sacred associations of home are by no means complete till the inviting shades of beautiful trees and the sweet scents of many-tinted bushes and plants bespeak a regard for something beyond the pleasures of the palate or the profits of culture, and declare the bliss of contentment more precious than gold.

The importance of our subject is not limited to the planter, or the owner of the premises; it extends to the whole community. The constant, careful culture of good plants, whether for fruit or ornament, can not fail to exercise a healthy influence on all in their vicinity, as regards both taste and morals. It leads to gentle thoughts and good purposes. The soothing and refining influence of spreading trees, of flowering shrubs with delicate odors, of graceful climbers with drooping festoons and intertwining tendrils, betoken home affection, home comfort, contentment; and must bear profit in inspiring deli-

cate thoughts, in ameliorating manners, in cultivating virtue.—*Horticulturist.*

CAMPHOR.

Perhaps the most common and popular medicinal agent for household use is camphor, a drug which has been regarded as a cure-all by mothers, grandmothers, and great-grand-mothers, down through many generations. The "camphor bottle," holding a solution of the agent in rum or dilute alcohol, is found upon a shelf in almost every dwelling, and if among the younger or older members of the family an ankle is turned, or a limb bruised, or there is headache, or teethache, or earache, or belly-ache, down comes the camphor bottle, and the suffering member is well dosed. Camphor is a powerful agent, and, in moderate doses, capable of doing much mischief. It is a matter of wonder that so few instances of injury result, considering its wide-spread empirical employment.

Camphor is brought to this country in a crude or impure state, and here it is subjected to the process of distillation to render it fit for employment. There are several important refineries in this country, one of which is at Rumney, N. H. A correspondent of *The People* presents the following interesting facts regarding camphor and this refinery:

"The camphor of commerce comes from Formosa, Sumatra, Borneo, Japan, and China. It is obtained in crystalline masses already formed, and also in grains by distillation. The tree which produces the former kind is a near relative of our Basswood, which we know as a charming tree, perfuming the air and yielding the finest honey in the world. It grows on the Diri Mountains in Sumatra, and in Borneo. It towers upward more than a hundred feet, and has been known to obtain a girth of fifty feet. The spirited persuasion of the axe draws from this forest monster the white treasures secreted in longitudinal fissures in its heart wood, sometimes, though rarely, in a layer as large as a man's arm, but more frequently in small fragments to be carefully extracted by some sharp-pointed instrument. It is not an abundant bearer. Twenty pounds is a rare yield for a great tree; ten pounds is a good harvest from one of medium size, and many are felled and split that furnish no camphor. This, however, is not an entire waste, since the wood is easily worked, and is never attacked by the voracious myriads of eastern insects which destroy all other varieties except the Teak and Calambuco. House and ship timber are made from it, besides many articles of furniture, and the aromatic trunk is extremely valuable to the housekeepers of our colder climate. This kind of camphor seldom finds its way to Europe and America. The Chinese ascribe to it marvelous medicinal properties, and pay for it enormous sums, thereby securing the entire yield.

Common camphor is obtained by distillation from the root, stem, and leaves of certain species of *lauracœ*, but more especially from the *Laurus camphora*. This tree is of good height but not gigantic, is many-branched with evergreen lanceolate leaves on short stalks, and small yellowish blossoms in long clusters at the end of the flower stems. Of this, also, there are two varieties. The Chinese or Formosa camphor is carried in junks to Canton, and there packed in square chests lined with lead, whence it is sent to the different eastern ports, where we procure it. It is of a grayish color, with a grain like sugar,

and usually unattractive in appearance. The Dutch or Japan camphor is prepared in Batavia; is packed in tubs securely matted, is pinkish in hue, and coarser than the Chinese.

Both kinds need purification before using. The Venetians first, and afterward the Dutch, monopolized the labor and profit of refining it, for a long period, and it is only of late years that other nations have succeeded in obtaining it in its crude state.

Camphor is slightly soluble in water, but yields freely to alcohol, acetic acid, ether, and the essential oils. A pretty experiment may be tried with it which the young people will find amusing. Scatter a few pieces of clean camphor upon pure water, and they will whirl and sail about, keeping up the dance sometimes for hours. Drop among them some greasy matter, and the merry little performers will stop on the instant.

Milton Holden & Sons, of Rumney, N. H., have the only camphor refinery belonging to New England parties. There is one at Stamford, Ct., but it is owned in New York. There are two in New York city, and one in Philadelphia.

The loss in refining runs from eight to sixteen per cent. The firm now are employed by W. F. Weld & Co., of Boston, and refine from six to seven hundred pounds per diem. They have two large furnaces, the tops of which are covered with heavy iron plate, and about an inch of sand to regulate the heat. They have fifty-six square and thirty-eight round pans, which are filled every morning, and in twenty-four hours are ready to be emptied. These have tin globe-shaped covers, with a tubular vent in the centre, and as the heat dissolves the camphor into a liquid, it rises in the form of vapor, and attaches to the covers, the impurities falling to the bottom of the pans. It requires long experience to know just the amount of heat required so as to secure the purest article with the least loss.

It requires about one-quarter of a cord of wood per day to run these furnaces, a day's work averaging fifteen and a half hours. After cooling, the contents of the square pans, clear as crystal, are packed in boxes of one hundred pounds each, and those of the round ones into barrels carefully lined, and are then sent to market, and from thence into every dwelling in the land.

AMONG THE ROSES.

An ardent Rose lover, whose enthusiasm bubbles over in glowing words, writes to the *Canada Farmer*, of some of his favorites:

"A perfect little gem is Madame Alfred de Rougemont; my first experience in blooming this Rose was with it in a pot, and it was a most charming sight. I planted it, however, in the open ground, where it passed the last trying winter safely, without any protection; and has been and still is covered with its delicate and lovely roses. The wood and foliage are of a light green, the growth moderately stout, and with a free and graceful habit. The roses are small in size, quite double and full; when newly opened they are most handsomely capped with white, with a delicate tint of flesh color, deeper towards the centre. It is a most abundant bloomer; and though by no means showy, is yet exceedingly attractive in its modest loveliness. For bouquets in which light colors predominate, for wreathing the hair, or set singly for a loop to gather flowing tresses, it is perfect.

"Among the brilliant dazzling ones, I place in the foremost rank the Duc

de Rohan. Free and vigorous in habit, its leaves thick and massive, yet glossy in their dark green, the entire tree puts on the air of one of noble blood; the roses are large, double and full, and when newly opened, are of a dark rich red brilliantly shaded with vermilion. The petals are of good substance, and have that rich velvet-like appearance which gives such fullness and depth to the glowing color. Apparently perfectly hardy, and an abundant bloomer, it will take a commanding position in all our choicest collections.

"Another of these dashy showy fellows is Lord Macaulay. One would hardly expect the staid old historian's name to have been handed down to coming time linked with such scarlet and crimson robes. But it is a lordly Rose, nevertheless, and seems likely to thrive well in this unaristocratic land of ours; never losing a bud through all the trying weather of the past winter, it pushed forth its stout, dark green shoots when tardy summer came at last, and clothed them with thick, leathery, shining leaves, which tell of blood. And then came the roses, large, full and showy; noble blooms, opening with a brilliant scarlet color which changes at length to a deep glowing crimson of rare richness and beauty.

"But for queenly stateliness of habit and queenlike beauty, Madame La Baronne de Rothschild is peerless among the Roses. Others may blush with a more coy and maidenly grace, others may put on more gorgeous apparel and dazzle the eye with purple and scarlet, but she robes herself in glossiest satin, and draws around her the drapery of ample folds, dyed with richest yet most delicate peach-blow tints. The stout shoots, armed with ivory-like spines, have an air of matronly dignity, and the large, very large, handsomely cupped, stout-petaled roses, borne singly on the extremity of each shoot, and such a clear light satin rose, crown it with royal beauty. I do not wonder if Rose growers in England were wild with excitement over the advent of this Queen among Queens, and the Royal Horticultural Society awarded to her the highest certificate of merit. One thing I have noticed that is worth remembering: it bears the fierce heat of our July sun uncommonly well.

"And what a charming Rose, in its stainless purity, is the Boule de Neige. The blooms are small, and in the esteem of some that may be counted a defect; but to me its comparatively miniature size is one of its highest charms. Set off with a single spray of its bright green leaves, how charmingly does its snowy whiteness contrast with those raven locks. And whatever may be wanting in size, it more than compensates in the abundance of roses, while the petals are rolled back so neatly, one upon the other, that it well deserves the name of Ball of Snow. And last fall, I remember, what an abundance of white roses we gathered from this best of white autumnals.

"And writing of autumnal bloomers, reminds me of that prince of dark Roses, Xavier Olivo. Last fall this was one of the most attractive in the bed; and now the tree is covered with roses and rose-buds, as though its life work was to cover itself with blooms. And such blooms they are, too, magnificent in size and beautifully full, of a deep yet brilliant velvety scarlet, when first open, and gradually changing to darkest crimson. It is an exceedingly showy Rose, that can not fail to be admired in the choicest selection—beautiful when only its rich, deep-green, glossy leaves are to be seen, but gorgeous when, mingling with its shining foliage, the

darkly glowing roses are seen in the height of their beauty.

"But I must stop. Yet I can not stop until I have shown you the lovely Countess de Chabrillant. Did you ever see such shell-like petals, so beautifully set in cup-like form, and so sweetly tinted with shaded pink? Is it not a most lovely flower? And each rose is so perfect; not crowded in clusters so close that none can get room to unfold in perfection, but singly, borne on the point of each strong shoot."

CALIFORNIA SEEDLING PEARS.

At a meeting of the Western New York Horticultural Society last winter, President Barry acknowledged the receipt of several varieties of Seedling Pears, originated in California, of which he said:

"In the month of November last, I received twenty-six varieties of Seedling Pears, raised by Mr. Bernard S. Fox, of San José, California. Their appearance surprised me. Many of them were so much like some of our old, well-known sorts, that I half suspected my friend Fox of playing a joke on me. There were Bloodgood, Seckel, Lawrence, Winter Nelis, Beurre Clairgeau, Beurre Bosc, Easter Beurre, Duchesse d'Angouleme, Beurre Superfine, Glout Morceau, and others.

"Some friends, very good judges, to whom I sent specimens, had the same doubt in regard to their being seedlings. When I began to examine them closely, and cut them, I found they were quite distinct from the sorts they resembled, and were positively new. I then wrote to Mr. Fox for some account of their origin, and he answered that they all sprung from the seed of the Belle Lucrative, sown in 1863, and had fruited in the rows where they had first grown.

"Some bore the fifth year, and the sixth over 200 bore fruit. One-fourth of the trees have not yet fruited, and for five years to come new fruits may be expected. Many of these varieties are fully equal in size and beauty to our best, and many have the advantage of being quite late. Generally speaking, they are deficient in vinous flavor, like the Easter Beurre and others of that class. Only one or two are slightly vinous; but some were justly entitled to rank as best. A few of the largest appeared to be inferior in quality; one specimen of these, resembling Nouveau Poiteau, in 1871, weighed two and one-half pounds.

"This is, beyond doubt, the most remarkable instance of success in raising Seedling Pears on record. And the fact that all are from seed of Belle Lucrative, and none like that variety, but like all others growing around, is both curious and interesting, showing that the mother plant did not affect the character of the varieties. This might have been the case had some other varieties supplied the seed. Much of this success is, no doubt, due to the peculiar climate of California. The early age at which these trees begin to bear, even in the seed-bed, seems strange to us. Mr. Fox wrote me he could have sent eighty varieties the past season.

"We may now cease looking to the old world for new varieties of Pears, and turn our attention to the Pacific Coast. Mr. Fox has already raised Pears superior to nine-tenths of the new varieties received from Europe in twenty years. And we shall not only get new varieties from the Pacific Coast, but we must expect to see our markets filled with their Pears. The supply from that source is already large."

LANDSCAPE GARDENING.

Gardening, in all its branches, is a science that but very few understand; and *landscape gardening*, by which we mean ornamental gardening, or laying out grounds in design, is an art in itself. No one who has not a natural eye for the beautiful, and an innate love of Nature, can ever make a complete landscape gardener.

The artist on whom "Flora" and "Pomona" shower their favors and blessings feels their inspiration in all the labor he performs, and the *trees*, *plants*, and *flowers* thrive and grow, bud and blossom, and yield their fruit, as it were, by magic. There is a mysterious and electric chain that binds the master spirit and the dormant plants, which, when inspired, gives life and growth as the reward of faithful labor.

How few who assume to know, and claim to be "experts" in gardening science, ever produce successful results. They are almost wholly ignorant of the true science, and only spoil by their efforts what could have been made beautiful; they seldom possess the requisite experience, taste, or knowledge, to bring about a happy result.

A landscape gardener can only acquire a requisite knowledge of this art by much reading and study, and considerable practice—with an observant eye to the workings of Nature; for her skillful hands make "hill and dale," and "light and shade," just where from a given spot a "beautiful picture" should always be found.

The skillful landscape gardener must possess the requisite knowledge to *look forward* to the "years to come," and know the character and habits of the trees and plants he places in his grounds. He should know the size each will attain, the extent of their branches, etc , so that all their future growth shall still keep the design beautiful or make it more perfect. It is an utter ignorance, or inattention, to *this point*, that ruins so many grounds, that could have been an ornament to a large neighborhood — while the failure of such labor only deters others from like attempts.

No person who has a handsome residence should ever improve his grounds hastily, or leave this all-important work to common or unskillful hands. A bad design around a handsome mansion, in the garden grounds, or improper trees and plants, or good ones badly arranged, will destroy the beauty of all, and deteriorate the value of such a residence many times the cost of good and perfect work.

California offers to all who will accept from a bounteous Nature a "rich gift"—a climate and soil which, if rightly improved, will always secure to every homestead beautiful surroundings. But those who would enjoy such blessings must remember, also, that Nature has laws that are *imperative*. Obey those laws in the cultivation of the earth, and the "horn of plenty" will fill the lap with abundance. Disobey, and barrenness and emptiness is the result.

We think the experience of ten thousand tillers of the earth in California now testifies that *Nature* is not to be trifled with—that Nature recognizes all who obey her teachings, and loads with blessings the thankful heart.

"Nature never did betray
The heart that loved her."

—*California Farmer.*

EDITING a newspaper is very much like raking a fire—every one thinks he can perform the operation better than the man who holds the poker.

FERN-PRESSING.

The girls should not forget that this is the time to gather and press green ferns. They are so pretty and refreshing to have in the house in cold weather, so easily obtained, and so little trouble to prepare, that it is a pity any one should be without a few bunches when the flower season has passed. There are many modes of preserving them; but the one that seems the most successful is to pick the ferns when they are young and tender; lay them between newspapers, or in large, flat books, and place them under very heavy weights, until the sap has entirely dried. Persons who gather them in August often leave them in press till Thanksgiving or Christmas; asserting this long subjection to the weights keeps the color better than any other method. The safest way to secure perfect Ferns is to take a book to the woods, and lay each one between the leaves as soon as broken from the stem. Even in a few minutes Ferns will curl at their tips, and after an hour or two it is almost impossible to lay them flat. This process is very good for bright leaves, and makes them look less artificial than when they are varnished. Bunches of autumn leaves are very beautiful evening decorations, if a lighted candle be set behind them. This brings out their brilliant tints, and gives them the appearance of having been freshly gathered.—*Scribner's Monthly.*

A FARMER makes no greater mistake than in supposing that he must be wealthy to have a nice lawn in front of the house planted with flowers and evergreens, or that he can not have Pear-trees, grasses, and an abundance of small fruits.

GARDEN ADORNMENTS.

Ornamental vases, rustic stands, and hanging baskets filled with choice growing plants, now form a prominent and comely feature in the decorations of our flower gardens and pleasure grounds. They are elaborately bedecked, and add richness and elegance to well-embellished grounds. In the smallest gardens there is room for one or more of them; they are of various sizes, and sold largely by seedsmen.

The successful culture of lovely plants in baskets, vases, etc., lies in the proper selection of plants; for example, all the plants set in one vessel should be such as will flourish under the same treatment.

It is true that some species require more water than others—some thrive best in sunshine, others succeed best in partial shade. Any one at a loss to select suitable plants may ask an honest florist to furnish such plants, and the right number, to plant in a vase, stand, or hanging basket. State the size of it, and whether it will be placed in full or in partial shade—and whether creeping or upright plants are desired.

The next point is, to use a rich, light, and friable compost for the plants to grow in, as their roots will be confined in a small space. Frequent waterings should also be attended to. When the weather gets too cold for the plants in fall, all the vessels may be taken into the house, and by special care the plants therein will flourish till the following spring, when they should be thrown out, and the vessels refilled with new plants and fresh compost.

Ferns, Ivies, Lysimachias, Periwinkles, Lycopodiums, Tradescantias, Saxifragas, and many other genera, grow well even where they never get a glimpse of sunshine.—*The Evergreen.*

Editorial Portfolio.

IRRIGATION IN THE GREAT SAN JOAQUIN VALLEY.

This valley extends from Stockton to Fort Tejon, in the southern portion of Kern County, being 250 miles in length, with an average width of fifty miles, and an area of 7,900,000 acres of valley land, less about 600,000 acres covered by Tulare Lake. Its light, sandy soil produces from ten to fifteen bushels of Wheat per acre, and the deep rich loam produces forty to sixty bushels of Wheat per acre. Little has been known of this vast expanse of rich territory until within the past four or five years. The farmers planted Wheat in small tracts six or seven years ago, and increased the area each year, until they were enabled to harvest last year a crop of 12,000,000 bushels of grain, which would require over 300 large ships to carry away.

California is blessed with a climate and soil, which to the agriculturist is a mine of wealth unequaled on the face of the earth, but like everything else in this world, it is not perfect. The one defect is the uncertainty of the rain-fall. Nature has provided in the great Sierra Nevada range, reservoirs of snow, which, melting in the spring and summer months, pour down their streams of gold to the needy husbandmen. This vast plain has a perfectly even surface, and slopes gradually to the west and north, presenting a field for irrigation works, which, in point of economy in distributing the water, abundant and never-failing supply of water, and also richness of soil, can not be equaled. The subject of irrigation has recently attracted a great deal of attention. In our State large sums of money have been expended in the construction of canals. The principal field of operations is in Fresno County, owing to the great abundance of water there and the ease and economy with which the canals can be constructed. The first company organized, two years since, in Fresno, to take water from King's River, near the town of Centerville; length of canal, twenty-three miles; width, fifteen feet; depth, three feet; capacity to irrigate, 50,000 acres. The second, from the same river, near same point, thirteen miles long, twelve feet wide, two feet deep; capacity, 30,000 acres. The third, twenty miles long, fifteen feet wide, three feet deep; capacity to irrigate, 50,000 acres. The fourth, commenced last year, will be completed during the coming winter. A headgate has been erected and three hundred feet of canal cut at a cost of $15,000. It is to be one hundred feet wide, six feet deep, and six feet fall per mile, with a capacity to irrigate 500,000 acres. The above are shown on the map accompanying this issue of the Horticulturist. Water has been used on about 10,000 acres only this season. The canals were built and owned by the farmers of this locality; therefore we can not say what they cost, but would say for work already done about $40,000. Owning the canals, the farmers pay no rate per acre, except enough to keep them in repair. Irrigation can be done cheaply. Mr. Easterby, near the town of Fresno, had 2,500 acres in grain, and irrigated five hundred acres with the work of two men, in one week. Upland, irrigated, yielded fifty bushels of Wheat per acre; and the land not irrigated averaged fifteen bushels per acre.

Although Wheat has been a profitable crop, now that irrigation is at hand the farmers are turning their attention to crops of Cotton, Jute, Flax, Alfalfa, Tobacco, Oranges, Lemons, Limes, Figs, Grapes for wine and raisins, Almonds, Walnuts, etc., all of which can

be grown in Fresno County with the greatest success. There is now under cultivation about 2,000 acres of Cotton, the quality equal to the best upland Cotton of the South. Cost of cultivation one-third less than in the South, and the profit per acre, $25 to $50. The picking is done by Chinamen; wages, $25 per month, they feeding themselves. Jute can be grown here quite as successfully as Cotton, and with more profit. We shall shortly produce our own grain sacks, and thereby keep millions of dollars in the State. Water-power on King's and San Joaquin rivers, for Cotton and Jute factories, is sufficient to drive all the spindles in the New England States, besides the economy in Chinese labor, cheapness of living, saving of fuel, owing to the mild climate, and nearness of raw material to factory. The San Joaquin Valley will become as renowned for Cotton as the Southern States.

Besides the canals shown on the map and referred to above, there is in the same county a canal taken from the San Joaquin River, built by Wm. S. Chapman and Miller & Lux at a cost of $70,000. It is twenty-six miles long, twenty-five feet wide, and four feet deep, with a capacity of irrigating 150,000 acres. It is for the use of themselves alone. Also, a canal built by Mr. I. Friedlander to irrigate the land of the Alabama Settlement, which cost $75,000. The water is taken from the Fresno River; length, thirty-five miles; width, twenty-five feet; depth, three feet; with a capacity to irrigate 75,000 acres. The water will be turned in shortly. Also, on the west side of the valley is the canal of the San Joaquin and King's River Canal and Irrigation Company, starting from the junction of Fresno Slough and the San Joaquin River; length, thirty-nine miles; width, fifty-four feet; depth, six feet; fall per mile, six feet; capacity 500,000 acres; cost, $450,000; charge for water, $1.50 per acre per crop. Fifteen thousand acres were irrigated this year, planted in grain, Cotton and Alfalfa. Owing to the fact that not half the quantity of rain falls on the west side of the valley that falls on the east, crops were a failure on the west side except where irrigated; the result of irrigation showing a yield of from thirty to fifty bushels of Wheat per acre — without it, *none*. The canal is to be extended, during the next two years, forty-five miles farther, to connect with the San Joaquin River, and will be used for transportation. In time, Tulare Lake will be connected with this canal, giving an inexhaustible supply of water. An extension of fifty-four miles will cost $300,000 additional.

Other canals are projected and surveyed from Merced, Stanislaus, Tuolumne, and Calaveras rivers. These will probably be constructed during the next five years. Irrigation on a small scale is also successfully carried on in San Joaquin, Tulare, and Kern counties. People who are now living will yet see the day when the San Joaquin Valley will have a million of inhabitants, large cities will dot its plains, and the value of manufacturing interests be equal to the value of the entire gold yield of the State since gold was discovered.

To Tell Good Eggs.—If you desire to be certain that your eggs are good and fresh, put them in water; if the butts turn up they are not fresh. This is an infallible rule to distinguish a good egg from a bad one.

Three thousand species of grass are known to botanists.

Magnolia grandiflora.—It has been stated that the climate of San Francisco is not warm enough to perfect the flowers of the *Magnolia grandiflora*. This impression is wrong, and all that is necessary to prove this, is a visit to the garden of James Otis, Esq., on Sutter Street in this city, where a finely developed plant has produced some very fine flowers during the last few weeks, notwithstanding that the plant is exposed to the heavy winds and is in no way sheltered. This ought to be encouraging to the more extensive cultivation of this handsome tree, with its beautiful and effective evergreen foliage, which, alone, offers strong inducements for its culture as a choice ornamental shrub or tree.

Apocynum as a Fibre Plant.—From the *Gardener's Chronicle* (London) we obtain the following item:

The *Times'* correspondent at Berlin writes thus of a new fibre plant: A fibrous plant called *Apocynum venetum* has been discovered growing wild in such quantities, in Turkistan, that it may be expected soon to make its appearance in the market. Its fibres, as tender and delicate as flax, as strong and tenacious as hemp, are, by combining the qualities of two, greatly superior to either. The Russians will probably endeavor to transplant it to Europe, an attempt which might be made by other countries as well.

It is tolerably well known that our species of *Apocynum*, of which we have two, furnish a superior fibre, as does also the related *Asclepias incarnata*. All these are vigorous, hardy perennials, and could, under cultivation, be made to yield large crops. A series of thorough and well-conducted experiments, which shall test the comparative value and productiveness of our native fibre plants, is much needed. But how shall it be obtained?

The Overland Monthly for September presents a varied and interesting table of contents. The most interesting practical papers are: "Our Indian Policy," "One of Our Farming Counties," "Rates of Railroad Transportation," and "The Savings Banks of California." There is much other matter, consisting of stories, poetry, and reviews of books. It is one of the best magazines in the country. $4 per annum. J. H. Carmany & Co., publishers, 409 Washington St., San Francisco.

FAIRS AND EXHIBITIONS.

California State Fair.—This Fair, which will open on the 15th inst., promises to be largely attended, and the exhibition, in all its varied departments, will exceed any former display. Forty thousand dollars will be distributed in cash premiums. It will remain open five days.

Horticultural Society Fair.—We would urge our nurserymen and fruit-growers to come out in united strength and excel any of their previous creditable exhibitions. By persistent effort, a full and hearty recognition will be obtained. We must remember that everything here is still in its infancy, and when we have cultivated the tastes of the people to a more appreciative standard, the reward will be more abundant and satisfactory. The premium list, and all other necessary information for exhibitors, will be found on page 4 of the cover of the present number.

One Hundred Merino sheep, with plenty of bedding, will, during the ordinary feeding time in winter, produce about forty two-horse wagon loads of manure, which is far more valuable as a fertilizer than that of either horses or cows.

With pleasure we refer our readers to the advertisement of the *Wholesale Catalogue* for autumn, 1873, of Messrs. Ellwanger & Barry, of Rochester, New York. It is sent free to all applicants. Also, to their extensive assortment of Trees, Plants and Bulbs mentioned on page 8 of our advertising sheet.

Dried Fruit—The Alden Process.—We were shown, a few days since, some bunches of grapes which had been dried at San Lorenzo by the Alden process. The grapes, although hardly ripe, had been perfectly cured and turned into raisins in four hours. The fruit-growers in that vicinity are well satisfied with their experiment so far. About 30,000 pounds of green fruit can be worked off in a day, with the following results:

Fruit.	Pounds green fruit.	Per ct. waste.	Pounds dry fruit.
Apples	100	88	12
Peaches	100	88	12
Apricots	100	86	14
Pears	100	88	12
Plums	100	86	14
Grapes	100	80	20
Blackberries	100	84	16
Pitted Cherries	100	84	16
Gooseberries	100	80	20

If the fruit-grower can get one cent a pound for the choicest varieties of grapes, the profit will be much more satisfactory than on a wheat crop. One hundred pounds of grapes at a dollar will produce twenty pounds of raisins worth two dollars and a half. Deducting expenses of freight and the cost of drying, there would still be a margin of more than one hundred per cent. Good raisins will sell readily at fifteen cents a pound, and the highest price asked in round lots for the best kind of grapes would not exceed five cents, while the Mission and some other varieties can be bought at a cent a pound. If the Alden process can't make home-made raisins plenty, we know of no other process that will be likely to secure such a result.—*Bulletin.*

Grouping of Plants.—There is no way in which the deadening formalism of our gardens may be more effectually destroyed than by the system of naturally grouping hardy plants. It may afford most pleasing results, and impress on others the amount of variety and loveliness to be obtained from many families now unused. Trees and shrubs, distinguished for their fine foliage, collected in quiet glades; and then bright-foliage trees should be set in contrast with quieter colors, and varied with bright beds of flowers and leaf plants, or hardy flowering shrubs. Those groups should be irregularly but artistically planted. Then on a knoll plant a large bouquet of the rosaceous family—Hawthorns, Cherries, Plums, Pears, Peaches, Almonds, etc. There is so much that may be done to add to the bewildering beauty of a landscape by naturally artistic planting, that we are often astonished that people do not "see it."—*Rural New Yorker.*

Tree Lemon Verbena.—In these days, when *effective* plants are sought after, we should not lose sight of things at hand with which to produce as good results as any new introduction can afford. The London *Gardener's Chronicle* calls attention to the pretty effects which can be had from the common Lemon Verbena when trained as a standard. The wavy spikes of flowers are very graceful, and the odoriferous character of the plant will always make it a favorite in any form.—*Gardener's Monthly.*

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Although, for California, there were frosts in the spring which were unusually severe, and which in some sections cut off at least one-fourth of the Grape and Apricot crops, yet, generally speaking, there was but little damage done, and the fruit production has been but little diminished. The uncommonly cool weather, during the spring and one or two summer months, had the beneficial effect of prolonging the bearing season of many sorts—especially the Strawberries and Raspberries. So, take the season altogether, fruits of all kinds have been most abundant and good. There never was an August that showed on the stalls a greater quantity of every description of fruit. To be sure there were to be seen too many inferior boxes and baskets of Pears, Apples, and Peaches, bringing but little, if any, profit to their producers, and showing how desirable it is for all cultivators to grow only the very best of the several varieties. Diminutive, spongy, and juiceless fruits, of whatever kind, are very unremunerative to all parties, besides being very unwholesome.

With respect to Plums, we should like very much to see the true European Green Gage, so celebrated for its fine flavor, richness, and juiciness, much more generally cultivated by fruitists. In Europe it has many synonyms, (about fifteen), like all the choicest fruits. One of them is, the "King of Plums," to which it is certainly most justly entitled; but its most common name is *Reine Claude*. The true variety is readily known by its short-jointed, slow-growing, spreading, and dwarfish habit. It requires a very rich, warm soil to insure fruit in perfection. The best book authorities pronounce the flesh of the Green Gage exceedingly melting, rich, sprightly, and of high flavor, and it separates freely from the stone. Fruit, medium, round, *suture* slight; skin, yellowish green—green mostly prevailing—marbled and dotted on the sunny side with red; stalk, slender, slightly inserted. The *Imperial Gage*, or *Princess Imperial Gage*, is often mistaken for the Green Gage, but it is considerably inferior to it.

We have tasted samples of the true Green Gage on this coast, and we never ate better in England, or on the continent of Europe. They are to be found in perfection at Mr. Thompson's Suscol Orchards on the California Pacific Railroad. Probably it is not so profitable a Plum to raise as the more common kinds, (the tree being also not so vigorous as some other sorts), but if once well-known in the market, by good judges of fruit and persons of epicurean tastes, we are sure it would fetch a price which would well repay the cultivators.

As to the cultivation of the Plum: the Green Gage, Cloth of Gold, etc., require to be planted about fifteen feet apart, while the Imperial Gage, Washington, etc., would be better at twenty feet. They may be planted in any good soil which is either naturally or artificially drained. They require but little pruning, except to shorten back such shoots as are too vigorous and likely to destroy the regular form of the tree; or to cut out weakly-growing shoots. The Green Gage requires but little, either of branch or root pruning, as it is a slow or slender growing variety. Like all other fruit trees, the Plum does best, of course, when the ground is often ploughed, dug, or hoed around. The best manure is animal. Ashes, in soils devoid of lime and the phosphates, will be found beneficial; two bushels to a

tree twelve feet high will be a guide.

To return to the subject of our markets: Here we will state generally, that fruit, in perfection, should be full-sized, sound, ripe, fresh, and *of the best varieties*. How many there are of our fruits with which the market is loaded, which fall far short of these requirements, we will leave the public to judge; for our own part, we may, perhaps, be allowed to say that, in these respects, a vast quantity of them are greatly deficient.

But notwithstanding these drawbacks, the fruits of California, taking them in the aggregate, are certainly the most perfect in size and condition, as they are also, upon the whole, delicious in taste. All travelers declare that they have never seen anything like them in any other country. Indeed, the truth is, that all of Nature's works that are met with in California are so widely different from those seen in the Eastern or Atlantic States, that when visitors descend into its beautiful valleys from the mountains, they almost feel as if they were treading upon the soil of some new and superior sphere. But, upon recollection, they feel proud that the same flag of stars and stripes floats over the public and private edifices in San Francisco, and on the forts and shipping of its beautiful and extensive bay, as over the rest of the glorious Union.

The supplies of Strawberries and Blackberries are now greatly diminished, and the latter have nearly ceased to make their appearance in market; their value is accordingly appreciating. Apples are very plentiful, and their prices, of course, are moderating. Bartlett Pears are becoming gradually much cheaper, while the common varieties are proportionably lower in price, also. Choice varieties of foreign Grapes—Rose of Peru, Muscat of Alexandria, Tokay, and Black Hamburg—are now in market in large quantities, and are quoted from 8 to 15 cents per pound, only. Apricots and the ordinary varieties of Peaches are nearly gone, with prices but little changed at present. Clingstone Peaches are, many of them, fine and abundant. Plums are now at the height of their excellence and glory, though most of them are of inferior kinds. Seckel Pears—that luscious and high-flavored sort, small though they are comparatively—are beginning, like the Green Gage Plum, to be prized more and more every year, and are to be obtained (unlike the Green Gage) in sufficient numbers for the fruit epicures.

The steamers are bringing slowly moderate lots of Los Angeles Lemons, which, owing to other kinds not being plentiful, bring remunerative prices. Huckleberries still remain at 20 cents per pound; Mangoes, $1; Alligator Pears, $2 per dozen; Smyrna Figs, 35 cents per pound.

On the 1st of September there was no great change in the price of vegetables. Melons also hold their own, but the abundant supply that is coming in threatens to break down the prices prevailing. Watermelons are quotable at 15@35c. each; Nutmeg Melons at $1 per dozen, and Cantaloupes 10@35c. apiece. The best samples of Green Corn have declined 5c. per dozen during this week, and the present range is from 15@25c. per dozen. Rhubarb is 6@8c. per pound; Egg Plant, 8c. per pound; Okra, 10@15c. per pound; Salsify, 10c. per bunch; Summer Squash, 5c. each; Artichokes, 25@35c. per dozen.

Annexed is a correct monthly statement of Strawberry statistics, and the range of prices for each month:

March, 23 chests, 30c@$1 50; April, 3,955 chests, 7@45c.; May, 8,372 chests,

5@15c.; June, 2,918 chests, 5@15c.; July, 3,433 chests, 3@9c.; August, 400 chests, 1½@6c. Total, 19,101 chests.

FILTERS AND FILTERING.—In every well appointed kitchen there are tin or porcelain funnels. For filtering watery fluids, it is only necessary to insert in the choke of the funnel, a V-shaped piece of fine sponge. All such liquids, on being put into the funnel, will pass through the sponge and become quite clear. When this effect ceases, the sponge must be removed and well cleansed. Vinous fluids are best cleared by filtering through a cone of white blotting-paper, shaped by folding a square piece of paper from corner to corner, and then folding the triangle into half its size, and opening the folds; it will fit any funnel, which will act as a much needed support to the paper. Wines, etc., poured into this, will run through perfectly bright. In some cases, where the wine is only thick from lees, cork, or other mechanically suspended substance, it can be made quite clear by filtering through a wad of white cotton put in the choke of the funnel; and when this answers, it is much quicker than the paper filter. For jelly and oil, wool alone is the proper medium for filtering. The felted wool jelly-bag is pretty well known as the best means of clearing calves' foot jelly, and it also answers for olive and other oil. These bags are, however, too expensive to be generally used; hence they are rarely seen in a kitchen. A good substitute for the wool bag is a cullender, on the inside of which a new flannel lining should be fitted, made of double stuff. A wad of white knitting wool, put into the choke of a funnel, will do to filter a small portion of such fluids.—*Scientific American.*

Correspondence.

THE ENGLISH SPARROW.

Editor California Horticulturist: In a recent number of the *Evening Bulletin*, I read with some interest the following:

A Californian who has recently returned from New York is anxious to have steps taken to introduce the English Sparrow on this coast. He says the bird there has proved a great blessing, especially in the city. The trees in the parks are in more flourishing condition in consequence. The sparrow lives on insects; it delights in caterpillars; it searches after the early worm, and when found, makes a meal of him. The result is a great improvement in the foliage within the city. Three years ago Trinity Church graveyard was a desolate-looking place. Scarcely a leaf was to be seen on the trees; the worms held high carnival, and had it all their own way. They built nests in the trees, and dropped down on the necks of the ladies. They were especially partial to green things, but when the foliage gave out, they crawled on the walks, into the church, up the shiny boots of the church-goers, in search of whatever they could devour. The sparrows came and gobbled them up; the leaves got a chance to grow again; the trees took a fresh start, and now all is changed. The trees actually vie with their country cousins in beauty of foliage. The sparrows did it; they are the most wonderful insect destroyers of the feathered tribe. They are also among the tamest birds in the world. They will run along the sidewalk a few feet in front of a person, as if delighted in human companionship. Boys forget to throw stones at them, and hoodlums are abashed in their presence. Such confidence as they display in the kindness of man is not to be returned with cruelty. They even serve to humanize the hoodlum. It is really amusing to see the little creatures come every morning about the door-steps and window-sills to get crumbs of bread from the children. Many become so tame that they perch on the hands that feed them. The keepers of the Central Park say they

have been of great benefit to every park in the city. They breed very fast, and will soon overrun a country when well started. In two years after their introduction in New York city, they were observed at Niagara Falls. They followed up the Hudson and along the Erie Canal, scattering blessings as they went. They would be of much use in the Golden Gate Park. They seem especially adapted to city life, and to abodes in city parks and yards, where little fruit is raised. The fruit-raisers of the interior might object to them, because they would occasionally pick at the cherries, but it is probable that even in gardens in the country they would be of more service than harm. Who can give information about their operations in the country? If any, let them send in their facts—favorable or unfavorable, no matter. San Francisco does not want to be benefited at the expense of the interior, not even in the matter of sparrows.

I fully agree with the writer of the above that the English Sparrow is very beneficial to the vegetation in the East, and particularly to that of the large cities, like New York; but I doubt whether the introduction of the sparrow here would be of much good at this time, and for some time to come. The reasons for my assertions are these: First of all, insects usually taken off by the sparrow have not proved troublesome on this coast; they are very few in number, and although they multiply very rapidly when they once make their appearance, the fact remains indisputable that insects are not now more numerous than they were twenty years ago, for reasons which may require proper explanation, but which are immaterial here.

Secondly, the ornamental trees which are cultivated hereabouts are chiefly evergreens; and nine-tenths of those, again, are coniferous trees, the foliage of which is not attacked by insects. The trees at the Trinity Church-yard of New York, which the writer of the above mentions, are all deciduous, to the best of my recollection, and it is the foliage of such trees upon which the insects in question live. The same is the case with all of the shade trees along the streets and roads of the eastern cities. Our shade trees consist chiefly of the Eucalyptus and Acacia, and none of them are apt to be injured by insects, according to my experience.

I am strongly in favor of protecting birds—they do more good than harm. But the introduction of sparrows will be an expense unaccompanied by any benefit that I can perceive at this time.

Yours, truly, F. A. Miller.

Rochester, N. Y., Aug. 4, 1873.

J. H. Carmany & Co.—*Gentlemen:* We read your Magazine with much pleasure; and it seems to be so interesting to those in our employ, that it is difficult for us to keep the numbers on file, which we wish to do. We desire you to send us the numbers of the first six months of the present year, that we may preserve them. We do not know that you can supply back numbers, but if so, please send them on, and drop us a line stating the amount of indebtedness, and we will remit.

Yours, very respectfully,

J. Vick.

Alhambra, Cal., Aug. 21st, 1873.

Messrs. J. H. Carmany & Co.—*Sirs:* Even a hasty perusal of the two numbers of the Horticulturist received impressed me so favorably, that I am anxious to get the back numbers, from January. I beg of you the favor to alter my subscription, to be for the year 1873. Whenever the spirit moves me, I will take pleasure in sending you some *practical notes*. Yours truly,

J. Strentzel.

Editorial Gleanings.

The Canned Pineapple Trade.—The schooner Rebecca Florence, Captain Richards, has reached this city with the largest cargo of canned Pineapples ever brought into any port, she having 420,000 cans in bulk, and 1,217 cases, containing 23,000 cans. The establishment at Nassau for canning Pineapples was placed in operation two years ago by Messrs. Kensett & Co. and Evans, Reeves & Co., of Baltimore, and Kemp, Day & Co., of New York. A grant was obtained from the English Colonial Government for five years, and large buildings have been erected to carry on the industry, where the Pineapples are received fully ripe and fresh from the plantations. The packing season commenced this year on the 14th of May, and ended on the 31st of July, during which period 1,000,000 Pineapples were purchased, and 1,010,000 cans of the fruit were packed. For six consecutive days 32,000 cans were packed on each day. The pines come from the island of New Providence and the surrounding out-islands, and are bought at from eighteen to forty cents per dozen, in gold. The company had upon their wharves at one time during the season just closed, 90,000 Pines. The native laborers, men and women, employed in the height of the packing season number from 400 to 600, and they are paid from eighteen to fifty cents per day, in coin, labor being very cheap.

Mr. Henry Evans, Jr., of one of the firms engaged in the business, came home in the schooner, having been at Nassau during the packing season, superintending the operations. The Rebecca Florence has brought two cargoes to this port this summer, which is all of the fruit shipped to the United States, the remainder going to the English market. From Baltimore the canned Pines are distributed throughout the United States, and bring about $4 per case of two dozen two-pound cans. On the 31st of July the canning season ended, and operations will not be resumed until May of next year. The firms have about $200,000 invested in the enterprise, and for fruit and labor alone the sum of $60,000 was paid in Nassau, which is of great importance to the inhabitants there, as there are but few industrial resources yet developed on the island. The cans for the English market are of extra size, as the Pines for that trade are packed whole, while for this country they are canned in pieces. The following is transcribed from a beautifully printed label, bearing a good picture of the fruit, and intended for the English cans: "Fresh Pineapples, (whole), packed in her Majesty's Colonies, by the Nassau Packing Company, Nassau, N. P." The preserving is effected by the aid of steam, generated by an engine, and forced through tubes into vats containing the fruit. The sugar used is granulated, and of the finest quality. By the grant all machinery and raw material are imported free of duty, except sugar, and even upon that, a drawback of ninety per cent. is allowed by the Colonial Government as it is used. The cans for the reception of the fruit are all manufactured in Nassau, but the skilled labor is obtained in Baltimore. This is a new enterprise, conceived by the firms named, there being no other parties in the business, and it has met with most gratifying success.—*Baltimore American.*

Double Fertilization of Female Flowers.—Mr. Arnold, of Paris, Canada, has shown that if the female flowers of an Indian-corn plant are submitted to the action of pollen from male

flowers of different kinds of Corn plants, each grain of the ear produced shows the effect of both kinds of pollen. In an experiment related, a given female flower was subjected first to the action of pollen from a yellow variety of Corn, and then to that taken from a white variety; the result was an ear of Corn, each grain of which was yellow below and white above. The conclusion presented is, not only an immediate influence on the seed and the whole fruit-structure by the application of strange pollen, but the more important fact that one ovule can be affected by the pollen of two distinct parents, and, this, too, after some time had elapsed between the first and the second impregnation.—*Scribner's Monthly.*

Vegetable Instinct. — If a pail of water be placed within six inches of either side of the stem of a Pumpkin or Vegetable Marrow, it will in the course of the night approach it, and will be found in the morning with one of the leaves on the water.

This experiment may be continued nightly until the plant begins to fruit. If a prop be placed within six inches of a young Convolvulus, or Scarlet-runner, it will find it, although the prop may be shifted daily. If, after it has twined some distance up the prop, it be unwound, and twined in the opposite direction, it will return to its original position, or die in the attempt; yet, notwithstanding, if two of these plants grow near each other, and have no stake around which they can entwine, one of them will alter the direction of the spiral, and they will twine around each other.

Duhamel placed some Kidney Beans in a cylinder of moist earth; after a short time they commenced to germinate—of course sending the plume toward the light, and the root down into the soil. After a few days, the cylinder was turned one-fourth around, and again and again this was repeated, until an entire revolution of the cylinder was completed. The beans were then taken out of the earth, and it was found that both the plume and the radicle had bent to accommodate themselves to every revolution, and, the one in its efforts to ascend perpendicularly, and the other to descend, they had formed a perfect spiral. But although the natural tendency of the roots is downward, if the soil beneath be dry, and any damp substance be above, the roots will ascend to reach it.—*Exchange.*

Roots as Manure.—It has been found that the roots of a good crop of Red Clover left in an acre of land after the removal of the crop, weigh 6,580 pounds or from three to three and a half tons. The same examination gave the weight of an acre of Rye roots at 3,500 pounds, and of Wheat roots at 3,400 pounds. All this matter is of course valuable for the use of such crops as may be grown during or after its decomposition. The well-known superiority of Clover as a manuring crop, however, is not due alone to the greater amount of organic matter, taken mainly from the atmosphere, which its roots supply, but also to the position in which this matter is deposited. The roots reach deeply into the soil, and on their decomposition they serve to draw moisture from the lower soil, and by the decomposition of fertilizing matter to a considerable depth, they induce the descent of the roots of other crops to a point where they are much more sure of a supply of moisture during a dry season than they could be if nearer the surface. Then again, these deeply penetrating roots traverse parts of the

subsoil not heretofore open to vegetation, and in their decomposition they produce a chemical effect on the inorganic substances that lie along their courses, and help to render them, too, serviceable for future crops.—*American Agriculturist.*

The Eyes in Deep-sea Creatures.—In his "Notes from the Challenger," Wyville Thomson says: The absence of eyes in many deep-sea animals, and their full development in others is very remarkable. I have mentioned the case of one of the stalk-eyed crustaceans, *Ethusa granulata*, in which well-developed eyes are present in examples from shallow water. In deeper water, from one hundred and ten to three hundred and seventy fathoms, eye-stalks are present, but the animal is apparently blind, the eyes being replaced by rounded, calcareous terminations to the stalks. In examples from five hundred to seven hundred fathoms, in another locality, the eye-stalks have lost their special character, have become fixed, and their terminations combine into a strong, pointed rostrum. In this case we have a gradual modification, depending apparently upon the gradual diminution and final disappearance of solar light. On the other hand *Munida*, from equal depths, has its eyes unusually developed, and apparently of great delicacy. Is it possible that in certain cases, as the sun's light diminishes, the power of vision becomes more acute; while at length the eye becomes susceptible of the stimulus of the fainter light of phosphorescence?—*Scribner's.*

Hard Lime Floors.—The Mexicans make a floor on which a horse can trot without making an indentation, by the following method: A layer of broken limestone, three or four inches thick, is laid evenly over the surface of the ground, and over this is spread, to the thickness of two inches, a mortar compounded of two parts sand to one of lime; this is allowed to stand twenty-four hours, or until the surface becomes dry. The floor is then thoroughly pounded all over, until it becomes as moist as when first laid, with a block of wood about a foot square and three inches thick, having a handle rising from the middle. The floor then dries, and this operation is repeated until very little moisture can be brought to the surface; a thin layer of red ochre is then sifted on. The floor is then thoroughly polished by a smooth, flat, water-worn stone. Roofs are made in the same manner without the coloring matter, which is added merely to improve the tint, and they are unaffected by sun or rain.

Ficus repens.—The *Journal of Horticulture* calls attention to this plant. We have found it one of the most beautiful things for covering the back walls of greenhouses. It grows in a partial shade almost as well as the common Ivy, and clings to the wall in the same manner. It is a first-rate vase or basket plant. We have found it to endure the freezing point without injury. The *Journal* says: "This is a creeping-stemmed plant, and attaches itself very closely to walls and wood-work. For the former it is particularly suitable, and grows more freely than on the latter, as the wall retains more moisture. The plant has proved itself to be hardier than was thought years ago, it being now introduced freely into warm greenhouses and conservatories, and thrives there very satisfactorily. Very little rooting space is needed, as compared with other plants, for it throws out rootlets at almost every joint. Too much

moisture must be guarded against with these cooler temperatures, otherwise the foliage will be apt to damp-off."

The Best Orchid.—Since so much attention has recently been given to the growth of these curious and beautiful flowers in this country, it is well to know that what in Europe is called "one of the best," belongs to a class very easy to grow. Generally the *Cypripediums* will do in a cool greenhouse almost as well as Geraniums, or any common plant. A report of a meeting in Brussels says: "In the class (confined to nurserymen) for ten *Cypripediums*, there was no competition. The best Orchid in the whole show was contributed by Mr. Linden in the next class as a single specimen, viz: *Cypripedium villosum*—a grand specimen, beautifully bloomed, with upwards of fifty flowers. This plant deservedly received the first prize, the second being awarded to Mr. Van Geert for a nice plant of *Odontoglosum Pescatorhi*, with five spikes of bloom."

Collection of Oranges.—Says the *Journal of the Farm:* "It is not generally known that the Superintendent of the Government Gardens, at Washington, has for some time past been making a collection of all accessible varieties of Oranges, and that he now has over fifty varieties, of which but three kinds have yet been distributed, viz: Tangerine, Maltese, and St. Michaels. It is proposed to have the different varieties tested, and when their qualities are ascertained, to distribute the best kinds for cultivation in the South and on our Pacific Coast. This branch of Horticulture is one which has made rapid progress within the last few years, and we are glad to note that Mr. Saunders is thus assisting it."

Testing Olive Oil.—Professor Palmieri, of Naples, the gallant observer who, it will be remembered, enjoyed himself on the slopes of Vesuvius during a recent long-continued eruption, has lately constructed an electrical apparatus of great delicacy and ingenuity, the object of which is to detect the admixture of other oils with that of the pure olive. The instrument is founded on the fact of the variability in the powers of conduction possessed by the various oils, olive being lowest in the scale. The wires of a battery are brought to a small elongated vessel containing the oil to be examined, and an electrometer being attached, the degree of conductivity can be read off on a scale. The instrument, it is said, can detect any of the usual adulterants with the utmost nicety. It has also been applied to the detection of woolen or cotton fibres in silk fabrics with equal success.

Pine Leaves are at present largely utilized in Europe They are converted into a kind of wool or wadding, which is applied very serviceably and economically as a substitute for hair in upholstery. A kind of flannel material has for some time been produced from this fibre, which is said to be very superior for many hygienic uses, as for rheumatism and various diseases of the skin—vests, drawers, loose shirts, &c., being among the garments made; in the process of manufacture, an ethereal oil is obtained, very useful as a solvent, and as a curative agent. Gas is also made from the refuse, of a quality valuable for lighting manufactories.

Appearance of Milk Under the Microscope.—The number and appearance of the butter globules, when viewed with the microscope, distinguish the various qualities of milk. In sweet

milk they are numerous and crowded together; by the gathering of these butter globules together, cream is formed on the surface of the milk. After butter has been made from the milk a certain amount of the butter globules still remain in it. Boussingault's experiments show that one-fourth part of the entire amount of butter remains in the butter-milk. Skim-milk contains less butter than butter-milk; the latter is therefore often adulterated with the former, but this admixture of skim-milk may be detected with the miscroscope. A good cream contains 37 to 40 per cent. of butter.

Floriculture.—*Scribner's Monthly* says all lovers of flowers must remember that one blossom allowed to mature or "go to seed" injures the plant more than a dozen new buds. Cut your flowers then, all of them, before they begin to fade. Adorn your room with them; put them on your tables; send bouquets to your friends who have no flowers; or exchange favors with those who have. You will surely find that the more you cut off the more you will have. All Roses, after they have ceased to bloom, should be cut back, that the strength of the root may go to forming new roots for the next year. On bushes, not a seed should be allowed to mature.

A Good French Idea.—The milk cans in which the milk is conveyed over the railways of France are made of similar shape to ours, but the lids are so arranged that by turning a screw they can be forced down on the milk, and thus prevent all motion. The cans are wrapped in woolen cloths, and these are wet from time to time as they may need it. The evaporation of the moisture thus keeps down the temperature of the milk, and no difficulty is experienced in carrying it a long distance, even in warm weather.

The fishery treaty between the United States and Great Britain permits the admission of fish-oil free of duty, while all other oils pay ten per cent. The question has thereupon arisen whether the oil obtained from seals should pay duty. From a zoological point of view, it is not fish-oil; but since it is the general practice of commercial nations to consider all oils obtained from marine creatures as fish oils, the government will probably be obliged to regard seals as fish.—*Scribner's Monthly.*

Cissus Discolor.—It is a matter of surprise that this lovely climbing plant is not used for out-door summer gardening to a greater extent than it is. The *Garden* says: "In the gardens of Mr. Linden, at Gand, there is now growing one of these plants which during the past year produced new shoots, the total aggregate of the length of which amounted to 1,625 feet. We are informed that the plant was grown in a mixture of coal ashes and spent tan."

Rose Insects.—If any one is desirous of keeping the Rose-bushes free from the small green vermin, the following remedy will be found a most effectual one: To three gallons of soft water add one peck of soot and one quart of unslaked lime; stir it well, let it stand for twenty-four hours, and when the soot rises to the surface, skim it off. Use a syringe for applying it.—*Science of Health.*

W. Saville Kent shows that in certain spine-finned fish, as the bream, and especially in the male, the color increases in depth and often in brilliancy during the spawning season.

MARSHALL PINCKNEY WILDER,

President of the American Pomological Society.

THE

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HANGING BASKETS.

BY F. A. MILLER.

The "hanging basket" may be considered one of the modern improvements in Floriculture, and has become within a few years the universal favorite with our flower-loving people. Hardly a house can be found, where an attempt has not been made to decorate the window, or the hall door, the veranda, or the conservatory, with a hanging basket of some description.

While some succeed admirably in taking care of these ornaments, and look upon their success with much pride, I hear of many others, who seem to be discouraged by their failure in keeping such ornaments in good growing condition. The fact is, that if a basket is filled with suitable plants, ordinary care will suffice to keep it in good condition; but it is evident that some of our florists do not pay as much attention to *suitable* plants, as to the general appearance, which secures a more ready sale, being pleasing to the eye, but unfit for the purpose. However, the fault rests not always with the florist; neglect and total ignorance as to the proper mode of treatment are very often the cause of failure

Baskets are made of different styles and patterns. Our potteries furnish some very neat ones, both plain and fancy; our manufacturers of wire-work produce some excellent models of various designs and sizes; and within the last few years most elegant rustic baskets, made of suitable wood, have been favorite ornaments. Many other devices and designs have been introduced, such as lava-pots, sea-shells, cocoanut-shells, excavated squashes, soup-bowls, and worthless tin cans, when nothing better could be procured.

Which of all these designs to choose for a hanging basket is merely a matter of fancy or expenditure—they are all suitable for the purpose. As far as I am concerned, I prefer the rustic basket to all others; it is the most durable and the most elegant, but also the most expensive. Next to the rustic basket, comes the wire basket, which is manufactured in all possible styles and patterns, and at very reasonable prices; it is a most graceful ornament, and when lined with green moss most pleasing. In the East and Europe some very excellent designs of baskets have been produced by the potteries, but all the patterns introduced here seem to be deficient and impractical; an improve-

ment in them will be very desirable.

The most important fact in the selection of a hanging basket, is proper size. Too often an attempt is made to cultivate too large a number of plants in a small basket. As it is desirable that a basket should contain a collection of plants, the size of an ordinary basket should be from ten to twelve inches wide, and from six to eight inches deep.

As a suitable soil for baskets, I would recommend a light sandy loam with very little manure. In making the soil too rich, the plants will grow too much, and out of proportion, with the appearance of a wild confusion, when gracefulness and neatness should be the only aim.

At the bottom of the basket a layer of charcoal should be placed, which will keep the soil in a sweet and healthy condition, and I would advise to mix a small portion of charcoal with the soil for the same purpose.

If a rustic basket is selected, proper drainage must be provided, by boring a hole through the bottom of the wooden frame, and placing a few pieces of broken pots over it.

The watering of baskets should be done carefully as often as required. If a basket is allowed to dry up, its beauty is gone forever. The soil should be examined every day, and if the surface appears dry, water must be given. How often water should be applied depends, first, on the size of the basket; and second, on the position the basket occupies. If exposed to the sun, the wind, or the open air, the evaporation of water will be rapid, and during a very warm day it may be necessary to water twice. If the basket hangs in a shady, cool, and protected locality, it requires less water, and perhaps twice a week will be sufficient. During summer, frequent watering and sprinkling of the foliage is desirable. During winter, the basket should be kept comparatively dry; not so much so as to endanger the life of the plants, but enough water must be given to keep up their good appearance.

However, with all the care possible, it is not supposed that a hanging basket will keep in fine condition forever. Sometimes new soil will be required, and also new plants. I think a basket kept in good condition for twelve to eighteen months, has done all that may reasonably be expected. Some plants, of course, will keep much longer than others; for instance, if a basket is filled with nothing but Ivies of different kinds, it may be kept in fine condition for three to five years; if planted with certain kinds of hardy Ferns, its good appearance may be kept up for two or three years; but if a variety of foliage and flowering-plants is used, which is calculated to give a rich and elegant appearance to a basket, it will be necessary to give a thorough overhauling of soil and plants every year.

Wire baskets should be watered by placing the basket in a bucket of water, submerging it to the rim of the basket for about five minutes. This may be done in summer once or twice a week, and in winter once every two weeks. An occasional sprinkling of the foliage, to wash off the dust and to give it a lighter and fresher appearance, is very desirable.

Space will not allow me at this time to speak of the most suitable plants for baskets, but I will endeavor to make it a special subject for the next number of the HORTICULTURIST.

THE span of the great Rotunda of the exhibition building at Vienna is over one hundred and ten yards, or double the size of the dome of St. Peter's, at Rome.

HOW TO GROW THE GLADIOLUS.

An old florist in the *Rural Home*, in commendation of this noble flower, which is so chaste in beauty, so striking in appearance, and so popular among amateur gardeners, gives directions how to plant and grow it. They are quite sensible.

In the first place, Gladioli like an open position; that is to say, they do not thrive so well if surrounded by shrubbery or large trees. At the same time they should not be planted in an exposed situation. It is also essential to bear in mind that they are liable to deteriorate if grown for several years in the same bed without the soil being renewed. Therefore, endeavor to change them from one bed to another every year. Some years ago I grew them for several seasons in the same bed—giving it every year a portion of new soil and removing some of the old. That plan, however, entailed so much labor that I gave it up; and I incline to believe that the more choice varieties become soil-sick; that is to say, they like a change every two or three years at least. At all events, I have fewer losses among the bulbs since I have changed their quarters more frequently, than I had before. It is also quite certain that larger spikes and stouter individual blooms of a decidedly different color, are obtained. The beds are filled up fifteen inches in depth with sound mellow loam, to which a heavy dressing of short rotten manure is added. Early in autumn the soil is laid up rough for the winter. It is desirable to take care that a good layer of dung is put at the bottom of the bed, if you want large and perfect exhibition spikes, and the depth of color and the freshness which so enchant every observer. It is no use to attempt a high state of cultivation in a soil through which the water can not percolate freely.

The main points in their culture are an open position and a free, generous soil, sufficiently drained to prevent stagnant water about their roots. Another important matter is, to see that the surface of the bed is properly mulched with some material that will prevent evaporation, and at the same time prevent the surface soil from becoming baked and hard by the action of the sun. For beds that are in the more dressy part of the garden, there is nothing to equal the cocoanut fibre refuse for mulching. Sometimes I must use half-rotten dung, and at others short grass from the lawn, according as either of these materials may be at hand. When short grass is used, two or three applications are necessary in very hot summers, as it is soon withered up. It is a mistake to mulch them with manure under the supposition that the plants derive much benefit from it, because, owing to the roots being so deep, the fertilizing properties of the dung can not reach them, even if the sun and air did not act upon it, and soon dry it up. For this reason, there should be something substantial in the soil for them to feed upon, without being dependent upon the surface dressings or liquid manure.

With respect to neatly staking the spikes, and carefully attending to them to prevent the wind from doing the flowers harm, it is not needful to dwell at any great length, so I will abruptly close this article by stating that the cultivator must not hurry the bulbs to rest if he desires to keep them safely through the winter. As the seasons differ in their general features, no fixed time can be safely given for lifting the bulbs. The foliage should be quite yellow before they are taken up; and I would rather let them taste the cold than have them out of the ground too long. It is

my candid opinion, that in many cases the disease, so-called, is nothing more or less than a debilitated constitution brought on by the bulbs being so long out of the ground.

AUSTRALIAN METHOD OF COOLING WATER. Large buckets of canvas, says the *Bulletin du Musee*, are made about four feet high and fifteen inches in diameter. A bag of linen or flannel stretched across the top serves as a sieve; and a siphon, a canvass tub, and a wooden cock inserted below the level of the water, are used to draw off the contents. These reservoirs are suspended to branches of trees in shady places, and exposed to the light breezes which in summer always exist in Australia. From the damp surface of the vessels a rapid evaporation takes place, which keeps the water within at a temperature much lower than that of the surrounding air. The editor of the *Scientific American*, commenting on the above, says: This arrangement is on the same principle as the water jars, or "monkeys," used in tropical countries and the east of Europe. The latter are merely unglazed earthenware jugs, having a very small neck and a spout. We have never seen them used in the United States, but should imagine that during the summer months, and particularly in event of ice famines, such as we have been threatened with during the past two years, they might be advantageously employed. The jars may be made by any potter from ordinary clay at a very small expense. By suspending them in a current of air, the water within is kept during the hottest weather at a delicious coolness, and at a temperature much more healthful than that produced by the copious use of ice. The vessels may be molded in fancy shapes, so as to be ornamental for table use.

MARSHALL PINCKNEY WILDER.

BY E. J. HOOPER.

We have the pleasure this month of presenting to our readers an excellent likeness of the distinguished President of the American Pomological Society, whose sessions are held, this year, at Boston, Mass. Mr. Wilder has now filled this high and honorable position in the horticultural world for twenty-four years. He has possessed from very early boyhood an ardent admiration of the beautiful in Nature, and has always been one of the warmest lovers of rural pursuits and of country life. His parents, who were among the earliest settlers of his native State, on account of his lively temperament, and strength and precocity of intellect, were desirous that he should have the advantages of a very liberal education; but he—having but little love for the confinement of a college life, and the close study of the ancient classics or higher mathematics, but greatly preferring the wild sports of the country and the healthy and more useful exercises of the farm—became a youthful farmer upon his father's old homestead. It seems, however, that he was more needed in the mercantile business of his father than on the farm, and he thus ultimately became a merchant in Boston, and eventually an prominent one — a leading man in banking and insurance institutions, and a colonel in a military company. He would doubtless have attained high elevation in political matters, had he so desired; but, after having represented his neighbors in the Legislature of Massachusetts, and been chosen State Senator, and also elected President of the Senate, he, Cincinnatus-like, greatly preferring the comforts of rural life and domestic tranquillity as more congenial to his taste, relinquished the

turmoil of political life, and devoted as much time as he had at command to Agriculture, Horticulture, and kindred arts.

In 1849, he became the President of the Norfolk County Agricultural Society. In 1850, the Governor of the Commonwealth appointed him Chairman of the Massachusetts Commission to the World's Fair in London; and, in 1853, as another acknowledgment of his agricultural and horticultural services, he was appointed a Commissioner of the Industry of All Nations, in the Crystal Palace in New York City. He was also appointed by the Royal Pomological Society of Belgium—a government institution—the Commissioner for America. He likewise became the main promoter of the Agricultural College established at Amherst, and was elected President of the Massachusetts State Board of Agriculture, and became afterward, during a period of eleven years, a member, by appointment, of the Governor's Council. In addition to all these honors—having suggested a national convention of cultivators—he was elected the first President of the United States Agricultural Society, which was organized at Washington, D. C., in 1852. Under his administration was instituted the "Great National Field-trial of Reapers and Mowers," at Syracuse, N. Y.—the first of the kind in the world. We need not say that Col. Wilder, as a horticulturist and pomologist, has a world-wide reputation. We must not omit also to state that he was elected fourth President of the Massachusetts Horticultural Society, at its eleventh annual meeting in 1840.

Col. Wilder has delivered almost innumerable addresses before the American Pomological Society in many cities. In one of these he said: "Our trees—from the opening bud to the golden harvest—from the laying-off of their gay autumnal livery, and during their rest in winter's shroud, waiting a resurrection to a new and superior life—are all eloquent preachers, proclaiming to our inmost soul,

'The hand that made us is Divine.'

Taught by their counsels, who does not admire the wisdom, perfection, and beauty of this fair creation?—the *tiny bud*, incased in coats of mail so that the rude blasts may not visit it too roughly, rivaling in its mechanism the human eye, and destined to perpetuate its own species distinctive as the soul of man—the *enameled blossom* unfolding her virgin bosom to the warm embrace of vernal air, bespangling the orchard with starry spray scarcely less beautiful than the glittering host of night, dancing in rainbow hues, and flinging on the breeze a fragrance richer than the spices of Ceylon's Isles, sweet harbinger of beautiful harvest—the *luscious fruits*, God's best gift to man, save woman—the *melting Pear*, of rough or polished rind, with sweetest honeyed flavor—the *burnished Apple*, tempting the human taste, from the mother of our race to her last fair daughter—the *royal Grape*, clustering beneath its bower of green, making glad the heart of man—the *brilliant Cherry*, suffused with loveliest tints of rose and white, or dyed in deepest incarnadine—the *velvet Peach*, mantled with beauty's softest blush, and vying with the oriency of the morning—the *delicious Plum*, veiled with silvery bloom over robes of azure, purple, or cloth of vegetable gold."

In the course of his address before the same society at Boston, in 1862, Mr. Wilder uttered these characteristic words: "O, let me be remembered in some beautiful flower, some graceful

tree, some luscious fruit! O, yes, far better than storied monument or sculptured urn, let me be remembered as one who labored to adorn and improve the earth—to promote the pleasure and welfare of those who are to follow me!" In this respect, we are happy to say, he has been gratified, as some seedling flowers bear his name, and also the excellent President Wilder Strawberry.

We had the pleasure of a visit from him and other leading Horticulturists, to this coast, in the summer of 1870; and though he is beyond three-score years and ten, he is so well preserved that we yet hope to see him here again.

We can not close this, our imperfect notice of so elevated and good a man, without quoting a passage from the Boston *Journal of Horticulture:*

"During his leisure hours, he has filled several large folio volumes with his own sketches, delineations, and descriptions of fruits, proved under his personal inspection. This has been the work of a long life. He continues these investigations daily; and it is to be hoped that the public may have the benefit of these studies. He has made the Pear a specialty. His collection of Pears embraces every variety, foreign and native, of note; to which he adds the novelties of every year. Having a correspondence with the most distinguished pomologists of Europe and America, he receives annually all such as are worthy of notice. His collection embraces 2,500 bearing trees—probably 3,000 by this time; and he has had, during his life, more than 800 varieties of the Pear on his grounds. Among plants, the Camellia has been his specialty. He has many hundreds of varieties, thousands of plants, and more than a thousand seedlings—some of which bear the names of himself and family—which he raised from seed obtained by hybridization, of which he has given a published account."

After all that has been thus said, it seems hardly worth while for the humble writer of this to say that he has personally known Col. Wilder's worth, benevolence, public spirit, patriotism, pure morals, amiability, friendship, courtesy, and shining talents, for upwards of thirty years, and has the pleasure, from time to time, of receiving letters from him, offering his hospitalities, and cheering, encouraging, and sympathizing with him in his comparatively poor efforts to follow in the Colonel's illustrious footsteps.

EL ESPIRITO SANTO.

This plant, which bears a flower of such rare conformature, and a name of so much significance, but seldom finds its way to our conservatories, and is entirely unknown to many of our flower-loving friends. Few persons visit in its tropical haunts, and it is only occasionally brought here by chance hands, as a choice gift, or as a matter of curiosity. In these days of "rapid transit," its home in the secluded forests of Central America can not be considered very remote, and it could be easily secured by our florists and incorporated in their selections. It has the distinction of being rare, pretty, and peculiar, and would be a valuable and lovely addition to their floral families. It is my good fortune to possess two plants of this species, and they, like Cornelia's children, are "my jewels." They were brought to me from Aspinwall, in midsummer, carelessly planted in a tin box, the bulbs but half concealed in their native soil, which was porous and sandy. As they were in bud, I left them undisturbed until after they were through flowering. At that time they could not claim to be

"things of beauty," as they were almost entirely leafless, only one possessing a portion of a ribbed and tattered leaf, while the flower stems were long, twisted and devoid of grace; but each bore aloft twelve buds, which to my expectant vision covered all other deficiencies and "hid a multitude of sins." When unbelieving and scornful spectators profanely compared the plants to "old corn-stalks," I exultingly pointed to the clustering buds, and bade them "stand and wait." My anxiety and impatience to behold the flower were soon rewarded, for the largest of the green and waxy-looking buds grew and unfolded with great rapidity; it was marvelous to see the sudden change in their color, from green to white, and a bud which had seemed sealed at night by morning had fully opened its heart, revealing a pure and lovely dove nestling there. In shape, the likeness was very exact and perfect; its breast was spotless, but its wings, which were expanded and upright, were dotted with dark crimson; the head, which was pure and white, was slightly inclined forward toward its breast, and with its little bill of a delicate yellow color, and tiny dots for eyes, was "entire, wanting nothing." Four thick white petals held and supported this beautiful emblem of the Holy Spirit. While contemplating this fair and lovely flower, the name did not sound irreverent, and it seemed to me that the Spaniard pronounced the right title when he called it, in his beautiful musical language, "El Espirito Santo." The native, with religious and poetic instinct, sees in it the type of the sacred Spirit that spreads its silver wings in all hearts that are pure and undefiled. The flowers did not soon wither or fade, and I had the pleasure of watching them unfolding and blooming for several weeks; they fully atoned for absence of foliage and want of comeliness in the plant, and excited much enthusiasm among those who had derided the "parent stalk." When I received these plants I was entirely ignorant of their former surroundings, and of the proper method of culture, but concluded, as they came from a tropical country, they must need great heat and be kept in the very warmest place I could give them, and I made an almost fatal mistake in exposing them to the fierce glare of the summer sun. I found, after a few hours exposure to this heat, that such of the buds as were near opening, or had partially opened, were shriveled and withered beyond recovery. I hastily removed them to the shelter of the shrubbery, where they were screened from the sun, and so saved the remainder of "my doves." I afterward learned from the person who brought them to me, that these specimens were natives of the woods on the Isthmus, and flourished in the deep tangle of tropical growth, and could not, therefore, bear dry heat. As soon as my bulbs ceased to flower, they were transplanted separately, and I am hoping for a re-appearance of my pretty flock, as I believe they blossom once a year. I find that they need a light rich soil, abundance of moisture, and plenty of reflected heat, but can not endure exposure to the direct rays of the sun while they are blooming.—*Ladies' Floral Cabinet.*

Gutta-Percha Cement.—Dissolve as much gutta-percha in a mixture of ten parts of bisulphide of carbon with one of oil of turpentine, as will make a thick mass. Clean the leather to be united from all grease, heat the surfaces before applying the cement, and dry under pressure.

AMARYLLIS.*

BY F. A. MILLER.

This is a very charming class of summer-flowering bulbs, though I am sorry to say but very few of them are cultivated here. However, they are beginning to attract attention, and I am sure that they will find their way before long into every conservatory and garden.

There are now some thirty different species, and as many more varieties, cultivated in the various floral establishments of Europe, all of which are good. Most of them are natives of Brazil, and like a moderately warm climate, such as we have here in California. While some of them arrive more readily to perfection if treated under glass, there are others which, like the Lily or the Tulip, succeed best in the open air. A deep sandy soil, enriched with old manure, suits them very well. Their roots require room to spread, and therefore must have good-sized pots if cultivated in the house.

Amaryllis bulbs should have a season of rest; but, unlike the Hyacinth and Tulip, they should never be allowed to lose all their foliage, which renders it necessary to water them sparingly when they are at rest. If they are cultivated in pots, they should be allowed to rest from autumn until March, when they should be placed in a warm situation. As soon as they develop new leaves they require more water, the application of which should be increased as the plant develops itself.

Insects are very hard on the Amaryllis, and to keep them clean of these, is half the battle.

The Amaryllis is propagated by side-roots, which are formed in abundance. It may also be raised from seed, but this process is a rather slow one.

If they are cultivated in the open ground they will not require any particular attention. With cultivation of the soil around them, and with protection from strong winds, they may be expected to do well.

Some of the best varieties are:

A. longifolia rosea, an excellent variety, flowering abundantly.

A. longifolia flore alba, also very desirable and effective.

A. belladonna, several good varieties.

A. atamasco, flowers white, and good bloomer.

A. crispa, flower of a rose color.

A. formosissima, flowering very abundantly, flowers of a rich crimson color.

A. purpurea (*Vallota purpurea*), one of the very best; its most brilliant scarlet flowers are very ornamental.

PRUNING ROSES.—"Ruralist" writes to the *Rural New Yorker* as follows:

As soon as the frost is out of the ground in spring, and hard freezing weather is past, I commence to prune my Roses. I suppose that every one who has noticed the varying habits of Roses knows the different species or classes require different treatment with the pruning knife. All kinds of summer or June Roses, as they are usually termed, such as Damask, Prairie, Moss, and French, should have the old canes occasionally removed; that is, those that have produced flowers one, two, or three years. Also, all weak, slender branches and canes may be removed, allowing only sufficient to give the plant a good form. The largest and most perfect flowers are usually produced upon the strongest one-year-old canes, and these may be shortened with benefit. Hybrid Perpetuals should also have their canes shortened, and the weak, feeble branches should be cut away, and as a rule,

* Natural order, *Amaryllideæ*.

the weaker the shoot the more severely it should be pruned. Six to twelve inches is long enough for side branches on Hybrid Perpetuals grown as tree or half standards. With Tea-scented, Noisettes, and Bourbons, there is little danger of pruning too severely, because it is the young shoots that produce the flowers, and the more vigorous these start and grow, the more abundant will be the blooms. There is little use to leave a quantity of long, slender shoots upon a plant, expecting that they will produce as many or as perfect flowers as a few strong ones. After Monthly Roses have produced their first crops of flowers in summer, a second may be hastened by cutting back the blooming shoots.

THE BALLOON VINE.—*(Cardiospermum halicacabum.)*—This climbing annual is a native of Florida and Texas, and grows freely in the tropical portions of the country. Its specific name is the Greek term for another plant, but was applied to this vine by Linnæus. It belongs to the same family as that of the Horse Chestnut, Bladder-nut, etc., and is a very interesting plant, and an especial favorite with children, because, when they crush the ripe seed, they burst with an explosive sound.

Its delicate foliage, and the peculiar character of the fruit, recommend the vine to all those who desire low running vines. In its wild state it runs along the ground, or over small shrubs, but when cultivated, it will grow six feet or more in height. Its leaves are handsomely serrated, and are thin in texture, while the flowers are very minute, and grow in axillary clusters, each bearing hooked tendrils, which enable the plant to fasten itself to supports.

The fruit is inclosed in a large bladdery capsule, with a single seed in each of the three divisions, and each seed is marked with a heart-shaped spot which gave it its name, *Cardiospermum*, or Heart-seed.

Like all other tender annuals, it will vegetate much better if the seeds are sown in a hot bed.—*Ladies' Floral Cabinet.*

GROUPING TREES AND EVERGREENS IN LAWNS AND PARKS.

BY E. J. HOOPER.

A lawn or park without trees has almost as cold and dreary an appearance as some of the barren and parched-up hills of California have, devoid of vegetation of any kind except perhaps a few wild flowers, beautiful undoubtedly as these are; hence, all landscape gardeners plant lawns and parks more or less with trees, either single, in groups, or in clumps. A large single tree, for example, a fine specimen of our California White Oak, is an object that has from all ages been regarded by mankind with admiration, for its grandeur, beauty, and usefulness. Hence, in all ages, man has either allowed a few of the wild denizens of the plains, forests, and groves, (which he has cleared for cultivating purposes) to remain for shelter and ornament to his dwelling and grounds; or, if none existed, as in some parts of California, he has planted for the same purpose. Not only was this admiration for and use of trees prevalent in the old times, but it is still more practiced in the present. But unfortunately only deciduous trees will attain such magnitude as to be beautiful and effective objects in landscape, in less than half a century in most parts of the world (although we may in this respect except to a considerable degree our Pacific slope, where vegetation grows so much more rapidly than in most other coun-

tries). It is desirable, even here, in order to obtain effect more speedily, to plant most of our trees of all kinds in groups, and protect them from cattle, till they have grown so tall as to be out of their reach. A group may consist of only a couple of trees, or the number may be extended to half a dozen, or even nine trees, all of which may be arranged in different forms, so that each may have a distinct character. To attain facility in thus arranging requires considerable knowledge and skill, and a prescient eye to the effect of different combinations of figure in groups, with diversity in kinds of trees employed, to produce a predetermined character in the scene. I would advise those who are about to improve new ground to consult with or employ a well-trained and naturally tasty professional landscape gardener—such as F. A. Miller, for instance—(who does not know of this recommendation, and would probably object to it if he were cognizant of it). But, of course, he has made this matter in Horticulture one of his studies.

The greatest beauty of a group of trees is, as far as respects their stems, the different forms they take as they grow into trees. Some, for example, grow quite upright, if ever so close together; others take a slanting direction, whilst in some groups, one tree will grow quite upright, and its neighbor will push out in an almost horizontal position. These different arrangements, or appearances, may be attained in various ways, by planting in different distances from each other. A very pretty group has often been obtained by planting two or three trees in one hole, and allowing them to grow naturally, just as they pleased.

Great diversity of character may be given to groups of trees, and the greater the number (within bounds) of trees, the greater variety of position, and consequently character, may be attained. The grand object of group-planting, however, is connecting the groups together in various views, and, at the same time, leaving a sufficient breadth of the grassy part of the park open for grazing. Groups should always be connected in the distance with the natural woods, groves, or belts, but should never be planted in the deep sinuosities of the margin of such a mass of trees; they should rather be placed near to the projecting swells, and by that position they will seem, in different views of them, to form a part of, and increase the depth of, the natural grove or belt. In such a position, a single tree should be planted beyond the group into the park, still more to increase that character. Single trees, in general, are very objectionable. It has been, I am sorry to say, a very common practice by many planters to introduce into park scenery a great number of these single trees, with a view of effecting a character which can only be obtained by grouping. I once witnessed in the East an example on a large scale of this dotting with single trees. The planter was not content with planting the trees (Oaks) singly, and at equal distances, but he actually planted every one of them on large hillocks, three or four feet above the surface. The insipidity and absurdity of this dotting arrangement was absolutely sickening. How differently Nature arranges the group, the glade, and the thicket, every lover of rural or forest scenery is aware. Let such formal landscape gardeners go into the wild woods and groves, and observe some of our best natural and even artificial places and parks in California, where groups of noble trees abound, and let them study and reflect whether the sprinkling and dotting of

trees will ever produce such fine effects.

The kind of trees for grouping depends much upon the soil and situation. In high dry soils, the Scotch Fir, the Elm, the Silver-leaved Poplar, Eucalypt, with some of the Australian Evergreens, Acacias, and Pepper-tree. In lower situations, the Oak and the Ash, with some of the Pine tribe, form fine groups. But nearly all trees do well here and in almost any situation.

In planting them, I would advise each group to be of one kind, or very nearly so. An outside tree of a very large group may be of a different sort, to give variety; and that outside tree should be next to an adjoining group of the same kind, which would give the idea that it had straggled from it. Some groups should have the tallest trees in the centre, and the outside, or points, should be lower, or branched to the ground. Other groups, by way of diverse character, should have the centre the lowest, so as to appear like two groups united by low trees. In fact, the great aim of the planter should be to have every group of as different a character as possible from its neighbor. You never see, in old parks in Europe or America, or wild forest lands, two groups alike.

The undulations of the ground, in the park or lawn, will generally give the planter opportunities of placing his groups in good positions. The tongue of a piece of elevated ground is a good position for a group, or on the side of a rising ground will answer for one or more admirably, especially if there is a mass of natural groves on the top; only avoid all stiffness and formality, not only in the number of trees in each group, but also the distance from each other, and the masses of which they are to seem a part in various points of view.

WEEDS.

[Concluded from page 264.]

But I fear that I may be giving a wrong impression about foreign weeds. It is a fact that many of the most troublesome weeds of this country are foreign importations. More than this, the same is true of most countries settled by Europeans during the last few centuries. It is so in South America, in Australia and New Zealand, in St. Helena, and elsewhere. Introduced weeds spread, and more or less choke out the old native species. I have illustrated how fast some European plants have spread in America. There are just as marked examples of American plants spreading over the Old World. The Evening Primrose (*Œnothera biennis*) is here a coarse, roadside weed, rather common, yet seldom abundant. It was, perhaps, carried abroad as an ornament or curiosity.

It has spread over much of Europe, crossed the Bosphorus, and is traveling eastward across Central Asia. Meanwhile it is spreading northward from India and westward from China. It is widely known in Africa, in Australia, New Zealand, the Sandwich Islands, and I know not how much farther.

As we see it growing in waste places here, among other weeds, if asked to pick out the plant most likely to spread, it would, perhaps, be the last one we would guess as the one to thus wander over the earth, and thrive in such varied circumstances.

I have been giving you two classes of facts side by side; one showing how fast foreign weeds sometimes spread in countries not their home; the other, how few true weeds become eradicated after they once have a good foothold. I told you at the start that I had no golden rule by which we could gain an easy victory over them. But our labor

can *overcome* them, and hold them in check, even though we may not rid ourselves entirely of them.

How shall we fight them to the best advantage? Well, we must vary our treatment according to the kind we have to deal with. No kind should be allowed to go to seed if one can help it. With them, as with most of our plants, the leaves are the organs in which the sap is changed, where the processes go on which have been compared to both digestion and breathing in animals; and, moreover, they are the organs that take in certain elements from the air. Hence, deprive them of these organs; cut them, hoe them, dig them; where a green leaf appears kill it if we can. This is usually most effective when the plants are young, but sometimes it is most so when the plant is in its most vigorous growth. This is particularly so of those plants whose roots are perennial. I once knew a man to sell the secret of "how to kill Canada thistles." The price of the valuable knowledge was ten dollars. The secret was, to cut them on the fifteenth day of June and the fifteenth day of September. In that locality, these were the dates when the first and second crops were usually just coming into flower, and the plant in most vigorous growth, and some seasons I have seen large patches subdued by this treatment. A better rule would have been to cut them just as the earliest heads were in bloom, whatever might have been the day of the month, or the age of the moon.

Your secretary has brought in here some of your most common weeds. Two that he says are quite troublesome here, I have never heard of being troublesome elsewhere. One of them I have spoken of. The other he calls White Bush, and says it is bad for sheep. It is the *Andromeda ligustrina* of botanists. A different shrub is usually known as White Bush in other localities. The others are of varying degrees of troublesomeness, and need treatment according to the species. (Their names were given, with some remarks about each.)

In closing, I can only repeat what I have already said; that weeds must be fought; if we yield they will soon conquer our crops. It is one of the ways man has to struggle with Nature, and probably always will. We are told that when Adam was expelled from that favored garden where we infer there were no weeds, he had to till the ground where "thorns also and thistles shall it bring forth to thee," and I fear that this will be the lot of the latest of his descendants who chance to be farmers. We know that with labor and a constant fight we may hold them in reasonable check, but after this very labor, good tillage in other respects must follow. Let us then keep up the fight, as cheerfully as we can, remembering that "eternal vigilance is" not only "the price of liberty," but is also the price of clean land.

Facts About the Siphon.— In June last, John Wells of Truxton, Cortland Co., N. Y., laid a half inch lead pipe according to the following survey bill: The ground rises from the spring in a distance of 34 rods 10 links, 17 feet 5 inches; from thence, in a distance of 65 rods, there is a fall of 30 feet, leaving a balance of 12 feet 7 inches below the spring. Ever since the water was started with a pump, it has run a steady and beautiful stream. In covering the pipe, sawdust was first put on, to prevent sharp stones from cutting or otherwise injuring it. Before covering, all defects in the pipe were carefully mended. — *Rural New Yorker.*

YUCCAS AS ORNAMENTAL PLANTS.

Yuccas are all more or less showy plants, belonging to the great Lily family. For many years I have been raising seedlings of our hardy native species, not only because I admire them as ornamental plants, but by adopting this mode of propagation one stands a chance of producing new and improved varieties. I have at this moment several dozen seedlings of the *Yucca filamentosa* in full bloom, and this spring flowers produced on stems five or six feet high are not surpassed in elegance by anything in my garden at this time. The flowers are mainly pure white, although an occasional variety will be found with a slight yellow-green or reddish tinge. In form they are usually oval, the ends of the petals turning back only when the flowers are nearly ready to drop off. They also vary somewhat in size and form. I have raised varieties of the species named above with flowers that were perfectly globular in form and not more than an inch in diameter, and others that were two or more inches in length and expanding about the same. A good, vigorous stem will produce from 200 to 300 flowers. The plant is evergreen, the leaves are about an inch and a half wide and a foot or more in length, from the edges of which hang numerous thread-like filaments, hence the specific name—*filamentosa*. This species is found growing in Virginia, south and westward to Texas, and is known by several local names, such as Bear-grass, Adam's Needle, etc., etc. There are several local wild varieties, which were described by our early botanists as distinct species. The narrow-leaved Yucca (*Yucca angustifolia*) grows in great abundance on the plains west of the Mississippi. It is smaller than the former, the leaves not more than a half inch wide, distinctly edged with white. The flowers are yellowish-white. It is quite hardy in our Northern States, and well worthy of a place in every garden. There are also many other species, natives of the extreme South and Mexico, not hardy at the North. The seeds are borne in large pods and several hundreds in each. They are flat and thin, resembling in form those of our common Lilies. The plants may be propagated by division of the large, fleshy, tuberous roots, but I prefer to grow them from seed for the sake of variety. The seed grows almost as readily as corn, and may be sown in the fall or spring. The plants require considerable room, therefore it is well to transplant the seedlings when a year old, placing them at least two or three feet apart. As the plants come into bloom just after the first flush of spring flowers is past, they are welcome additions to our gardens.

ALFALFA HAY—HOW TO CURE IT.

A writer in a Sacramento, Cal., paper says: As many farmers are cutting Alfalfa for hay who have had no practical experience in curing the same, a few words of instruction may not be out of the way. In the first place, to make good hay, the Alfalfa should be sown so thick on the ground that its stalks will crowd each other, and thus be forced to grow somewhat spindling. A single bunch of Alfalfa grown from a seed placed in the ground so as to have a plenty of room to stool, will produce large, coarse stalks, and if allowed to stand and mature its seed these stalks become almost like dry sticks. In this condition the hay becomes comparatively of but little value. Therefore the seed should be sown so thick as to

cause a pretty even growth all over the ground, and to create a pretty strong sod. The stalks will then be thin and slender, and the leaves will bear a good proportion to the stalks themselves. Alfalfa should be cut as soon as it has fairly commenced to blossom, and should be allowed to remain spread upon the ground as left by the mower only long enough to wilt it well. It should then be raked into winrows and allowed to remain in this condition only long enough to guard against heating when put into the cock. It should then be put into the cock and dried so as to prevent heating and mildewing when in the stack, and no more. When packed in the stack or mow it should be sprinkled with salt pretty freely—say two or three pounds to a ton.

Alfalfa cured in this way is among the most valuable varieties of hay we have for horses, cattle or sheep. Those who have fed their working teams upon it have found it to be fully as nutritious as the best of oat hay. When horses have become accustomed to eating it they will prefer it to all other kinds. For milch cows good Alfalfa hay is next to green grass in value, and sheep will eat it when they would leave oat or barley hay. Our own experience in feeding stock of all kinds has been considerable, and we do not hesitate to pronounce good Alfalfa hay more hearty and nutritious than the other varieties of hay now in this State. While we make this assertion, we are fully aware that there are those whose experience has been equally as great as our own who differ with us. The reason of this difference arises more from the manner of curing and handling the hay than from any other circumstance. If allowed to be dried in the sun as spread out on the ground by the reaper, the stalk not only becomes dry and brittle and loses much of the gluten and saccharine matter that it naturally contains, but the leaf almost entirely drops off, even while handling it sufficiently to transfer it into the barn. If then it is handled over to bale and send it to market there is nothing but dry sticks left, and it is justly condemned. The great secret in making good Alfalfa hay is in the time of cutting and manner of curing.

FORESTS AND FRESHETS.

At the current meeting in Portland of the American Association, Dr. Hough, of Albany, read a paper on the rain-fall and its relations to forests. He had carefully analyzed the returns of the rain-gauge for a term amounting to 2,000 years, and from these he had attempted to deduce a law of secular changes in the fall of water. But the returns did not justify it. They show marked variations from year to year, and reveal irregularities at many localities, and they also indicate great tendency to drought for years together. Dr. Hough strongly reinforces the doctrine of the relation of forests to the flooding of streams, and in so far bears out the argument of the State Commissioner in reference to the preservation of the Adirondack woods. In a cleared country the water flows quickly away to the streams; these are at once at high-water mark, and then a season follows when water is not to be found. The actual effect of the evaporation of rain-drops on the leaves and the chemical action which goes on in the plant is obvious in the humidity and temperature of the atmosphere where trees exist. One can observe this in a casual glance at open fields; the sun-burnt look of one which is treeless is in contrast with the fresh and vernal appear-

ance of the inclosure in which clumps of trees are found. Houses shaded by trees are damper than those not so protected. In the driest season, one who walks in the country will notice a sensible change in passing from a treeless waste to the vicinity of a forest or into the forest itself.

The necessity of tree-preservation for economic uses can not be overrated. The supply of lumber is rapidly failing. In Europe the forests are regulated by law, and crops of trees are harvested in rotation and upon a definite and prearranged system. France has altogether 13,226 square miles of protected forest. The code by which they are governed dates from the time of Colbert, who was a master hand in regulation and state interference. He showed as great wisdom in this code as in any other branch of his system of administration. By the Colbert Code, "Oaks were not to be felled till ripe, that is, able to prosper another thirty years." The French have carried their system to Algeria, and have already added several rainy days to July and August. In this country, the French system is impossible. The state owns no forests, and the work of preservation and careful husbanding must proceed from the people. One generation will plant for another, and the small sapling of to-day will be a forest monarch fifty or a hundred years hence. No crop would be more valuable; no investment more certain. As Dr. Hough says: "It must come to be understood that a tree or a forest planted is an investment of capital, increasing annually in value as it grows—like money at interest—and worth any time what it has cost, including the expense of planting, and the interest which this money would have earned at the given date." Waste spots should be planted and the increased value of farms, whose roadsides are lined with trees, should be made apparent to all. There is wealth, and health, and comfort in this suggestion.

Ostrich Feathers.—Ostrich feathers, in commerce, are classed in the following order, as regards value: First, those coming from Mogadore; second, those from Egypt and Barbary; and third, the South African or Cape feathers, for which Graham's Town is the central market. These are long, and, therefore, are esteemed for many purposes, but have not the delicacy and elegance of the barbules of the North African feathers. The Aleppo feathers used to be considered the type of perfection of Ostrich feathers, but they are now so scarce as to be seldom met with in commerce. For the "bous" or tail feathers of the Ostrich there is an enormous demand, and perhaps more of this kind are sold than any other. Northern and Southern Africa are the quarters from whence supplies are obtained. There are feather merchants in Mogadore and other Barbary States, who are in communication with all the districts of the desert where the bird is found. The price of Ostrich feathers in a series of years—taking into account quality and demand—ranges from $40 up to $275 the pound weight; but their first cost is, of course, much lower. The import trade in England is in comparatively few hands. There were received in 1870 66,063 pounds of Ostrich feathers, of which more than half were black Ostrich. Vulture plumes, or "bastard Ostrich," as they are called in trade, are employed in large quantities in France, and form the most important branch of the commerce in feathers there. They are obtained from the American Ostrich (*Rhea Americana*),

which inhabits chiefly the pampas and vast plains of Patagonia, the Argentine Confederation, and the adjoining republics. It is smaller than the true African Ostrich, is without a tail, and the feathers are not of the same rich and costly kind. The Patagonians and Indians make plumes, parasols, and many beautiful ornaments of them. The feathers are imported in the rough from South America, under the distinction of large and small Vulture. The former are commercially known as "dry" or "white foot," the lower part of the plume being white, and the head black. They are used for coiffures, the white part in its natural state, or dyed some light color, and the dark part as black. The bad feathers are worked up into *plumeaux* or dusting-brushes. The small Vulture feathers are exclusively used for head-dresses, and are rather higher in price than the large ones.

SEA KALE.

Crambe maritima, 15th class, *Tetradynamia* of Linnæus, and nat. order *Cruciferæ* of Bernard de Jusseau. A native of Britain. A perennial; one of the names applied by the Greeks to the Cabbage, and especially to the marine Cabbage. *Crambe maritima* grows on sandy shores in the west of England, and there the common people have from time immemorial been in the practice of watching when the shoots and leaf stalks begin to push up the sand in March and April, when they cut them off under ground, as is done in gathering Asparagus, and boil them as greens. About the middle of the last century the plant was introduced into gardens, grown in deep sandy soil, and blanched either by sand, ashes, litter, or by covering by flower pots, earthen pots made on purpose, or any opaque cover. It is almost as universal in good gardens as Asparagus, and like it, is forced either by taking up the roots, and planting them on a hot-bed or in the border of a forcing-house, or by covering or surrounding them in the open garden. Before covering with warm litter, each plant, or stool of plants, is covered with an earthenware bleaching-pot or a wicker case to keep off the dung from the young shoots, and to insure their being blanched, and to prevent the young shoots from being scorched by the heat of the manure. No plant is so easily forced, and, unlike Asparagus, it yields produce the first spring after raising from seed.

Crambe Tataria, a native of Siberia, introduced 1789, a perennial, is called by the Hungarians *tatar-kenzer* or Tartarian bread, and its roots stripped of the bark and sliced are eaten with oil, vinegar and salt. The boiled root is sweet, and eaten by children; the young shoots are boiled like those of Sea Kale, and have an excellent taste, but are stringy, though they would not be if well cultivated, which the plants appear to deserve. I have seen the first species cultivated in European gardens, and it is indeed a great delicacy for the table, but have not seen a single dish of it in all my travels in America.

A Subscriber.

The Rose Tree and Its Legends.—The Greek poets say that the Rose was originally white, but that it was changed to red—according to some, from the blood of Venus, who lacerated her feet with its thorns when rushing to the aid of Adonis; and, according to others, from the blood of Adonis himself. The fragrance of the Rose is said by them to be derived from a cup of nectar thrown over it by Cupid; and its thorns

to be the stings of the bees with which his bow was strung. Another fable relating to the birth of the Rose is, that Flora, having found the dead body of one of her favorite nymphs, whose beauty could only be equaled by her virtue, implored the assistance of all the gods and goddesses to aid her in changing it into a flower, which all others should acknowledge to be their queen. Apollo lent the vivifying power of his beams, Bacchus bathed it in nectar, Vertumnus gave its perfume, Pomona its fruit, and Flora herself its corona of flowers. Anacreon makes its birth coeval with those of Venus and Minerva:

"Then, then, in strange eventful hour,
The earth produced an infant flower,
Which sprang with blushing tinctures dressed,
And wantoned o'er its parent breast;
The gods beheld this brilliant birth,
And hailed the Rose—the boon of earth."

Hints About Growing Cucumbers. — Take a large barrel or hogshead, saw it in two in the middle, and bury each half in the ground even with the top. Then take a small keg and bore a small hole in the bottom, place the keg in the centre of the barrel, the top even with the ground, and fill in the barrel round the keg with rich earth, suited to the growth of Cucumbers Plant your seed midway between the barrel and the keg, and make a kind of arbor for the vines to run on. When the ground becomes dry, pour water in the keg in the evening; it will pass out at the bottom of the keg into the barrel, and rise up to the roots of the vines and keep them moist and green. Cucumbers treated in the foregoing manner will grow to a large size, as they are made independent of drought or wet weather. In wet weather the barrel can be covered, and in dry the ground can be kept moist by pouring water into the keg.

Editorial Portfolio.

FAIRS AND EXHIBITIONS.

The third annual exhibition of the Bay District Horticultural Society took place, as announced by advertisement; and although a brilliant success, as far as the display of plants, fruits, and flowers is concerned, it was a most disgusting financial failure. Strange that the people of San Francisco, expensive as they are in the coarser amusements, can not appreciate the more refined pleasures of such exhibitions, which, in other portions of the civilized world, are so liberally patronized.

The Secretary of the Society not having furnished us with his usual report, we are necessitated to postpone further comment to our next number. We, however, subjoin the opening speech of Professor Carr.

OPENING ADDRESS,

By Prof. E. S. Carr, *of the University of California.*

For the third time, this beautiful retreat from the dust and confusion of the city is opened to the public; and for the third time, you have honored me with an invitation to speak a good word for the Society, and the interests of Horticulture on this coast. I am glad to serve you to the best of my ability; but, in view of what you have done and are doing, and of the fact that you are opening this Exhibition in spite of the discouragement which attended the last, I certainly feel unequal to the occasion. I would have preferred that some other *doctor* should administer the sharp and bitter tonic, which the people of the Bay District deserve, if they allow so good a thing as this Society to languish for want of support.

When I look at this noble and beautiful State, and think of the almost boundless prodigality with which Nature has endowed it, I feel that there ought to be a larger, grander humanity developed here than anywhere else on the planet. For, first of all, we have

the soil and climate best adapted to the accumulation of wealth, and, therefore, the best possible conditions for the growth of knowledge, science, art, and taste among the masses of the people.

"Here Nature shall condense her powers,
Her music, and her meteors,
And lifting man to the blue deep
Where stars their perfect courses keep;
Like wise preceptor, lure his eye
To sound the science of the sky,
And carry learning to its height
Of untried power and sane delight."

But when we see how large a proportion of the intelligence, the brains, which should be brought to bear upon the development of these vast resources of material, intellectual, and spiritual power, are devoted to other ends, I fear it may be said of us: "Eyes have they, but they see not; ears have they, but they hear not;" and that we be found worshiping the golden calf, while our unappreciated prophets are listening to the voice of God in the mountains, and tracing His hand in manifold works of beauty and grace.

It is pleasanter to praise than blame; and there is so much to praise in Californian energy and enterprise, that criticism is apt to fall pointless, like the grumblings of discontent. But one of the great essentials of improvement is to be aware of our own deficiencies.

We are often told that indifference to everything which does not exhibit quick returns is the vice of new communities. So it is; but not, therefore, an excusable vice. A new State in this half of the nineteenth century is the last onward step of human progress, and, therefore, we have a right to look for the best of everything, or at least the good healthy germs from which the best is to come.

To-day, while thousands of our American people are crowding the thoroughfares of Europe, and millions of American gold is lavished in foreign lands, I feel that we are rich enough to possess the best which Europe has to offer, if we were wise enough to feel the need of it.

Do you suppose the Russians would have their winter gardens, and the Germans their open-air concerts, and every European capital its great libraries, and museums, and art galleries, if the people did not improve these opportunities of culture? Do you suppose the American in Kew Gardens, who would honestly prefer a Red Cabbage to a Cabbage Rose—whose ear is trained to Yankee Doodle, and not beyond it—with money enough in his pocket to buy a grand duchy—is truly the peer of the German, content with his black bread and beer—with simplicity and cleanliness—if to these his gardens, his evening concerts, the glorious legacies of art and of imperishable thought, be added?

What good thing is there in that old world to which such numbers are flocking which we could not readily command, if we would? Is it education? Think what teachers have voluntarily come to us—their Lieber, their Agassiz—glorying in the wider possibilities open to them here! Is it art? Think what that commercial Florentine people, with their citizen rulers, accomplished for art in a single century; simply because they were wise enough to choose things which are of lasting value! Think how every handicraft flourished there; how trade prospered and commerce increased—impelled by an enlightened public spirit! This, more than anything else, is what we need in California.

I wish that some of the eloquence expended in every political campaign, in showing how the liberties of the people are threatened, and their substance wasted, could be used in showing that money is always *saved*, when used to promote education, art, and science—the great conservators—and to multiply all the rational enjoyments of human beings. I begin to feel that, between the enormous expense of keeping ourselves from foes without and foes within, we can hardly get time to make ourselves worth saving. But, lest you should take these as *after-election views*, I will leave them, and speak of "predestination"—that of the Bay District Horticultural Society.

You all know that some twenty years ago there was formed right here, among the money-changers, a little Society, which met in a dingy upper chamber, with a turnip for a candlestick, and an Indian basket for a ballot-box, yet steadily proclaimed itself the California Academy of Sciences. Among that faith-

ful and far-sighted few was the worthy President of this Society. He was often mistaken, I have no doubt, for a miner seeking his last chance, when shouldering his blankets and pick, he went forth into the hills. But the kind of gold which Dr. Kellogg finds never creates a panic on Wall Street; and I fear it will be a long time before there is a general run on any of his banks. Since he is not in his place this evening, I may as well speak of him and of the service which he has rendered to Botany and Horticulture. There is not a public garden in Europe, and perhaps not one of any importance in the world, to whose treasures he has not contributed; nor any large herbarium in which plants of his collecting, from Alaska to Mexico, may not be found. A year ago, when the friend of all science and of all progress stood among us—and it was said of him that he "never had had time to make money"—I thought that distinction belonged equally to some of our own scientists; and that the fact should be known that "Mammon-worshiping California" had nevertheless a devoted band of laborers for science and the future.

I have alluded to the history of the Academy for your encouragement—to show what steady perseverance will do. Little by little that Society worked its way—so slowly that the cobwebs gathered over its collections, and so silently that every now and then some of the contributions to it re-appeared as new discoveries—until it had accumulated so much that the law, "To him that hath shall be given," began to operate, and suddenly, Mordecai sitting humbly at the gate is he that the king delighteth to honor. The Art Association has had a shorter probation; but its history also proves that any similar institution will flourish here if it has vitality enough to make its claims known.

California is not wanting in pride in her business enterprises. She only needs to believe in some of the higher laws of life—"that lovely things are also necessary; flowers as well as corn; the wild birds and creatures of the forest as well as the tended cattle"—and the field of her energy will soon include these.

"The *people* of this country—I speak this word in that latest sense which discriminates between the users and the used—are, for the first time, wide awake to their own interests." We shall soon see what manner of public work they propose doing. Since every great step in progress is the result of individual effort, all the beginnings of this new exodus will be made in the home. There never were truer words said than these, to the English people: "What is chiefly needed to make the world better, is to show the quantity of happiness that may be obtained by a modest competence." I believe the results of the new movement will be more tasteful homes, then better and more beautiful villages, and farms which have less the appearance of deserts.

I am glad to see the farmers of California organizing for mutual protection and improvement, because the matter of protection can be speedily adjusted, leaving only that of improvement to be attended to. How much Horticulture will have to do with that! I have passed a good many farm-houses in California, wondering what punishment could be worse than to be condemned to live thus a single year. I never saw in any State more attractive rural homes than many about our bay, or many such farms as Gov. Bidwell's at Chico, or Mr. Beard's, at Mission San José—places which nobody would think of calling "palatial." They are just about good enough for a man who loves and honors his calling, and enriches his life as well as his purse. The charm of these representative homes is largely due to the horticultural adornments which are felt to be indicative of the taste of their owners.

I know a man who goes every morning to a mechanic's work, yet gives an hour or so daily to the little greenhouse, built at odd moments and with small savings. I do not know if he is an exhibitor here, but there ought to be a thousand exhibitors out of these ranks. I never saw in any rich man's conservatory such a splendid show of Calceolarias, or such perfect bits of experimental work, as in his. He gets a crop, my friends, off that single town lot, which I do not think he would exchange

for a San Joaquin principality, if he were corralled, as many of our farmers are, on a great bare wheat ranch, from which every flower of the field had been exterminated.

There is not a mechanic in San Francisco who can not have his bay-window fernery, his little rock garden, a tiny fountain murmuring a perpetual song, if he will. It is the mission of your Society to create an appetite for these things—an appetite which is fed by blossoms as well as fruits.

I hear it whispered, gentlemen, that your next exhibition will take place in a new hall, to be built by the Mechanics' Institute. Now, let me make a prophecy. Persevere in holding your semi-annual exhibitions—in introducing every new and valuable acquisition to out-door and in-door gardening—and five years will not have passed before some "greedy monopolist" will disgorge capital enough to build you as good a hall as that of the Massachusetts Horticultural Society. Yes, and better; for here you can at a comparatively small expense sustain a winter garden, and make it self-supporting by admission fees and rents of stalls, and reserve plenty of space for competitive exhibitions also. About three years ago some enterprising citizens of Frankfort, Germany, made a similar experiment, which has proved a great success—their admissions amounting to six hundred persons a day, and their company's shares commanding a considerable premium.

There was no feature of the last exhibition I enjoyed so much as the children's flower-show, and I am glad to see it repeated here. I hope it may help to bring about a larger admixture of Natural History studies in our schools, and help in creating a generation of liberal patrons of Floriculture.

A higher appreciation of all the arts can come only through education—first in the home, then in the school. A recent English writer says: "How few mothers can tell their children the names of the wild flowers and what they are good for—of the garden plants and what is good for them, what will feed, and what will kill them; or the names of the birds, the trees they like to build in, the homes they build, their abodes in winter, and how they procure their food. Though Nature is especially the child's book, we have few mothers and teachers prepared to interpret it." I am sure the same can be said of us; and this lack of early training explains the public apathy in respect to works of taste.

I beg leave to call the attention of this Society once more to the importance of co-operating with the State Agricultural Society, and similar bodies in other States, to secure needed legislation for the protection and preservation of our forests. I do not think the public are aware that this Society made strenuous efforts in this behalf at the last session, and that a bill was passed for the encouragement of forest and timber-tree culture, which, on account of some objectionable features, failed to receive the signature of the Governor. The people of other States are waking up on this subject. New York will be asked to set aside a vast territory, worthless for agriculture, for a State forest. Much of it has already been skinned by lumbermen, but Nature, if permitted, will repair the loss. The Adirondack region, filled with lakes, and containing some of the noblest mountain scenery, is to be restored to the native inhabitants—the moose, bear, otter, the birds and fishes—so nearly exterminated elsewhere.

The Yellowstone Park, the great pleasure-ground of the nation, is now being surveyed, and in time will become the resort of travelers from all parts of the world; yet it is no rival of the incomparable Yosemite, which is intrusted solely to the keeping of this State. Every good citizen should feel an interest in the right management of this trust, and in the unimpaired transmission of that perfect piece of Nature's handiwork to future generations. The men are not yet born who can improve Yosemite and the Mariposa Grant; and whatever accommodations the public may require should be concealed rather than obtruded there. These two parks are the only forested lands in the United States exempt from spoliation. It has been shown by carefully gathered statistics that, at the present rate of con-

sumption of timber, fifty years will consume all the forests east of the Mississippi; and the history of all other countries, where the natural conditions have been so overthrown, proves this to be the least of its consequent evils. Millions of acres in this State, worthless for any but forest uses, are being converted into wastes, uncheered by verdure, and torn during the rainfall by devastating torrents. Every shrub and green thing is swept bare, as with the besom of destruction, by the flocks and herds. All over Europe it has come to be considered the legitimate function of governments to regulate these things. The forest laws of France restrict *pasturage*, as well as wood-cutting; and I wish we might have a similar application of science to statesmanship here.

I think we need a little legislation on another subject to which I would invite your Society to lend its influence. The great importance of the Grape-growing interest—and, now that economical modes of fruit-drying have been adopted, the fruit-growing interest—makes of special importance the "ounce of prevention" of those insect pests which have cursed other States. With increased facilities of communication, our exemption from these is sure to be short-lived. The bark-louse is already at home in our fruit-trees, and the chinch-bug is sure to visit our fields. That dreaded scourge of the vine, the Phylloxera, may in a single season destroy one of our most important industries. It is time for us to recognize the importance of an office, common in the Eastern States, viz: that of *State Entomologist*.

Lest I should anticipate the Governor's message in these suggestions, I will not amplify them. I expect to see this Society becoming more and more influential in forming correct public opinions as well as public taste. Through exhibitions like the present, and through its publications, it can not fail to become an important instrumentality in ushering in the period of universal plenty, peace, and good will.

A CAR-LOAD of San Diego honey was recently sent East, from this city.

STATE AGRICULTURAL SOCIETY'S FAIR.—The Twentieth Annual Fair of the California State Agricultural Society took place at Sacramento in the third week of September, and proved a grand success. All branches of agricultural and horticultural industries were well represented. The people, who flocked there by thousands, were well pleased with the management and display; and the officers of the Society proclaim the Fair a financial success, which must be encouraging to everybody interested in Agriculture.

From all accounts, the exhibit of stock was the finest ever seen, the races were exceedingly interesting, and the display at the Pavilion gave entire satisfaction.

The horticultural departments were well represented, and we consider it our duty to review these more particularly, leaving it to others to discuss the merits of the stock, of the races, and of agricultural products in their broader sense.

The leading horticultural features were Fruits, Vegetables, and Flowers. The exhibit of Fruits was very creditable, but did not quite come up to the show of last year; this, however, was entirely due to the total absence of eastern fruits, which formed a very interesting and instructive feature last year. The *Vine Growers' and Wine and Brandy Manufacturers' Association* made an excellent showing of Grapes. Mr. Young, of Sonoma County, had a very extensive collection of fruits, well selected and nicely arranged. This was Mr. Young's first attempt to exhibit his fruits, and he succeeded well in demonstrating that Sonoma County can raise as fine fruit as any other locality in the State.

The display of Flowers and Plants was much larger and better than here-

tofore, and attracted a great deal of attention. The principal exhibitors were E. E. Moore, and Miller & Sievers, of San Francisco; A. Ebel, gardener to E. B. Crocker, Esq., Sacramento, amateur; and Mark Hopkins, of Sacramento, amateur. Mr. Hutchinson, of Oakland, exhibited some very good cut Dahlias. Mrs. B. B. Cutter, of Sacramento, showed some exquisite Tuberoses, tastefully arranged, with well-colored foliage of the tri-colored Cockscomb.

The display of Vegetables was unusually fine and varied, and Messrs. F. Gabrielle & Co. deserve much credit for the superior arrangement.

We are happy to say a few words of praise for the magnificent display of canned and preserved Fruits, Jellies, etc., by Mrs. J. B. Odbert, of Sacramento. Her collection embraced two hundred jars and glasses, of one hundred and sixty-nine varieties of fruits and jellies, in great perfection.

The following awards have been made in the various horticultural departments:

GREEN FRUITS.

D. C. Young, Sonoma—Best display of Apples, $30.

Ira S. Bamber, Placerville — Best twelve varieties of Apples, $15.

R. Williamson, Sacramento—Best six varieties of Apples, $10.

Dr. W. S. Manlove, Sacramento—Best three varieties of Apples, $5.

D. C. Young, Sonoma—Best display of Pears, $30.

D. C. Young, Sonoma—Best twelve varieties of Pears, $15.

T. K. Stewart, Sacramento—Best six varieties of Pears, $10.

D. C. Young, Sonoma—Best three varieties of Pears, $5.

I. S. Bamber, Placerville—Best display of Peaches, $15; best six varieties of Peaches, $10; best one variety of peaches, $5; best display of Plums, $15; best five varieties of Plums, $10.

D. C. Young, Sonoma—Best one variety of Plums, $5.

I. S. Bamber, Placerville—Best green figs, $5.

D. C. Young, Sonoma—Best display of tropical fruits, $20; greatest number and best specimens of Oranges, $5.

D. C. Young, Sonoma—Lemons, $5.

R. Williamson, Sacramento — Best display of Seedling Fruits, $10.

D. C. Young, Sonoma—Best display of Fruit, $50.

FLOWERS.

Miller & Sievers, San Francisco—Best collection of Flowering Plants in bloom, $25.

E. E. Moore, San Francisco—Best collection of ornamental Foliage Plants, $25.

Miller & Sievers, San Francisco—Best collection of New and Rare Plants, $15.

Miller & Sievers, San Francisco—Best collection of Roses in bloom, $15.

Miller & Sievers, San Francisco—Best collection of Fuchsias in bloom, $15.

Miller & Sievers, San Francisco—Best collection of Cut Flowers, $10.

Miller & Sievers, San Francisco—Best collection of Bouquets, $10.

E. E. Moore, San Francisco—Best collection of Australian Plants, $10; Hanging Baskets with Plants, $10.

Mark Hopkins, Sacramento — Best collection of Plants for conservatory, greenhouse and window culture, $15.

A. Ebel, Sacramento — Australian Plants, honorable mention.

Joseph Hutchinson, Oakland—Dahlias and Pinks, special premium recommended.

Mrs. B. B. Cutter, Sacramento—Basket of Tuberoses, special premium recommended.

Mrs. J. H. Carroll, Sacramento—Very large Bouquet, special premium recommended.

THE VINE GROWERS' ASSOCIATION. — The following is the annual address of Mr. G. G. Blanchard, the President of the Vine Growers' Association.

Ladies and Gentlemen of the Association: The season in its rounds of bounty and of weather, are scarcely more constant and punctual than we. Each returning fall, with its fruits, brings

us together for congratulation and advice, and affords us opportunity to give the "reasons why," and occasion for the "thus you see," of the year's employment. This annual "come and go," this periodical "fetch and carry," in ways many and various, contribute to our prosperity as individuals, to the prosperity of our State, and our social progression and happiness.

One more year have we watched, considered, and dressed our growing vines; one more year have we racked and re-racked, tested and tasted its liquid product. For one year more have we applied to the culture of the one, and the improvement of the other our entire stock of knowledge and ingenuity; and now, here, upon the altar of this industry do we offer up the result, and ask the descent of the latent mysteries of vine culture and wine making upon our offering.

While we have been thus nobly engaged, the contending political forces have been busily applying their dogmas to public needs, and untiring in their efforts to secure our recognition and support. Besotted selfishness and unholy avarice are the seeds of the evils to which we are the prey. Our wines are delicious, our fruits both palatable and nourishing; our presence upon the soil makes it inviting and gives increase to the national exchequer. Yet, as a class, the vine grower has but a small voice in the political economy of the State or nation.

There will be produced this year, from twelve to fifteen million gallons of wine, of the value of three and a half millions of dollars; besides about two million pounds of Grapes for table use, worth one-quarter of a million; and one-quarter of a million pounds of Raisins.

There are not within this State to exceed forty thousand acres planted to vines. Of hill and mountain land alone, which is eminently susceptible to the cultivation of vines, there are more than eight millions of acres.

With reasonable cultivation, and without diminishing any of the other productions of the State, we have acres sufficient to produce annually from the vine more than $200,000,000, and these lands are mostly suitable for any other production as a staple. Our highest prosperity will never be reached, until the occupation of these lands is made an element of legislation; until the subject shall receive encouragement and aid. Commerce is not to be forgotten, manufactures should not be overlooked, nor our mining interests neglected; neither should this greatest and most natural resource of the State — vine growing—be made the subject of legislative oppression.

The husbandman is the Atlas, upon whose back the world's life is supported, and he has ever, with silence and humility, borne the burden. While exemption from taxation has been the order, his results have been listed for assessment. His surplus is the subject of tariff upon tariff.

Our requirements have never been understood by political economists; our liquors are gauged when new and at highest proof. No account or allowance is made by the officer of revenue for evaporation, leakage, or deterioration. Our wines and liquors stand to us as our growing crops, and only ripen at from three to five years after the time they are manufactured; yet, while in this state of incubation, they are listed and taxed from year to year, when they only have value as they mature. The present system of taxation is unjust and oppressive, and affords but poor encouragement to industry. The burdens rest almost wholly upon the owners of real estate, while bankers, brokers, and those who deal in securities and exchanges, are exempt from taxation. The value of all the real and personal estate of the United States in 1860 was $16,086,616,068, (which included slave property); in 1870 it amounted to $30,822,535,140, leaving out the slave—more than doubling in a decade. This increase is unprecedented in history. Yet, this fabulous increase can not be said to result from an increase of farming area or farm products, for the improved lands of the United States, in 1860, amounted to 407,212,538 acres; while in 1870 there were only 407,735,041 acres, showing an increase in the ten years of only 522,503 acres. These figures demonstrate that the increase has been prin-

cipally in lands not agricultural, and of personal property not the product of the soil. While farming lands and farming products have increased, yet it was disproportionate to the increase of other lands and other commodities, considering the cheapness of lands, the extent of our arable domain, and the better price of its products. Query—Does this show a healthy state of things? I think not. When in a purely agricultural country agriculture is at a double discount—when men will forsake the plow for a standing-place in the city, and abandon the law of induction applied to the vegetable mold, for the chance of a freak in the dice of fortune applied to the shadow of a vision at some curb-stone, the one must be shadowed with burdens that frighten, or the other be gilded with reliefs that dazzle. All burdens are distasteful. But the most unsavory is American taxation. The toiler has no time to hide, in fact, he can not hide his effects from revenue officials, for the most part they are bulky and just about him; while he that luxuriates in his percentum and illicit traffic may escape the tax gatherer. Our system of political economy does not stop to consider, with any degree of niceness, the wrongs done a class whose very business makes it unlikely that they will raise any very potent voice in their own behalf. The law makers are, not as a class, those upon whom the hand of government falls heaviest. Ay, they too often are those whose hand is most heavy upon the government—and upon whom the government has no hand. Extravagance is the rule, economy the exception. A true citizen never advances his own interests at the expense of the community in which he lives. Query—Are those bad citizens who do? But extravagance always leads to corruption, and both are fueled and fanned by party bias and party rule. Honest difference of opinion, springing from diverse conceptions of untried theories and national polity, is always entitled to respect; but political distinctions, originating in the vanity of wealth, a debauched sense of class superiority, fevers of ambition, or in the advantages of a popular spasm, should be intolerable, and condemned as factional.

National prosperity, by a false estimate, is said to overlay a nation's wealth; and with equal falsity is it said, that the prime duty of a government is to preserve and aggregate its wealth.

When a government has no higher object than monetary advancement, its stability is enervated, its health devoid of vigor, and its longevity problematical. Prodigies of virtue, statesmanship, and valor seldom spring from places of luxury. The sons of poverty, for deeds of honorable merit and renown, always defy and rout the powers of opulence. The voluptuous myrmidons of Persia, for valor and virtue, paled into littleness before the peasant youths of humble Sparta. The Roman invincibles carried their victorious eagles into the rich but festering Egypt and Persia, where opulence and venality was the rule.

Principles of stainless loyalty and political virtue are deep-rooted and immovable in the poor. Preservation of material wealth is not the motive which sends a yeoman to the front; his battle song is of liberty and the republic, instead of gold and silver. A city burned, or a fleet scuttled, to the true defender, gives no qualms of property lost. The opulent commercial sons of Carthage, for gold sold her liberties and independence, despite the entreaties of her toiling people.

Before Spain was gorged with the metals of Zacatecas and Potosi, her enterprise and her virtue walked hand in hand. Her moral power was only equaled by her national activity.

The mistaken idea that wealth was national prosperity, lowered the Spaniard from his superior rank, and his government from a first to an insignificant power.

Adherence to the soil is a specific remedy for an unstable condition of public mind. The plow and reaper agitate nothing but earth. He that causes a blade of grass to grow where none has grown before, is greater than he who commands an army. Wealth produces pride of dominion, and pride of dominion is corrupting. Wealth furnishes the vitals of corruption; venality is its most nourishing aliment, and contamination its most refreshing atmosphere. Reunions like this tend to uni-

versalize class knowledge and disseminate the principles of industrial virtue. They clear away the miasma arising from pools of sloth and from political defections. They dignify and give notoriety to that which without them would be devoid of recognition or respect, beyond a common and passing mention. Aggregated we present a powerful front, and the knowledge of all becomes the knowledge of each.

One of our contemporaries sneers illiberally because it recognizes in our columns some excellent articles which itself had appropriated from the Report of the Commissioner of Agriculture for 1870. We allude to description of Gum plants, and similar articles. Are we not equally at liberty with itself to draw from such sources, such information for our readers as we hope may be acceptable? We do not pretend to supply, nor does the public expect, all original matter; and when we extract, we consider it rather a compliment than otherwise. If at any time any article is not duly acknowledged, it is an oversight of our compositors which we regret. It is a pity that our contemporary can not be gentlemanly; when we presume it desires, as we do, to be read by the ladies.

WOODWARD'S GARDENS.

To the horticulturist and the botanist these gardens afford ample scope for study. The plants are kept in fine order, and exhibit great improvement under the judicious management of their present conservator, Mr. Brown.

The extensive collection of Orchidaceous plants is highly interesting; we also notice additions among the Caladiums — indeed the display of foliage plants generally is very fine. The Begonias are well represented. We are eagerly expecting the opening of the *Cereus grandiflora* (Night-blooming Cereus), and hope not to be disappointed as we were last year, by some vandal who destroyed the bud.

CATALOGUES RECEIVED.

We have received No. 4 of *Vick's Floral Guide.* It is handsomely illustrated and contains much useful and interesting information. This completes the quarterly series for the present year. We are happy to find that it has proved a success. This catalogue comprises a copious list of excellent flowering bulbs at moderate prices. We commend it to the careful perusal of our readers.

Also *Descriptive Catalogue of Langdon Nurseries,* C. C. Langdon & Co., near Mobile, Alabama. This comprises Fruit and Ornamental trees, Grape-vines, Roses, Evergreens, Bulbs, etc., and is at once copious and useful.

The Flower Garden, Beach, Son & Co., 76 Fulton Street, Brooklyn. This is at once an illustrated magazine of Floral progress and a useful priced catalogue of Trees, Shrubs, Plants, Bulbs, and Seeds.

FAVORS RECEIVED.

The Overland Monthly for October.—This is a very interesting number. "Prison-life in China" portrays a lamentable state of affairs in that country. "Seeking the Golden Fleece—After that the Deluge," by Dr. J. D. B. Stillman, presents a vivid picture of the flood of 1850 at Sacramento. "Aboriginal Shell Money," by R. E. C. Stearns, gives evidence of much careful research, and is both curious and highly interesting. Many of the other articles are well worthy of perusal. "Etc." as usual piquant; "Current Literature" caustic, but nevertheless judicious.

OUR EXCHANGE TABLE.

Among the numerous and ever welcome periodicals of our own class which from time to time present themselves, much to our gratification, at our editorial table, we call the attention of our readers and of the public in general to the following, as well worthy of public patronage:

The Horticulturist—monthly—Henry F. Williams, New York. $2.50 per annum. An excellent magazine.

The Gardener's Monthly—its specialty Horticulture and Floriculture. Every gardener, whether amateur or professional, should read it. Editor, Thos. Mehan. Published monthly by Brinkloe & Marot, Philadelphia. $2 per annum.

Moore's Rural New Yorker—weekly, illustrated. Very good. Published by D. D. J. Moore, N. Y. $2.50 per annum.

Ladies' Floral Cabinet—beautifully illustrated, full of practical information and pleasant reading matter. 75 cents per annum. Published monthly by H. F. Williams, N. Y.

Country Gentleman—weekly journal, replete with much desirable information. Publishers, Luther Tucker & Son, 395 Broadway, Albany, N. Y.

Sir John Lubbock states that the *Stresiptera* or parasites found on bees and wasps, pass through all their transformations in the bodies of these insects. The males and females are very dissimilar; the former are active, minute and short-lived, while the females are bottle-shaped, never leave the body of the insect, and, except that they occasionally thrust the head of the bottle out between the abdominal rings, they appear to be almost motionless.

WORK FOR THE MONTH.

BY F. A. MILLER.

We have so far advanced toward the rainy season, that irrigation may be entirely dispensed with, so far as trees, shrubs, and vines, both ornamental and useful, are concerned. The cool nights are longer, and in the vicinity of the Coast Range the atmosphere is damp enough to cover all sorts of vegetation with a heavy dew. The lawns in San Francisco, Oakland, and other localities near the coast, will do well enough without any further irrigation; while those of Sacramento, Stockton, San José, and other inland localities, may be treated with an occasional sprinkling during the month of October. Lawns ought to have a good top-dressing of manure just at the beginning of the rainy season, and I think the sod should be allowed to rest for a few weeks, preparatory to the application of a top-dressing.

It is very important that all ornamental trees, which are not sufficiently established to support themselves, have proper stakes given them, so that they may withstand our heavy winds. It is a common thing here, that, after the ground becomes thoroughly saturated with water during the winter months, trees are blown over for want of proper support. The present is the most favorable time to guard against this.

Flowers begin to be scarce articles, and as it is expected that the first rain will bring out new growth and fresh flowers, this would be the most favorable time of the year to resort to trimming and pruning. But let it be done by some one who understands his business. Some of our so-called gardeners apply the pruning-knife indiscriminately to Roses, Lilacs, Deutzias, Snowballs, and other flowering shrubs, and

manage to cut off all the wood which is expected to flower. Some Roses do better by close pruning; others do best if left alone. Your gardener should know something about this. In regard to Lilacs, Deutzias and Snowballs, nothing should be cut off except suckers and superfluous wood. If you can not trust your gardener, it will be far better not to touch these shrubs with the knife.

Another lot of Gladioli may now be planted for winter flowering.

It will yet be time to sow Pansy seed for winter and spring blooming. It is best to sow them in a box, which may be covered at night with a pane of glass or canvas. If placed in a warm and sheltered place they will be fit to transplant in four to six weeks. A bed of Pansies is always most desirable, and we can have them here in the greatest perfection during our winter months.

Dutch bulbs, such as Hyacinths, Tulips, Narcissus, Crown Imperials, Snowdrops, Lily of the Valley, Crocus, and others, have come to hand and may be planted at any time, particularly those which are intended for pot-culture in the house or under glass.

I hear of late much call for Tuberose roots. Most of our amateur gardeners seem to think of planting bulbs when they see the flowers in our floral establishments. All this is wrong. If you wish to cultivate Tuberoses in the open air, you must obtain and plant them in spring, in order to have them in bloom in August, September, and October. If they are planted now, they will not bloom until next year, and may rot in the ground before that time. The only way to plant Tuberoses, at this time, is to have them in pots or boxes, and place them in the house or under glass, for the purpose of forcing them for winter blooming. I would say, however, that the single white variety is better for that purpose than the double flowering.

If you wish to cultivate Hyacinths, Crocuses, Tulips, etc., with success, do not delay planting them until you see them in bloom in our floral establishments; but go to work now. Obtain your roots at once of some responsible dealer, who will be willing to give you the necessary information as to proper treatment.

Continue to give your plants in the conservatory, greenhouse, or window, constant airing during warm and pleasant weather; but do not expose them to draughts or strong winds.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

In writing on the subject of fruits, it naturally suggests itself that many new and valuable varieties of these as well as of vegetables have been produced, as it has appeared accidentally, in different localities of the State. Besides the common productions of the temperate regions, various kinds of tropical fruits also, such as the Pineapple, Banana, Mango, Cocoanut, Plantain, Loquat, Chinese Guava, the Date, and others. In view of this fact, if the farmers and horticulturists, and their societies, as now organized and being organized, will take hold of these new and valuable articles—and some others that might be named—and give them a thorough trial, even if only in a small way at first (and doubtless this is the safest plan), in different localities and soils, keeping a correct record of the circumstances connected with each individual experiment, they will perform a work that will, probably, bring vast and immediate benefits to themselves and

indirect good to the whole people. With especial reference to tropical or semi-tropical products, we here venture the opinion that our rich bottom-lands, particularly those in the southern portion of the State, where the facilities for irrigation are at hand, will produce some varieties, at least, of the semi-tropical fruits of the more torrid zones, not only as good in quality, but as abundantly as the best localities of some of the islands of the Pacific, the East and West Indies, and some parts of Africa. Fruit of the common kind is so abundant now, that it is very desirable not only to raise the very choicest, having the highest flavor, fine appearance, and complexion, but the first-class species of each, in order that it may be profitable. Apples and Peaches of the most common qualities go far ahead of the demand; and even the wholesale price, in some instances to our own knowledge, will not pay for the expenses of gathering, putting in boxes, and forwarding to our markets. Many of the kinds which are most prized will not stand the effects of transportation to the East or to other places so as to pay the packers, as has been lately proved. It is only a very few of them that can stand the wear and tear of time and distance, and remunerate their proprietors. It is chiefly in some cheap and effective drying and canning processes—better and less expensive than those already practiced—that we can look forward to improvement in profits for some time to come. But when any particular product is raised in excess of the requirements of home consumption, it is certainly of great moment to produce less of this and more of those products which we are still importing, and for which there is still an unsupplied *home* market; for, as has been observed, by a competent authority lately: "Of all the markets in the world, a *home* market is the best for any country; a foreign market is only good when the home market is over-supplied, to consume the surplus." Thus, we should produce, as we have said before, more various kinds of fruits for drying, canning, and pickling; and also we may add, as we have happened here to think of it, more of all the nuts, such as the English Walnut, Almond, Pecan, and Peanuts, etc. And, in general, it may most truly be said, that besides a larger variety of all kinds of fruits, our products of all sorts should be more diversified, so that individual success should not consist so much in large possessions of land for grain, or in immense monopolized wealth for the few, but in a general well-doing with medium possessions, and reasonable wealth for all. And these are subjects to which we invite the attention of those who have the best interests of California at heart; those who have lately been elected to make the laws and administer the government.

For the encouragement of cultivators of tropical fruits, and to cite an instance of the probable success of Orange culture far north of Los Angeles, we will here state that in the garden of Judge Sexton were raised last year Orange and Lemon trees loaded with fruit; while in the garden of Mr. Glaucauf, in the town of Oroville, a day's journey by rail from Sacramento, an Orange-tree about twelve years old, bore and ripened the same year 400 as fine Oranges as were ever produced in Los Angeles, and they are of the same variety. A tree, also, on Bidwell's Bar, some six miles above Oroville, bore 1,500 Oranges, as good as any grown anywhere. These are significant facts, and tree-horticulturists in the Sacramento Valley and elsewhere of the same climate, and in-

deed all over the State, should benefit by them, and at least make some small experiments in the same sort of fruits. Owing, however, to the burdens of the internal revenue and the high cost of freight about Oroville and those parts, Grapes for wine and brandy, etc., do not pay the producers, though they might for table and raisins. In many localities in the Sacramento and San Joaquin valleys (at any rate with irrigation) can be raised besides all the ordinary fruits, such as Apples, Peaches, Pears, Quinces, Plums, and small fruits and berries, the Olive, Orange, Lime, Citron, Figs of several kinds, Pomegranate, Mulberry, English Walnut, Filbert, etc. But let us make a statement of those things which we find now existing in most abundance in our fruit and vegetable markets, and their condition, and some of their prices.

By the 22d of last month, all the common fruits of the season had found their way to the stalls; Quinces—the latest—having just about that time come in. Prickly Pears were then quoted at 25c. per pound. Oranges were then scarce, but since much more plentiful. Lemons, also, were nearly out of market in the latter part of August; but Limes were abundant. Plums were worth, by the box, from 7 to 8c. per pound—since somewhat less, especially for the rather dry red sorts—the more juicy and finer-flavored, as the Yellow Egg, Prince's Imperial Gage, and the Green Gage or Claude Verte, being, of course, higher in price.

Blackberries and Strawberries might be considered, last of September, out of season.

Apples have declined considerably in price since last month; the best being $1 per box; ordinary lots, of which there are too many, being as low in many instances as 60c. per box.

Grapes remain at last month's prices 10 to 20c. per pound. But this fruit is every day becoming, as the season advances, abundant.

Apricots have long disappeared, and Peaches can not last much longer—the clingstones coming in, in large numbers. The common varieties of freestones are as low as 8 to 12c. per pound, or about $1.50 per basket. Clingstone Peaches are considerably higher.

There is now, at last, becoming a tolerable demand for Quinces. The price is rather nominal, but they are selling generally at about 10c. per pound.

In the vegetable market, Winter Squashes are quoted at 20c. per pound, and Summer Squashes at 4c. per pound. Pumpkins are out of season. Potatoes have declined from ½. to 1c. per pound, and Lima Beans have depreciated from 2 to 3c. per pound. Tomatoes are 2c. per pound less. Good Green Corn is quotable at 25c. per dozen. Rhubarb is not to be had for any price. There is no variation in the prices of other varieties of Vegetables.

Bartlett Pears are in good demand, and prices are sustained. Seckel Pears have been received in plenty, September 16th. The steamers continue to bring small lots of Los Angeles Lemons, which, owing to the absence of other kinds from the market, bring high prices. Crab Apples are plentiful at 6@8c.; Huckleberries 20c. per pound.

About the latter part of last month (September), there came forward Strawberries in large quantities—the fourth crop—and being in fine condition, met with ready sales.

Peaches, with the exception of a few from the mountainous districts, are now about out of the market (October 6th).

Plums and choice Pears are scarce. The first Winter Nelis Pears of the sea-

son came in the first week of October; but not being yet mellow, are not much in demand.

Apples are abundant (October 5th), and very reasonable in price. The last steamer from the South brought a few boxes of Lemons, Citrons, Pomegranates and green Walnuts, all of which came to an appreciative market.

We quote the different varieties of Grapes as follow: Mission and Sweetwater, 5@8c.; Black Hamburg, Black Malvoisie, and Rose of Peru, 8@10c; Muscat of Alexandria, Tokay, and Black Morocco, 15@20c. per pound. We quote Smyrna Figs, 35c. per pound. Apples, by the box, delivered, at 75c.@$1.50; Pears, $1@$2. Plums retail at 10@15c. per pound; Bananas, 50@75c. per doz. and $3@$5 per bunch; Strawberries, 15c. per pound.

The following are the prices at which some of the leading articles in the vegetable market are retailing: Green Corn, 25@30c. per dozen; Antivie, 25c. per dozen; Colrabi, 10c. per bunch; Black Radish, 20c. per dozen; Mint, 15c. per bunch; Onions, 4c. per pound; Pickling Onions, 5c. per pound; Shalots, 25c. per pound; Egg Plant, 8c.; Okra, 10c. per pound; Kale, 50c.; and Celery Root, 75c. per dozen; Red and White Cabbage, $1 per dozen; Cabbage Sprouts, 8c. per pound; Asparagus, 50c. per lb.

Interesting News for Ladies.—Ladies who wear chignons, as well as the bald of the other sex, will be glad to hear that there is every prospect before long of hair being grown in the garden, and transferred by an easy and pleasing process to the head. It seems that cuttings of hair, properly treated, will strike like Geraniums, and a *savant* in Kentucky has, according to the New York *Tribune*, discovered that by inserting the cut end of a hair into a kind of paste made of two vegetables and a simple chemical, it can be made to grow, and be thence transplanted successfully to a scarified skin. In fact, all that is necessary is a small head-rake, sufficiently sharp in the tooth to scrape the skin off the scalp in little furrows; the hair should then be at once inserted in the wounds, and personal beauty is thus reduced to a mere question of agony. Wig-makers will not like this, but it is impossible to deny that it will be a vast improvement on present arrangements; moreover, lovers may not only exchange locks of hair, but actually engraft these souvenirs on each other's heads, and for this reason alone the discovery will be hailed with rapture by the romantic and affectionate in every quarter of the globe.

The Monarch of the West Strawberry, as grown in New Jersey this year, is described as follows: "It is a fine-looking berry of very large size; one of those left with us measured five inches in circumference. The flesh is solid, the flavor exquisite, and the color a bright red, just such as is calculated to please the eye of fastidious purchasers. It is quite prolific, late ripening, and from its solidity well calculated for marketing purposes. The berries grow in clusters from six to twelve, presenting a very rich and beautiful appearance. The stalk is a very strong one, and capable of bearing the heavy crop of fruit from the ground, a very important and desirable feature in sandy soil. Some of the leaves were five inches in length. Mr. Perry asserts that, side by side with his finest Wilson's Albany, it commanded fifty cents per quart, while the Wilson was slow sale at fourteen cents."

Editorial Gleanings.

When to Cut Grass. — An English paper says: If for horses at work, the grass should be mowed after it has passed out of blossom, when the seed is in the milk, because at this stage it contains the largest quantity of nutritious substances, such as sugar, starch, gum, etc., which are of the highest value, contributing much toward rendering hay such a choice article of food. If for cows, it should be cut earlier, so as to leave the grass as nearly in the green state as possible—soft and succulent—because in this condition it contains a larger quantity of juices which assimilate well in the animal, and produce a greater flow of milk. If for young stock and sheep, the grass should be mowed when in full flower, because after flowering, and as the seed forms and ripens, it is exposed to loss in its nutritive matter by the seed being shaken out and the brittle foliage breaking off during cutting and making, and the grain itself, especially the rye grass, becoming almost a woody fibre, losing nearly all its sap and sweet aroma. In short, hay made from over-matured grass is no better than ordinary straw, if indeed so good.

Fecundity of Fishes.—It is said that probably about 60,000,000 or 70,000,000 codfish are taken from the sea annually around the shores of Newfoundland. But even this quantity seems small when we consider that the cod yields something like 3,500,000 eggs each season, and that even 8,000,000 have been found in the roe of a single cod! Other fish, though not equaling the cod, are wonderfully productive. A herring six or seven ounces in weight is provided with about 30,000 ova. After making all reasonable allowances for the destruction of eggs and of the young, it has been calculated that in three years a single pair of herrings would produce 154,000,000. Buffon said that if a pair of herrings were left to breed and multiply undisturbed for a period of twenty years, they would yield a fish bulk equal to the globe on which we live. The cod far surpasses the herring in fecundity. Were it not that vast numbers of the eggs are destroyed, fish would so multiply as to fill the waters completely.

It is a curious fact that science has often to adopt measurement and not weight as a standard unit. There is, indeed, no such thing as absolute weight. It is only the result of gravity. A mass of matter, for instance, is nearer the centre of the earth at the poles than at the equator, and would weigh a quarter of a pound less at the latter than at the former. Therefore, if we ordered a quantity of goods to be sent from some place near the poles toward the equator, and they were weighed by a spring balance, they would not weigh so much on reaching their destination as they did when they were shipped; and yet the quantity of matter would be exactly the same.

The Struggle for Life among Plants. —Each plant endeavors, almost consciously, to destroy his neighbor, to occupy his ground, to feed upon his nutriment, to devour his substance. There are armies and invasions of grasses—barbarian inroads and extirpations. Every inch of ground is contested by the weeds; the forest is a struggle for precedence; the wars of the Roses are a perennial feud. The serenest landscape, the stillest woodland, are the mortal arena of animal and vegetable conflict.

The spittle-like substance found upon grass, weeds, and frequently upon various kinds of trees, is produced by a genus of insects belonging to the *Cercopis* family of the order *Homoptera*, or whole-winged bugs. The larvæ of these bugs suck out the juices of the plants, and, after passing through, it is deposited about them in the form which has been termed frog-spittle; hence the more common name of these insects, "Frog-spittle bugs." Flies, no doubt, frequent these bunches of spittle, but do not produce it, any more than those which frequent a sugar hogshead have anything to do with the manufacture of sugar. There are many species of these frog-spittle insects. — *Rural New Yorker.*

The conversion of White Pine into paper pulp, has been going on to a limited extent for a number of years, but it was only about two years ago that it was found possible to use Red Pine for the purpose. The difficulty lies not so much in the bruising and mashing of the wood as in extracting the rosin, and tar, and such matters, in which the Red Pine abounds so much more than the white variety. The process is the invention of a Scotchman, and a London firm is busily engaged in introducing it into Sweden; they have already started several works in different parts of the country. The manufacture, when fully developed, will be a great thing for Sweden, with her enormous forests of Red Pine.

Antiquity of Flax.—Dr. Oswald Heer, of Zurich, has published a paper "On Flax Culture in Prehistoric Times." He finds the original home of the Flax to be along the Mediterranean. It can be shown that the plant was cultivated in Egypt 5,000 years ago. Flax is found among the remains of the oldest pile-dwellings in the Swiss lakes, where neither Hemp nor Wool has been discovered; and it is probable that the old lake-dwellers received the Flax plant from the south of Europe.

Ripening Pears. — Josiah Hoopes, after alluding to the common test of ripeness for picking, namely, gently raising the fruit to see if it will readily detach itself at the stem, directs that the specimens be placed thinly and evenly on the floor of a cool room, on a blanket previously spread, and then covered with a second blanket. He says, "In a short time the effect of the treatment will be apparent in the most golden-colored Bartletts, and rich, ruddy-looking Seckels imaginable. Pears perfected in this manner rarely have the mealiness of their naturally ripened companions; nor do they prematurely decay at the core as when left on the tree."

METEOROLOGICAL RECORD,

For the Month Ending Sept. 30th, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 508 Battery Street (opposite the Custom-house.)

BAROMETER.

Mean height at 9 A.M.		30.04 in.
do	12 M.	30.04
do	3 P.M.	30.03
do	6 P.M.	30.01
Greatest height, on the 5th at 12 M.		30.19
Least height, on the 26th at 6 P.M.		29.79

THERMOMETER.

(*With north exposure and free from reflected heat.*)

Mean height at 9 A.M.		59°
do	12 M.	64°
do	3 P.M.	64°
do	6 P.M.	60°
Greatest height, on the 21st and 23d at 12 M.		70°
Least height, on the 24th and 29th at 6 P.M.		55°

SELF-REGISTERING THERMOMETER.

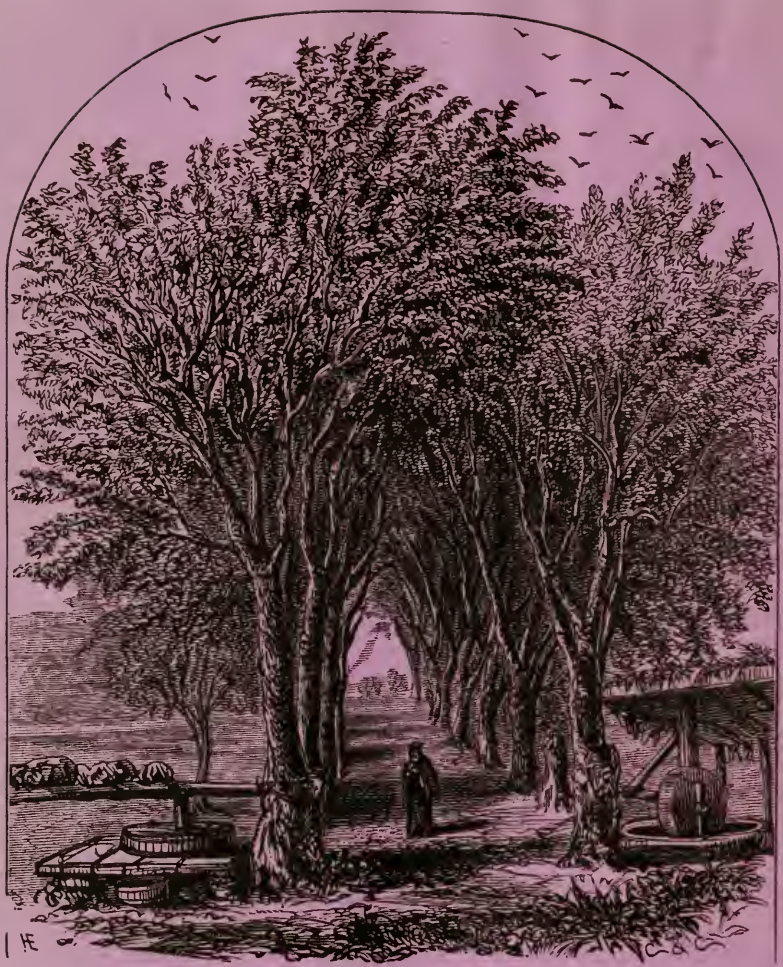
Mean height during the night	46°
Greatest height, on nights of 25th and 26th	53°
Least height, on nights of 8th, 15th and 17th	42°

WINDS.

North and north-west on 1 day; south and south-west on 3 days; west on 26 days.

WEATHER.

Clear on 6 days; variable on 20 days; cloudy on 4 days.



OLD AVENUE OF OLIVES,

San Luis Obispo, California.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. NOVEMBER, 1873. No. 11.

MORE VARIETY IN OUR FLOWER GARDENS.

BY F. A. MILLER.

With much truth it is said that both the climate and soil of California offer superior facilities for the growth and development of all kinds of vegetation; yet it is an unmistakable truth, that our people are very slow in taking advantage of these favorable circumstances at our command, and which would be instrumental in making us a prosperous and happy people. Our prosperity would doubtless be much enhanced if our fields offered more diversified productions; and the gardens surrounding our homes would give more satisfaction and comfort if the Flora was represented by a greater variety of plants and flowers, which our climate permits us to cultivate successfully, without running the risk of losing them during the winter months, as our eastern friends frequently do.

There are a few gardens in our State which have been planted with some care and judgment, but nine-tenths of them are made up of Gum-trees, Pines, Monterey Cypress, Acacias, Roses, Fuchsias, Laurustinus, and Geraniums — all of which are very desirable, and I would not like to see a garden without them; but there is something more wanted to break this tiring sameness, and to give variety to our surroundings, in order to produce a more pleasing effect, such as California only is capable of exhibiting.

The reader, undoubtedly, will ask here, "What is wanted to produce the desired effect?" To answer this question is my present purpose.

I wish to say a few words first in regard to ornamental and shade trees. The Eucalyptus and Acacia thrive with us remarkably well, and they are, indeed, charming trees, well worthy of cultivation; so is the *Cupressus macrocarpa*, (Monterey Cypress), and the *Pinus insignis*, (Monterey Pine); but, really, I think they are too abundant in our gardens, compared with other trees. I am aware of the fact, that near the coast evergreen trees do much better than deciduous trees, on account of the very severe winds and our peculiar climate; and for these reasons they are preferred. I shall therefore confine myself to evergreens, and would recommend the following very meritorious kinds:

Grevillea robusta is a most magnificent tree, its foliage being very ornamental, graceful, and effective. This tree is not very abundant at our nurseries, but

some of them may be always had at reasonable prices. They thrive admirably well in our soil, and in a few years make a very handsome tree.

Banksia Australis is another very desirable ornamental tree, and should be in every garden. This is also somewhat scarce, but may be had at most of the nurseries at a reasonable charge.

Corynocarpus lævigatus is a magnificent tree. Its dark-green foliage has a bright metallic lustre, and always looks clean and refreshing.

The *Brachychiton acerifolia* is a very remarkable ornamental tree, with bold and striking foliage, which has the form of the Maple-leaf, but is persistent. It bears very showy bright-red flowers, making the tree a most conspicuous object from a distance. A few specimens may always be found in some of our nurseries.

The well-known *Magnolia grandiflora* should be in every garden. It thrives well here and makes one of the best ornamental trees, its foliage and its flowers being highly decorative.

The *Cryptomeria Japonica*, the *Schinus molle*, (Pepper-tree), the *Thuya gigantea*, (from Oregon), the various kinds of *Araucarias*, the *Madroña*, (native of California), the *Abies Douglassii*, and others of the same genus; the *Eucalyptus amygdalina*, *E. Viminalis*, *E. Risdoni;* all are very pleasing trees, and well adapted to our coast.

Next to trees come the various shrubs, of which an indefinite number might be cultivated in our gardens, and which would be likely to do well here.

It seems that *Laurustinus* and *Pittosporums* are in great majority everywhere. Certainly they are excellent shrubs, and we can not do without them; but let us have here and there something else, which promises to do as well and gives us more variety.

The *Polygala* is a beautiful evergreen flowering shrub, and one which meets with favor everywhere. It has a neat habit, is always in bloom, and can be pruned and trimmed into almost any shape or form.

The *Ericas*, of which we now have a number of excellent varieties under cultivation at the principal nurseries, is altogether too rarely met with. As an evergreen flowering shrub, surely, it has no superior; its foliage and flowers are exquisitely graceful, and it grows as well as the Laurustinus with us. I hope our nurserymen will introduce a larger number of varieties of this beautiful shrub. When first introduced, it was erroneously treated as a greenhouse plant, but since then, it has established itself as perfectly hardy. Its flowering season being through the winter months, it is particularly desirable.

The *Bouvardia* is one of the most precious flowering shrubs, and although it is yet treated by most of our nurserymen as a greenhouse plant, its hardiness is fully established. We set about fifty plants in open ground in the autumn of '72, and although they were very small, they survived the winter, and are now flowering exceedingly well. The delicate wax-like flowers of various shades and colors are very effective and cheerful. I would like to see them in every garden.

Indigofera Australis is a very pretty shrub, with handsome purple flowers and graceful foliage, nearly always in bloom.

The *Deutzias* of various sorts, the well-known *Lilacs*, the *Spiræas*, the *Wiegelia rosea*, the *Snow-ball, (Viburnum opulus)*, are all most desirable flowering shrubs, and although they are deciduous, they are, during the spring months, of great value to the flower-garden. The pruning of these decidu-

ous shrubs is not well understood by those who make the rounds here as the so-called "job-gardeners;" and the best advice I can give to those who cultivate them in their gardens is, not to let their gardeners touch them with the shears or knife, unless it is for the purpose of removing suckers from the ground, or such wood as is positively too abundant or in the way. It is the last year's growth that produces the flowers, and by cutting this away there can not be any flowers.

The *Daphne*, a most exquisite evergreen flowering shrub, and rarely met with, will thrive here in the open air. Its flowers are very sweet-scented.

The *Diosma alba* is equal to any of the very best of flowering shrubs. Its pretty white flowers are exquisitely fragrant; it is perfectly hardy.

The *Cestrum aurantiacum* is a lovely shrub, producing elegant clusters of orange-colored flowers.

The *Chorozema*, frequently treated as a greenhouse plant, is perfectly hardy. It is a most profuse flowerer during the winter months, and very desirable.

The *Swainsonia*, the *Lantana*, the *Habrothamnum*, *Besberis*, *Cratœgus*, *Cuphea*, *Hydrangea*, and *Escallonia*, are all shrubs of great beauty, and hardy beyond a doubt.

I would also call special attention to the *Bursaria spinosa*, of which only one good specimen seems to be growing at Woodward's Gardens. This is a most lovely shrub, of graceful appearance, and its pretty white flowers are very ornamental. Plants may be had in most of our nurseries.

In conclusion, I wish to call the attention of the reader to the *Azalea* and *Rhododendron*, both of which are flowering shrubs of extraordinary beauty, and ought to grow here in the open air, if their cultivation was once thoroughly understood. Some difficulties seem to exist in their culture, but my opinion is, that these difficulties may be removed by judicious treatment. I am not prepared to say positively what treatment they do require, but I have sufficient reason to believe that our soil and water in San Francisco are not exactly adapted to them. It seems, however, that a few experiments would be followed by a good result. Azaleas and Rhododendrons should grow as readily here as Fuchsias, and will eventually prove even hardier. I hope that some of our nurserymen and amateur gardeners will give the matter some attention; and I anticipate a good result.

[To be continued.]

Fruits of Siam.—Siam is verily the queen of the tropics in regard to the abundance, variety, and unequaled lusciousness of her fruits. Here are found those of China, greatly enriched in tint and flavor by being transplanted to this warmer climate; and those of Western Asia, in this fruitful soil far more productive than in the sterile regions of Persia and Arabia; while numberless varieties from the Malayan and Indian archipelagoes, united with the host of those indigenous to the country, complete a list of some two hundred or more species of edible fruits. In this clime of perennial freshness, trees bear nearly the year round, and so productive is the soil that the annual produce is almost incredible. The tax on orchards alone yields to the crown a revenue of some five millions of dollars per annum, as I was informed by the late "second king" of Siam. It is not unusual to find on a single branch the bud and blossom, together with fruit in several different stages. Thus, at the merest trifle of expense, a table may be

supplied during the entire year with forty or fifty specimens of fresh, ripe fruit. Among these are many varieties of Oranges and Pineapples, Pumeloes, Shaddocks, Pawpaws, Guavas, Bananas, Plantains, Durians, Jack-fruit, Melons, Grapes, Mangoes, Cocoanuts, Pomegranates, Soursops, Linchies, Custard Apples, Bread-fruit, Cassew-nuts, Plums, Tamarinds, Mangosteens, Rambustans, and scores of others for which we have no names in our language. Tropical fruits are generally juicy, sweet, with a slight admixture of acid, luscious, and peculiarly agreeable in a warm climate; and when partaken of with temperance and due regard to quality, they are highly promotive of health. For this reason Buddhists regard the destruction of a fruit tree as quite an act of sacrilege, and their sacred books pronounce a heavy malediction on those who wantonly commit so great a crime. One who has tasted the fruits of the tropics only at a distance from the soil that produces them, can form no conception of the real flavor of Plums and Grapes that never felt the frosty atmosphere of our northern clime; of Oranges plucked ripe from the fragrant stem, and eaten fresh while the morning dew still glitters on the golden-tinted cheeks; of the rare, rosy Pomegranate juice, luscious as nectar.—*Lippincott's Magazine.*

Training Petunias.—A writer in the *Garden* says that a fine effect is obtained by his method of training Petunias. He procures a number of hazel rods, each about two feet long, bends them like croquet hoops, and drives both ends into the bed, placing them at suitable intervals all over it. On these he ties and trains his Petunias, which blossom more abundantly than usual under this treatment. We have seen Petunias successfully treated as if they were Sweet Pea vines, and trained on a slanting trellis. The trailing habit of this plant, especially late in the season, is not always sufficiently considered.

TAKING UP AND CUTTING BACK FRUIT-TREES AT PLANTING TIME.

BY E. J. HOOPER.

As the planting season is near at hand, I have concluded that a few practical observations, concerning the lifting and pruning of young fruit-trees, is not out of place in this our November number of the Horticulturist. There is one thing respecting fruit-trees which is deserving of more attention than it practically receives. I do not apply this so much to the heads of firms, (although they should see and insist upon it), as to their foremen and those working under their instructions; and that is, that fruit-trees should be taken up with more care than is generally practiced under what is called the drawing system, by men who, it may be, are only employed for short periods, and who feel no particular interest in the way the work is done. I have seen beautiful fruit-trees sent with their roots so chopped and ruptured, and also packed in such dry material, that those fine young trees—say two years of age—(and that is as old as they should be purchased for all practical purposes), were scarcely so good as healthy maiden plants wrought in that or the previous season. There may be a chance, even for such trees, if planted very early in our rainy season; but if planted much later, and especially if rather late in the spring, the shoots, if left, would most certainly become stunted; and if cut back, in opposition to the general rule, that roots and tops should not be cut

back at one and the same time, there is every chance that most of them would become nothing but poor sickly scrubs with feeble shoots. So much is there of fact in this representation, that many gardeners, on going to a nursery, not only choose their plants, but themselves see that they are carefully taken up, and the roots surrounded with damp mulching. Unless they can do this, they make it a point to order maiden plants; these they can train and move carefully, at pleasure. The training, as well as the proper removing of trees from the ground, is a matter of as much importance to nurserymen as to their customers. If trees are taken up with more care, even although a little more is charged, and if planters can only make up their minds to plant at the commencement of the rainy season, or very soon after it, then the cutting-back process —which as now practiced is sometimes nearly down to the stump of the young trained trees, thus rendering all the training of no avail—will soon be numbered among the things of the past.

Some nurserymen, when fruit-trees are purchased rather early in the season, say in January, give instructions that Peaches, Plums, Cherries, and Apricots should be much cut back when planted; and that Apples and Pears bought at the same time, should stand over for that operation till the following spring. Now, I see no use in this excessive mutilation. I can see very well the benefit to nurserymen of cutting back in a moderate degree annually; but I do not see any service to the purchaser of well-trained nursery-trees, if they have abundance of roots when taken up, of cutting back at all. Is the benefit, if any, equivalent to the postponement of bearing for one or two years longer than necessary, and also the risk, in many cases, of ruining the trees? The advocacy of some cultivators of the cutting-back system, at least to any great extent, can not find any support, I think, in the Horticulturist. If the moving is effected at the proper time, and in the right manner, I hold with no more cutting back than is required by the unripeness of the points of the shoots; and the necessity in some cases, perhaps, for getting more shoots to fill up large spaces in the young trees, and to give them good symmetrical forms. I see, in short, no benefit to be derived from such mutilation, and the shortening should only be resorted to when the shoots are not mature.

Training trees in a nursery to be lopped back when transferred to a garden or orchard-grounds, will probably go on until two practices are altered, and planters as well as nurserymen get freed from carelessness in this matter. Trees should be carefully planted soon after our first or second rains, about the beginning or middle of November, when the ground is warm enough, in our moderate climate, and when they have a long time before the dry season, in spring, to encourage and produce plenty of fresh rootlets. If the trees are taken up carefully, and carefully sent, they will suffer very little. And if a few green leaves remain, they will serve to keep up the circulation, while an occasional dash from the hose, syringe, or a watering-pot, and a slight shade in the hottest part of the day (although this latter suggestion will only apply in garden planting on a small scale), will prevent flagging and shriveling. The very lifting will induce a more perfect maturing of the wood; and before frosts or drouth can damage them, the plants will be able to hold their own. Such trees, with the soft points merely removed, will speedily lengthen and throw out healthy lateral shoots, and soon at-

tain a fair size. Even if the planter cuts back pretty freely, the vigorous state of the roots will soon produce a correlative vigor of branches. In fact, two-year old, or somewhat older trees, are a good deal in a similar position when judiciously and moderately pruned or cut back, to strong, healthy willow stools or Grape-vines, when pruned. None of these favorable characteristics, however, can exist in the case of trees imprudently taken up, and transferred in a bundle to their destination, in March or April, then put into the ground at the coldest season of the year as regards the soil, but with the increasing heat and dryness telling on them; chiefly when the buds are swelling and expanding into shoots, before there is healthy root action to supply their wants. Spring planters, consequently, unless they can use very extra care, have themselves, and not nurserymen to blame for many of the evils and disappointments that sometimes ensue in our favorable climate and soil.

Arrangements have been effected to establish a uniform time all over the country—that of the National Observatory, Washington, being taken as the standard. New York and the Observatory have been already united by telegraph, and this connection is, we are told, only the preliminary step toward the connection of all the principal cities in the East, the West, the South, and the distant Pacific Coast. The idea is that the chronometer time at the Observatory shall be telegraphed during the day to these different points, whence it will be again distributed among the lesser cities. Railroads, banks, and all the varied industries and enterprises, are expected to be governed by this uniform standard in the conduct and management of their business.

AN INDIAN WINE.

BY F. C. DANVERS.

The indigenous productions of India have recently received an addition in the shape of wine. Of all the numerous products and manufactures for which India has long enjoyed a far-famed popularity, she has never hitherto been known as a wine-producing country. This is no longer the case, and although it may be many years before we see Indian vintages advertised in and about London, there nevertheless exists the fact that she is capable of sending forth such productions. The fruit from which this wine is manufactured is of a dark, astringent, and sub-acid character. The tree on which it grows is the Jamun-tree (*Sygyznium Jambutanum*); and under the enterprising care of Mr. J. J. Varnier, an Italian gentleman, residing at Patna, it has been made to yield an indigenous wine, named by the manufacturer "Kenoines." It appears that some years ago, Mr. Varnier was struck with the resemblance which the berry of this tree bore to a kind of astringent grape which grows near Milazzo and Mascali, in Sicily, and which yields a generous, full-bodied, and, to Italians at least, a palatable wine. On analyzing the Jamun fruit, he found its approach to the grape in question greater than he had at first thought, and though, to a certain degree, deficient in vinous basis, yet capable of yielding good and palatable wine.

On his return from a visit to Sicily, Mr. Varnier tried experiments, and succeeded finally in inventing a process of producing wine out of the Jamun. Encouraged by the result, he secured in 1858 the aid of a skilled wine manufacturer from Sicily, and thereby had the satisfaction of turning out some wine with perfect success. Not only were

the defects of the wine corrected, but its keeping qualities in a hot climate are said to have been secured beyond doubt, and it is expected that age will refine and improve it more and more.

Dr. Collins, of the Government Opium Factory, at Patna, is of the opinion that it will prove a wholesome and palatable beverage; and Dr. Cameron, of Monghyr, described it as "pleasant to drink," and as a very light wine, of a light red color, of a sweet taste, bearing a great resemblance to claret-cup. A second wine, made apparently from the same fruit, is also described as a stronger wine, not so sweet nor so pleasant to drink, but containing a large quantity of astringent matter, which would doubtless prove useful for patients suffering from dysentery and diarrhœa.

THE KANGAROO VINE OF AUSTRALIA. — The habits of this giant climber (*Cissus antarctica*) are graphically described by a writer in the *Gardeners' Monthly*. He saw one of these vines which was almost seven hundred feet in length, and measured three feet and nine inches in girth at the base: It had first infolded in its deadly embrace a tree of considerable size, but this support had died and disappeared, and nothing remained but a spiral column of vine nearly two hundred feet in height, from the summit of which the huge climber sent out its continuations in a horizontal line for more than one hundred and thirty feet, until it reached a Eucalyptus tree. It was the opinion of our author's guide, that the trees which had supported it on its way to the Eucalyptus had perished by strangulation. He named the vine "the devil's corkscrew." Around the Eucalyptus the vine had wound in several coils, and then thrown out a number of stems, which were grasping all the trees in the neighborhood of its line of march.

PLANTS FOR HANGING BASKETS.

BY F. A. MILLER.

[Continued.]

In continuation of my communication in the October number of the CALIFORNIA HORTICULTURIST, on hanging baskets, I will now give a list of plants well adapted for such ornaments. As a centre piece for a basket the following are some of the best:

Chinese Primrose fills the basket well, keeps neat, and produces flowers in abundance—generally throughout the year. I would say, however, that the Primrose will not do well in the open air, and the basket containing it should have a place near the window or in the conservatory.

Sanchesia nobilis is a very suitable basket plant, with highly ornamental foliage, and will do very well for the house.

Centaurea candida is a very bright-looking plant for a basket, and will do very well where the basket is intended for out-of-doors, or on the veranda; for this purpose I do not know of anything better.

Dracoenas with variegated foliage are brilliant plants for baskets; however, they are higher in price and require to be inside of the house. In a warm place they will do well and produce a fine effect.

The *Alternantheras* are bright-looking plants, and are particularly well adapted for baskets; but it is necessary to keep the basket well drained, tolerably dry, and inside of the house, or else the leaves will drop. The same must be said of the

Coleus, which, of late, has become so popular with us as a basket plant; the bright colors help considerably in the sale of baskets. The habit of the *Coleus* is such, that it will soon outgrow

its neatness, and a removal of the plant becomes necessary.

Some of the dwarf-growing *Begonias* are very desirable for baskets, particularly the new variety, *foliosa*, or the well-known *Begonia parvifolia*—only for house culture.

The dwarf-growing *Fuchsia macrophylla* is a plant of good habit for an out-door basket; and will always flower well if kept moderately moist.

Ferns of various kinds are worthy objects for baskets, and if kept in a shaded place will look always bright, green, fresh, and graceful; a basket filled with Ferns should be kept rather moist.

For the window or the conservatory, the variegated ornamental foliage *Begonias* may be highly recommended. A basket of this kind must be kept rather dry, and in a warm and protected place. It makes a very effective ornament.

To fill a basket well, a number of smaller plants are required to be planted near the rim. The most hardy of these, for out-door baskets, are:

Isolepis gracilis, the best and most graceful grass for the purpose, always green if watered sufficiently.

Lobelia is next in importance to make up a good effect; it is of excellent habit, and gives a graceful appearance; its bright little blue flowers are always admired.

Senecio scandens (German Ivy) is the hardiest and most prolific plant for baskets; it climbs and trails in a pleasing manner, and grows well both in and out of doors.

Tradescantia zebrina, *Sedums* of various kinds, *Linaria*, *Maurandia*, *Saxifraga*, *Periwinkle* of different sorts, *Ivies*, green and variegated, and *Ivy-leaved Geraniums* are all hardy, and combined with the others named before, will make a most desirable basket for the open air.

For the greenhouse, conservatory, or parlor window, the following dwarfish-growing plants produce a most pleasing and brilliant effect:

Cissus discolor, excellent as a climber or trailer for a warm situation.

Antigonon leptopus is probably the most graceful trailing plant for such a basket. But few of them can be had as it is a plant of recent introduction.

Torenia Asiatica, a beautiful blue flowering greenhouse plant, which will do well under ordinary treatment, is well adapted for the purpose.

Fittonia gigantea, *Pearcei*, and *Verschaffeltii* are magnificent ornamental foliage plants for baskets.

The *Peperomias*, *Russelia juncea*, *Coccoloba*, *Gymnostachium*, *Variegated Sedum*, *Lycopodium*, *Smilax*, *Eranthemums*, *Ampelopsis Veitchii*, have all excellent habits for basket-growing in the house or under glass, and possess all the good qualities necessary to make up a most desirable collection.

After planting the basket with all that is to grow in it, it should be thoroughly watered and placed in the shade for a few days; during which time it should simply be left alone. As soon as all the plants have assumed a healthy and vigorous appearance, the basket may be hung in the place intended for it. During winter months, no more water should be given than is positively necessary. During summer, a frequent sprinkling of the basket is very beneficial.

[To be continued.]

To Freshen Cut Flowers.—Cut off half an inch of the stems and place them in boiling water, or otherwise place them in fresh water with fine powdered charcoal, and place a bell-glass over them.

SUMAC AND HOW IT IS CURED.

H. A. V. of Waco, Texas, writes:

There is a great quantity of Sumac on the prairies around here, and quantities of it might be easily gathered:

1. Will it pay to gather it?
2. Where is the best market for us?
3. What is the time to gather it?
4. How should it be prepared for market, and what price should it bring?

Several answers were elicited to inquiries about Sumac, from Southern readers of the *Country Gentleman*, in the course of last year, and we condense from them what comes the nearest to answering the questions of H. A. V., trusting that further information may be elicited from our correspondents who happen to be familiar with the product referred to.

So far as we are aware, more attention has been given to Sumac in the vicinity of Fredericksburg, Va., than in any other part of the country. A meeting was held at that place in September, 1872, of ten or a dozen firms engaged at various points in grinding Sumac, for consultation as to the interests of the business. It is stated that the price paid at the mills for dried Sumac is one to two cents per pound, and that after grinding, it is sold in New York at about four cents a pound by the ton. These facts lead us to infer that H. A. V.'s 1st question may be answered in the affirmative. As to the 2d question, we know of no market likely to be available short of St. Louis or New York. With reference to the other inquiries, we quote the following letter from a Western correspondent of the *Country Gentleman:*

Red Sumac—black, sometimes called —is the Sumac of our commerce. White is worthless. Here in southwest Missouri, the shrub grows without cultivation on all our prairies and glades. If it is to be cultivated, the better way, it seems, would be to get the ground in good fix, and plant in rows about three feet apart each way; cultivate the first year, and sow the land in Blue-grass, as it is of slow growth, and the turf will help the ground to hold moisture, and as the Sumac roots run near the surface, they will be nourished till the branches have afforded the necessary shelter. The leaves are gathered here from the middle of July to last of August, before they turn red, as after this they are not marketable. Dry or cure in the shade. Kiln drying has been practiced by some, but can not say as to the success, though it seems that this process would be practically useful. After curing, the leaflets are generally stripped from the stem and packed in bags or bales for market, though much was marketed the past season from some of our neighboring counties, stems and all. The price is from seventy-five cents to one dollar per hundred pounds stripped. The seeds are not gathered with the leaves.

A correspondent in western New York gave the following directions for curing:

The time for cutting is after the leaf is of full size, until it turns its color. Only the leaf is of value. No bobs must be allowed in it. Cut the stalks of the present year's growth, and cure them as you would hay, taking care to preserve it from rain and dew, as both injure it the same as hay would be injured. Put it in the barn, and examine it often for a time, for it will heat and spoil very soon if not properly cured. Let it lie until the weather is very cold; then thresh it. The best way is to put it on the barn floor; pile it on three or four feet deep, and put on a span of horses. They will soon tread the leaves from the stalk. Rake off the sticks and put on another flooring. When the leaves and small branches (that do not rake out) have become a foot or more deep on the floor, put the horses on to that, and tread and stir it until it is quite fine; then sift it, and it is ready for sacking. To sift it expeditiously will require a large coarse sieve. One of half an inch mesh, will take out most of the objectionable stems.

The following facts were quoted from a New York journal:

Previous to 1865 but little American Sumac was used; now nearly 4,000 tons are drawn from our old fields and forests, yet at the same time the consumption has largely increased, and the amount imported exceeds $300,000 in value. The upland Sumac is that preferred for market purposes. It is of three species: the stag-horn or *Rhus typhina*, which grows to a tree eighteen feet high, and the smooth or *Rhus glabra*. The *Rhus copallina* is also used; it is sometimes called dwarf Sumac. The swamp Sumac is not considered of value. The first has branches of a hairy appearance like a stag's horn; the two latter have little bristles or hairs on the berries. These Sumacs generally grow on red lands derived from primitive rocks.

The time to gather is before the berry is ripe. Gather only the leaves, and be careful to keep out the berries. Dry in the air, taking care to keep out rain and dew. Also do not have the leaves too thick, as they may heat; and it is also best to stir them several times a day. No woody stems should be allowed to be picked or get among the leaves. They add some weight, but take off a great deal from the value of the Sumac. When thoroughly dried it must be ground. This is done in mills, the stones of which run on edge, and there are numbers of them in Maryland, Virginia, and one at Greensboro', N. C. As dried, before being ground, it is worth about one and a half to two cents per pound, as may be its cleanliness. When ground and sent to New York, first-class American Sumac will sell from four and a half to five cents per pound by the ton.

When the business was first commenced, a great deal of poor Sumac was sent to New York. A bad name was given to the article, and the price was very low, but we are informed that our manufacturer in Winchester gets as much for his article as the best Sicilian. Southern Sumac is richer in tannin than the Sicilian, but there has not generally been enough care taken in its preparation for market. After grinding, it should be packed in bags containing 162 pounds. The bags, to hold this quantity, should be cut 40 by 60 inches. That considered best has a light green color.

There is room for a dozen or more of these mills in the South, and the Sumac for them is daily going to waste. The necessary machinery, buildings and power need not cost as much as $5,000, and if grinding only two hundred tons a year, would pay handsomely on that investment. The price at the mills in Virginia ranges from one to two cents per pound, and if properly prepared, will sell in New York at four cents per pound. There certainly must be a profit of $20 per ton.—*Country Gentleman.*

Plants for Hanging Baskets.—In filling the baskets, do not use common garden soil, as it is not suitable for growing plants in this way, from its tendency to bake together and shrink away from the sides of the basket or pot; but, if possible, procure some top-soil from the pine woods, which is rich with the decay of the tiny needles of the pines, or a yellow loamy soil, part sandy, from the florist's. Then be sure that there is a little hole in the bottom of the baskets to allow the superfluous water to pass away, or else put in bits of charcoal to act in drainage, and also to keep the soil sweet. A piece of sponge is also an excellent substitute for a hole in the basket, as it will suck up all superfluous moisture, and then allow the roots of the plants in their turn to receive it. Usually plants in hanging baskets require more moisture than other plants, because they are more thoroughly exposed on all sides to the air, and the water evaporates more quickly. So if they hang up away from direct contact with your eyes, you must give a little water both night and morning, so that they will not suffer for the want of it.

I am growing now for winter flowering and foliage, the ivy-leaved Geranium, *L'Elegante; Isolepis gracilis*, a

lovely grass of a light green; Coliseum Ivy; Smilax; *Peristrophe angustifolia aurea*, a lovely plant, with yellow leaves striped with green, while its flowers are of a delicate violet hue; *Pilea muscosa*, which resembles tree moss, and its graceful drooping habit makes it very desirable; and *Tradescantia zebrina*, whose striped leaves, of a rich purplish maroon and green, contrast charmingly with the other plants. These will fill three baskets, which will decorate my dining-room and parlor when the face of Nature is shrouded in its snowy mantle, and not a green thing is visible out of doors.—*Country Gentleman.*

OLD AVENUE OF OLIVES.

(SEE ILLUSTRATION.)

The patient plodding industry of the old Mission Fathers of California, from all accounts, gave them an abundant reward, and when we look over their mission-fields of labor now in ruins, and nearly all vestiges of a numerous Spanish and Indian population have disappeared, a feeling of sadness takes possession of our hearts. This is particularly the case when viewing these noble old Olives of a former day, and we can not do better than make a few extracts from the *Overland Monthly*, a magazine that is constantly publishing so many interesting facts about our prolific soil and genial climate: "I followed the guidance of my English friend, and was satisfied that he appreciated the beauty of the grounds. 'Stand here,' he said, taking position near the ancient olive-press, beneath the *allee* of equally ancient Olive-trees; 'look down that way, and fancy how in olden times the padre walked slowly along in the shadow of these Olives, breviary in hand, and looking up occasionally to see that the Indians did well their work in the garden.' I half-closed my eyes, and gave full scope to my imagination; the man was right. It was a picture serenely still, and full of heavenly peace.".

In connection with this subject we make the following extract from the same magazine: "Olive-culture, it is anticipated, will prove a lucrative business in the county of Santa Barbara, and elsewhere on the southern coast of California. The labor required in its cultivation, compared to that demanded by ordinary field and garden farming, is trifling. The tree at five years of age, returns a slight recompense for care; and at seven, an orchard should afford an average yield of about twenty gallons of berries to a tree. If there are seventy trees to an acre, there should be obtained from it 1,400 gallons of berries. From twenty gallons of berries may be extracted three gallons of oil; and, if properly manufactured, olive-oil will command $4 to $5 a gallon, at wholesale. Thus an average yield of Olives, derived from an orchard covering one acre of land, will produce about $800 worth of oil. After deducting the entire cost of production and manufacture, a net profit may be anticipated of at least $2 per gallon; and thus, one acre, containing seventy trees, yielding an average of twenty gallons of berries, or the equivalent of three gallons of oil each, will afford a surplus above all expenses of about $400 a year."

LANDS are made to increase yearly in fertility, mainly in three ways—by buying commercial fertilizers, by ploughing under clover, by buying rich food for animals and saving all their droppings. The farmer understands his business who knows which mode is best for him. The most successful farmers practice all three.—*Exchange.*

ORNAMENTAL AND FOREST TREES FOR FARMS.

There is much said in the agricultural papers of the day concerning the planting of ornamental and shade trees at the West. Various States have set apart "arbor days," when every man and boy shall feel it his duty to transplant one or more trees, and some States are so wise as to offer a reward to the person who shall set out the largest number of forest-trees on that day. Now, there is as great a scarcity of shade-trees upon many farms at the East as at the West, and the purpose of this article is to call attention to the fact, and persuade youthful farmers to supply the deficiency, and to transplant the Maple, Oak, Elm, and other trees this season, which will afford a grateful shade for years to come.

I heartily commend those farmers who plant new orchards of Apples, Pears, Cherries, Plums, and Peaches. The fruit is delicious, highly appreciated at home and abroad, and will bring in plenty of "material aid" in the shape of greenbacks. But fruit-trees are not desirable about the house, and can never take the place of forest-trees for adornment, timber, or fuel; nor are they as desirable for a "cool, umbrageous shade."

Cattle seek grateful shelter from the noonday sun, and it is as essential for their comfort to obtain it as it is for man's — as needful for their health. But do not plant the trees too close to your dwelling-houses and barns; give the air a free circulation about such buildings. Oaks, Maples, and Elms should not droop their branches over the roof-tops, but be planted at least thirty or forty feet distant.

In selecting trees to plant around the home farm, it is always well to choose those which are useful as well as ornamental. The Sugar Maples are quite as handsome as Oaks and Elms, while from thirty to forty good-sized trees, several pounds of delicious syrup can be obtained. I know a man who planted in his yard ten Sugar Maples, some twenty or thirty years ago, and now obtains about three gallons of maple syrup every spring. Thus we can combine utility and beauty. The American Weeping Elm is as perfect a tree as grows, and the Oak is always majestic, while the White and Black Ash and Silver Maple are also much admired.

While I am on this subject, let me beg your readers to plant trees outside of lawns and front yards, as well as within the fences, and have the pleasure of providing a shady highway and sidewalk for every passer-by. There is nothing which adds more beauty to a street than rows of forest-trees. Evergreens are most desirable for windbreaks, screens, and ornamental purposes upon a lawn, but are not so well adapted to the front door-yards. They are excellent shields from the north wind, however, and in single trees or in clusters, are especially beautiful on large lawns.

Almost all farmers can go into the forests and obtain as many trees as they require, merely for the cost of digging and transplanting them. If they choose Maples, Elms, Oaks, or Ash, they will be surer of success if they select those that are from eight to ten feet high; their top branches should be shortened, and many of them cut entirely away, leaving the stems nearly bare, but taking care to lift a large ball of earth and all the little rootlets possible.

In planting them, prepare a hole larger than the base of the tree, and deeper than the roots; pour one or two pails of water into the hole, and set the

tree in firmly and straight. Stamp down the soil around the roots closely, and then turn the uplifted sods bottom upward around the base of the tree.

To transplant Chestnut, Hickory, and White Oak, select small trees, not over five or six feet high, and leave the poles nearly bare of branches or leaves; also cut the main stem in for half a foot. This severe pruning has the effect of producing more root growth, and saves the life of many trees.

When new trees are planted, it is well to mulch them about the roots and stems with coarse stable litter or hay; and if planted where cattle will be liable to rub against them, a strong stake will afford much protection.—*Country Gentleman.*

Cultivation of Fish in Ditches and Ponds.—Experience proves that fish are much more easily cultivated than has been supposed. Much attention is now being paid in Germany to their cultivation in ponds and ditches, and it has been found, contrary to the generally received opinion in reference to such localities, that they are more favorable for the purposes than other large bodies of water, apparently fresh and pure in their character. This is doubtless owing to the great abundance of animal life, as well as the more decided concentration of vegetable substances in the form of living plants of different kinds, including the algæ. This produces a constitution of oxygen, needed for the respiration of the fish, and allows a larger mass of life to be crowded together in a given space. The reproduction of the species is unusually rapid, and the young grow very quickly. From the above it seems quite clear that there is no great mystery in fish culture, and that it can be made largely profitable, if properly managed.

PROLIFIC JOINT CORN.

BY ROBERT E. C. STEARNS.

Three seasons ago I noticed in the Illustrated Catalogue (1871) of B. K. Bliss & Sons, seedsmen, an advertisement of a new variety of Corn, which was highly recommended by them. Having known of the excellent reputation of the firm for many years, I sent to them for a few small packages of the seed, and gave it a trial. I should mention, however, that aside from their recommendation, I, by accident, met with an Indiana paper, and in glancing over it, I noticed that this Corn had taken two premiums for great yield, at two of the county fairs of that State.

My place of residence was at the time just outside the city limits of Petaluma, and on nearly the highest land thereabouts; the soil a gravelly loam, with some clay and some little fine sand intermingled; it had been in pasture for many years prior to planting; was plowed deep, and well broken up and pulverized; but the spring rains being exceedingly meagre, the soil was very dry in some places—"as dry as an ash-heap"—so dry that some of the seed never sprouted, and was dug up as hard and sound as when put in the ground. Of course the Corn that did grow was a long time in getting a start, yet under these exceedingly unfavorable influences, the crop was most abundant, and with a *fair show*, would have been enormous. I was more than satisfied, and fully believe that the yield would have reached, if not have exceeded, the statement of its originator. One stalk —from a single seed of course—which I exhibited at the Sonoma County Fair, had *fifteen* ears on it, and *ten* ears to a stalk was not uncommon, the ears being from five to seven inches long when

husked. It is a white Corn, with a small kernel and slender cob.

One secret of its great yield per acre is in the fact that it is not a *tall*-growing corn, and therefore admits of *close planting*, which will not answer for the common varieties. It can be planted in drills or furrows which are no farther than three feet apart, and a kernel dropped every *twelve* to *eighteen* inches; the latter distance being ample in ground that is in a good condition. At this spacing (three feet by eighteen inches) the number of stools per acre would be nearly nine thousand, which is nearly or quite three times as many as when or where the common Corn is planted.

It is a good parching Corn, though not the *very best* for this purpose; and as good for feed as any other, especially for poultry, as the kernels are small and do not need cracking.

For the purposes of fodder, cut green, to feed milch cows late in the season, it is first-rate, as the stalk or butt is slender and tender; and if the stalks are saved after harvest, the proportion of husks is so great as to make it superior. If sowed, to be cut green for fodder, I should put the seed not over *six* to *nine* inches apart in the row.

It is a heavy corn, weighing sixty to sixty-two pounds to the stricken bushel. I cultivated it as nearly on a level as possible, using a cultivator between the rows, and not a plow. It is by far the most prolific Corn that I ever saw; and unless a person is prejudiced against *white* corn, will prove as satisfactory as it has to me.

Perfume of the Ailanthus.—Many complaints have been made of the overpowering and offensive odor of the flowers of the Ailanthus-trees planted in the streets of Paris and other large cities. According to M. E. Andre, it is only the flowers of the male trees which exhale this unpleasant scent, and he recommends that none but female trees should be, for the future, planted in public or other places where the peculiar odor of the males might be offensive.

A BUNCH OF CALIFORNIA PEARS.

BY E. J. HOOPER.

In a window of the office of the *Bulletin*, in this city, are exhibited 140 Vicar of Winkfield Pears growing from a stem an inch only in diameter at the top or thickest part. The length of the stem and branches is four feet, and the width of the cluster, about the middle, is two and a half feet. Its weight is eighty-five pounds, and the pears will fill two common boxes containing nearly three bushels. The tree from which the fruit was taken is on the ranch of Mr. Kercheval, near Courtland, on the Sacramento River. This variety of Pear, sometimes called Vicar of Wakefield, Le Curé, Monsieur le Curé, and Clion, was found growing wild in a wood in France by M. Clion, a French curate; hence the names, Clion, Le Curé, etc. Afterward, it was grown in a garden at Winkfield, Berkshire, England, by Rev. Dr. Rham, and received the new name of Vicar of Winkfield, concentrating the two associations in the one name, and which, being of our own language, is to be preferred. It is a most profitable variety, either on the Quince stock or as a standard; and although only second quality, it is always fair and large. The tree is a very vigorous grower, with large, roundish, glossy leaves; shoots—diverging, and of a dark olive color; fruit—large, oblong, obovate, pyriform; color—dull pale-green at first, becoming pale-yellow, often with a fine

brownish-red cheek, marked sometimes with brown dots over the whole surface. Its season is from October to January. It is always a first-rate baking Pear, and when well ripened off in a warm temperature, it is fine as a table Pear, but generally rather astringent and crisp. It is always, however, remarkably fair and handsome, and noted for its productiveness and large size.

A VASE OF FLOWERS FOR THE SHAH.

On the occasion of the visit of this "attractive celebrity" to the Crystal Palace on the 30th of June, the private rooms appropriated to royalty were nicely decorated with flowering plants by Mr. Laing of the Stansted Nursery, Forest Hill, and with a number of vases, very tastefully arranged by a young lady of the neighborhood, well known among the amateur exhibitors at the Crystal Palace Flower Shows. Among them, that selected for the centre-table in the Shah's private room especially merits a record. The vase chosen was composed of four tall trumpets standing in a glass dish, the centre trumpet being taller than the other three which surrounded it, and curved away from it. In the dish were four fine blooms of crimson Cactus, alternately with large flowers of white Water Lily; these were set off with a few fronds of Maidenhair, judiciously placed. In each of the three curved trumpets was a flower of a fine white *Lilium* (in form and color intermediate between *L. auratum* and *L. candidum*), in which the deep yellow of the eye of the *Nymphœa* was sparingly repeated. Around each *Lilium* were a few blooms of blue Corn-flower, among which peeped out two little pieces of *Kalosanthes Coccinea*, of the same color as the Cactus below. The tallest trumpet was dressed with white *Rhodanthe*, mixed with two or three paler blue Corn-flowers and a little grass, and edged with small sprays of little crimson-tubed yellow-mouthed *Echeveria*. The stems were twined with climbing Fern (*Lygodium japonicum*), and between the three curved stems stood up three well-chosen pieces of white *Rhodanthe*. The whole formed one of the best specimens of floral arrangement I have ever seen, the flowers being of the best quality and in the best condition, and the grouping being faultless. I wish that decorators could be induced generally to use fewer colors in their vases, and to repeat the colors, instead of varying them, upon each tier of their vases. The most artistic decorations that have come under my observation have been produced either with flowers of the same colors that occur in the lowest tier being replaced by smaller and smaller flowers of the same color, in the succeeding upper tiers, or, if smaller flowers are not attainable, by paler shades in the upper tiers of the colors used below. This vase for the Shah's room presented illustrations of both these principles combined.—*The Garden.*

THE ROTTING OF FRUIT.—According to Decaisne, the rotting of fruit is produced by two microscopic fungi, which develop in moist air, viz.: *Mucor mucedo* and *Penecillium glaucum*, infinitely minute germs of which are continually floating in the atmosphere, and which attack more especially any injured or abraded portion of the surface. If the fruit be wrapped up in cotton or with soft tissue paper, or still better with wax paper or tin foil, the introduction of these germs will be prevented, and the fruit can be kept for a long time without any appreciable change.

Editorial Portfolio.

We regret to find that the Fall Exhibition of the Bay District Horticultural Society is financially a failure—a repetition of the ill-success of the spring. The utmost economy was used in the preparations; expenses were carefully reduced to a minimum; the officers and some of the members exerted themselves to the utmost, and performed those duties which in all other societies are deputed to employés; and to the honor of very many of the exhibitors, they have generously declined to draw the premiums awarded them—and yet a loss! The Secretary reports that his balance-sheet shows a deficiency of at least $500. We abstain from further comment at the present time, on account of the press of other matters; but at another time, will have to revert to the subject. We subjoin the report of the Secretary of the Society.

The Cinchona-tree.—In view of the probable introduction and cultivation of the Cinchona-tree upon American soil, any information relating to the proper treatment of these plants is rendered serviceable. A recent observer reports that, when the plants of the *Cinchona succirubra* are manured with sulphate of ammonia or guano, the result is an increase in the alkaloids obtained. By this treatment, however, a change seems to be effected by which this species loses its alkaloidal character with age, and for this reason manuring is not advised. A more favorable result follows the manuring of the *Cinchona officinalis*, which is thus caused to yield a much greater amount of quinine. While pursuing the same line of investigation, J. E. Howard reports that the leaves of the *Cinchona succirubra* contain no alkaloids.

FAIRS AND EXHIBITIONS.

Bay District Horticultural Society.—The Third Annual Exhibition of our Horticultural Society opened, as announced, on Tuesday, September 30th, at 8 o'clock, P. M., at the Horticultural Hall. Although the time for the necessary preparations was very limited, yet everything was so far completed that hardly any space was unoccupied at the time of opening.

In the absence of Dr. Kellogg, the President of the Society, Dr. Behr made a few appropriate remarks, and then introduced the speaker of the evening, Prof. E. S. Carr, who delivered an able address, which was published in the last number of the Horticulturist. That Professor Carr has rendered an excellent service to the cause of Horticulture by his talented speech, is acknowledged by all who heard him. It is particularly well appreciated by the members of the Society, who fully share his views as to the importance of the institution, and the lack of proper support on the part of the public.

After the close of Professor Carr's address, Dr. Behr declared the Exhibition open to the public; and under the influence of the delightful strains of the band, all present roamed around, full of admiration for the grand display made in so short a time, and enjoyed, to say the least, a most pleasant evening. Although the attendance at the opening was small in number, yet those present represented the very best class of our population.

The principal features of the Exhibition were flowers and plants, fruits, preserved fruits, and jellies.

Flowers, plants, shrubs, and trees were really well represented in point of variety, as well as quality. There was a very decided improvement in the

quality of plants, and nurserymen and florists did well in preparing their plants for exhibition, which they neglected to do at former exhibitions. The principal exhibitors in this department were E. L. Reimer, Miller & Sievers, E. Meyer, E. E. Moore, R. B. Woodward, William Robertson, and various amateurs.

The most interesting and most conspicuous collections were:

Group of *Tropical Plants*, of R. B. Woodward, by Th. Brown.

Tender Ornamental Foliage Plants—one collection by Th. Brown of Woodward's Gardens, another by Miller & Sievers, and a third by E. E. Moore.

Ferns, two very excellent collections, by E. Meyer and by Miller & Sievers.

Flowering Plants, by E. L. Reimer; a most meritorious exhibit for the lateness of the season.

Collection of *Caladiums*, by Miller & Sievers, including many new and fine varieties of late introduction.

Greenhouse and Conservatory Plants, three collections, by E. L. Reimer, Miller & Sievers, and E. Meyer, all of which were very meritorious.

New and Rare Plants, two collections.

Australian Evergreens, one collection.

Coniferæ, one very good group, by E. L. Reimer.

Coleus, two superior collections.

Hardy Ornamental Foliage Plants.

Best Grown Plants, twenty specimens, by E. L. Reimer; one of the best groups we ever had the pleasure of seeing.

Japanese Plants, a meritorious exhibit, by E. E. Moore.

Climbers, Roses, Fuchsias, Double Geraniums, Variegated-Leaf Geraniums, Ornamental Foliage Begonias, Marantas, Primulas, and California Native Plants, all well represented.

In Class II, some very good exhibits were made of Hanging Baskets, both rustic and wire, of Flower-stands, Fern-cases, and Coniferæ Cones.

In Class III, of Cut-flowers, the prominent features were Dahlias, Roses, and a general display of Cut-flowers.

Class IV, of Bouquets, was, as usual, inferior. But very few really good exhibits were made, our florists complaining of want of time. The deficiency in this class is always badly felt, and the want of enterprise in this department is not easily accounted for.

Class V, consisting of Fruits, was the most complete and remarkable that has ever been made in San Francisco. The principal exhibitors were D. C. Young, of Sonoma; John Rock, of San José; W. B. West, of Stockton; and Mrs. Odford, of Sacramento.

The collection of Apples, by D. C. Young, was the largest ever made in the State, comprising 140 varieties of superior quality. The same party also showed a complete collection of the Pears grown on this coast, and they were of excellent variety.

The exhibit of Foreign Grapes by Mr. W. B. West, notwithstanding the lateness of the season, was one of the best ever made, in point of varieties as well as quality.

Mr. Rock, of San José, had some very fine Apples, Prunes, and Quinces, which would be creditable to any country.

The display of Preserved Fruits, Jellies, and Pickles, by Mrs. Odford, of Sacramento, was the finest and most numerous ever made in this State, and found a great many admirers. We can not express too much praise for the untiring enterprise of this lady, who makes this industry a particular study.

Class VI, of California Wines, was represented by Mr. H. Winkle, who showed some excellent California White and Red Wines—Zinfandel, Gutedel,

and Cabinet—all of which are said to be of first quality.

EXHIBITS NOT INCLUDED IN THE GENERAL PREMIUM SCHEDULE.

By A. Kauffman, three Pears, *(Duchesse d'Angouleme)*, weighing, in the aggregate, four pounds and six ounces.

By Miss Stella Sheppard, one case of *Passiflora princeps*, in wax.

By P. A. Espina, specimens of Penmanship, representing various horticultural products.

By Andrea Sbarboro, three Japanese specimen plants, representing a cottage, a turtle, and a sailing vessel.

By Mrs. Burnum, one case of Skeleton Leaves.

By E. Wolleb, four specimens of Ornamental Foliage Plants.

By various children, plants which they had received from the Society at former exhibitions, and which, to their credit be it said, showed a marked improvement as compared with those of the last exhibition.

AWARDS OF PREMIUMS.

Class I.—Plants.

1. Flowering Plants in Bloom: first prize, E. L. Reimer.

2. Australian Evergreens: first prize, E. L. Reimer.

3. Coniferæ: first prize, E. L. Reimer.

4. Plants for Greenhouse and Conservatory: first prize, Miller & Sievers; second prize, E. Meyer; third prize, E. L. Reimer.

5. Hardy Ornamental Foliage Plants: first prize, E. L. Reimer.

6. Tender Ornamental Foliage Plants: first prize, Th. Brown, Woodward's Gardens; second prize, Miller & Sievers; third prize, E. E. Moore.

7. Tropical Plants: first prize, Th. Brown, Woodward's Gardens. Special mention of superior specimens.

8. Hardy Climbers: first prize, E. L. Reimer.

9. Tender Climbers, second prize, Miller & Sievers.

10. New and Rare Plants: first prize, Miller and Sievers; second prize, E. Meyer.

11. Plants for Hanging Baskets and Rocks; second prize, E. L. Reimer.

12. Ferns: first prize, E. Meyer; second prize, Miller & Sievers.

14. Coleus: first prize, E. L. Reimer; second prize, Miller & Sievers.

15. Fuchsias: first prize, E. L. Reimer; second prize, Miller & Sievers.

16. Double Geranium: second prize, E. L. Reimer.

17. Variegated Leaf Geraniums: first prize, E. L. Reimer.

18. Zonale Geraniums: second prize, E. L. Reimer.

20. Ornamental Foliage Begonias: first prize, E. E. Moore.

24. Caladiums: first prize, Miller & Sievers.

25. Marantas: first prize, Miller & Sievers.

27. Primulas: first prize, Miller & Sievers.

30. California Native Plants: first prize, Miller & Sievers.

31. Japanese Plants: first prize, E. E. Moore.

32. Best-grown Plants, twenty specimens: first prize, E. L. Reimer.

33. Best-grown Plants, ten specimens: first prize, Miller & Sievers.

Judges—R. Michelsen, Dr. Behr, and W. B. West.

Class II.—Miscellaneous.

34. Rustic Hanging Baskets: first prize, E. E. Moore.

35. Wire Hanging Baskets: first prize, E. L. Reimer; second prize, Mrs. Hoffman.

36. Rustic Flower-stand: first prize, Miller & Sievers.

37. Wire Flower-stand: first prize, Miller & Sievers; second prize, Mrs. Hoffman.

38. Coniferæ Cones of California: first prize, C. Stephens.

41. Square Fern-case: first prize, M. H. Lester.

42. Round Fern-case: first prize, Miller & Sievers.

Judges—D. C. Young, Dr. Behr, and W. B. West.

Class III.—Cut Flowers.

43. Cut Flowers, general display: first

prize, E. L. Reimer; second prize, Wm. Robertson.

44. Gladiolus: first prize, Miller & Sievers.

45. Cut Roses: first prize, Wm. Robertson; second prize, Miller & Sievers.

46. Cut Pinks: first prize, Miller & Sievers.

47. Cut Dahlias: first prize, N. M. Malmgren; second prize, Miller & Sievers.

Class IV.—Bouquets.

48. Basket of Flowers: first prize, Miller & Sievers, by August Duhem.

49. Pyramid Bouquet: first prize, E. L. Reimer.

50. Wedding Bouquet: first prize, W. Robertson.

51. Funeral Wreath: first prize, W. Robertson.

52. Funeral Cross: first prize, W. Robertson.

53. Funeral Cross: diploma, Miller & Sievers, by Hugo Leopold.

54. Flat Bouquet: first prize, E. L. Reimer.

55. Floral Design: first prize and diploma, Miller & Sievers, by August Duhem.

Judges—Th. Brown, H. Horst, and R. Michelsen.

Class V.—Fruits.

1. Best collection of Fruits: first prize and diploma, D. C. Young, of Sonoma.

2. Best collection of Apples: first prize, D. C. Young.

3. Best twelve varieties of Apples: first prize, D. C. Young.

4. Best collection of Pears: first prize, D. C. Young.

5. Best twelve varieties of Pears: first prize, D. C. Young.

6. Best collection of Peaches: first prize, D. C. Young.

11. Best collection of Prunes: first prize, John Rock, of San José.

12. Best collection of Quinces: first prize, D. C. Young.

13. Best collection of Figs: first prize, D. C. Young.

14. Best collection Foreign Grapes: first prize and diploma, W. B. West, of Stockton.

15. Best twelve sorts of Wine Grapes: first prize, D. C. Young.

16. Best twelve sorts of Table Grapes: first prize, D. C. Young.

20. Best exhibit of Preserved Fruits: first prize and diploma, Mrs. J. M. Odford, of Sacramento.

Meritorious exhibit of Branches of Fruits; D. C. Young, of Sonoma, and C. W. Stevens, Fruit Vale.

Honorable mention of Quince Seedlings: D. C. Young, of Sonoma.

Judges—C. Westphal, Wm. Robertson, and E. L. Reimer.

The Society may well be proud of their success in making up the Exhibition, which was in every respect superior to any of their former atttempts. Unfortunately, however, the show resulted again in a financial failure, and the actual loss may be estimated at about five hundred dollars, which, in addition to the loss of last spring, will cripple the Society for some time; and the serious question arises, whether the people of San Francisco can be depended upon in the future to sustain the efforts of the Society in fostering a taste for the beautiful. We have a sufficient population to make a Horticultural Society a permanent institution, and it is time that the people should awaken to their own interests. If they fail to do this, they certainly must do without this kind of exhibitions hereafter. It is to be hoped that the Society will not be compelled to discontinue such worthy displays.

No greater injury has ever been done in horticulture than the recommendation by inexperienced writers of *chip manure*, as a dressing. Its danger arises mainly from its ready disposition to spread fungi, which inevitably arise in soils naturally a little moist and tenacious. When once formed, such fungi spread with astonishing rapidity, totally preventing growth, and finally killing the plants. —*Horticulturist.*

WOODWARD'S GARDENS.

The present season of the year is not a very favorable one for luxuriating among flowers and plants. Nevertheless, a recent inspection of the conservatories and tropical houses of this establishment afforded us ample satisfaction. And we have been pleased to see, on several recent occasions, that instructors of the young have availed themselves of the very liberal opportunity afforded by the large-souled proprietor, to study natural philosophy from *objects;* exemplified, as it is, in so many of its departments in these really rich grounds. This is as it should be; it is the best, the surest, the pleasantest, and the most rapid way, both for pupils and teachers, for imparting instruction. We speak from many years practical experience in education. School-books are but text-books, and no class should graduate without passing through such a course.

Among the many choice plants which attracted our attention in the tropical houses, we will mention the following as deserving particular notice: *Pandanus Javaniensis; Scudleria moxciana; Cypripedium insigne;* and *C. venustem variegatum* (parasites in bloom); *Hemerocallis fulva*, variegated Lily; *Croton carcascaria, C. pictum, C. rubra variegata; Cycas revoluta; Eranthemum scandens; Micania spectosa; Dioscora discolor; Euphorbia sanguinea; Alocassia Bataviensis*, a kindred species to Tara; *Maranta Zebrina; Phlebobium aureum; Strelitzia reginæ*, Queen Lily (2), both coming into bloom; *Amaranthus salicifolius; Anthurium regale; Gesneria refulgens, G. cinnabarina, G. zebrina; Ceropegia elegans; Phelia mimosa*, bombarding Fern; *Aphelandra cristata; Tarinia Asiatica; Begonia Weltoniensia, B. semperflorens;* while of the Rex variety of *Begonias* there were *B. Queen of Hanover, B. silver chain, B. Marchali.* But we must stop or we shall become tedious. Our friends must see and admire for themselves.

FAVORS RECEIVED.

We are indebted to the courtesy of the Hon. Frederick Watts, Commissioner of Agriculture, Washington, D. C., for the *Annual Report of the Department of Agriculture* for 1872. This is always most acceptable for the carefully prepared statistics and valuable information of this most important department. Also for the monthly reports so regularly forwarded.

The Overland Monthly for November. Again we welcome our always pleasantly anticipated contemporary—another very interesting number. "The Gravel Ranges of the Gold Belt" is an important article; "Seeking the Golden Fleece—No. 3" is highly interesting; and "Mount Whitney" very readable. "Etc." and "Current Literature quite up to average.

MANURE AND WATER.—The Rose is one of the few cultivated plants that will profit by almost any amount of stimulating manure, provided it is not too fresh and rank. Let it be old and fine, and then apply as liberally as the supply will warrant. All Roses do better in rather heavy and compact soil than in one that is very light, containing too much sand or vegetable matter. The Rose being a thirsty plant, it should be planted in a deep, moist soil, or where water can be freely given artificially. Those who plant single specimens of Roses in sod or upon raised mounds in the garden, usually learn their mistake in July or August.

NEW AND RARE PLANTS.

Mimulus cupreus, variety "Brilliant."—There are few things more gay in the spring of the year than the various varieties of "monkey flower." They are, besides, of very easy culture, if a few simple precautions are taken. The chief of these is to keep them from great heat. They like rich soil, and to be in the full light; and like moisture, but not to be soddened or wet. A saucer with water under the pot, is an excellent way to keep up this regular supply. There are many cool places about buildings and in greenhouses, just suited to it. In every other respect it is easy of culture. The variety treated of is said to be a *scarlet*, which, if so, will render it peculiarly desirable.

—*Gardener's Monthly.*

Yucca Baccata.—This new and very distinct species, found in New Mexico, Utah, and Arizona, was introduced into cultivation in Europe last year by M. Linden, of Brussels. In the rigidity of its habit and the texture of its leaves, it bears a greater resemblance to *Y. cornuta* or *Y. Treculeana* than to any species of the *aloifolia* section. It has a thick, wrinkled stem, about a foot high, on the summit of which are closely crowded the short, straight, erect, pointed, boat-shaped leaves of a light green color, bearing on their margins numerous long, broadish, and sharply pointed shaving-like appendages. The fruit is a capsule, as in all the Yuccas, but has the shape and fleshy consistency of a ripe Banana, by which name it is known to the natives of Western America. The taste is sweet and agreeable, and the Indians, who are very fond of it, gather and dry large quantities for winter use. The uncooked fruit is said to possess highly cathartic properties.—*Garden.*

Aquilegia leptocera aurea.—This is a new introduction from the Rocky Mountains. It is closely related to *A. canadensis*, and in habit of growth, foliage, and height resembles that species. The flowers are, however, pale straw-colored; and being a free-flowering plant, it will form a very desirable contrast to the blues and reds of the other species and varieties. It appears to be as easily cultivated as any of its congeners, and quite as hardy. The *Garden* says of a specimen recently exhibited in London: "That fine yellow Columbine (*Aquilegia aurea*) shown at Kensington the other day, is a distinct and handsome plant, with fine clear yellow flowers, making it worthy of association with the very finest species of Columbine."—*Gardener's Monthly.*

Saxifraga Peltata.—One of the most extraordinary and distinct of its family. It produces large lobed leaves eight inches across, attached near the centre to strong stalks eighteen inches or two feet long, and bearing striking resemblance to an umbrella, in consequence of which it is popularly called the Umbrella plant. The flower-stalks rise to the height of two feet, bearing cymes of large, white, rose-tinted flowers. It forms strong, fleshy creeping stems, and is found growing on the margins of streams in California, with the stems frequently submerged. This at once suggests its fitness for ornamenting the banks of streams and lakes in this country.—*Gardener's Monthly.*

Tea, as grown in the south, is said to lack the indispensible *theine* for which it is alone valuable — that it does not, when steeped, yield the flavor or fragrance of the Chinese production. Is this true? Can any of our Southern readers send us a sample of American-grown tea?—*Rural New-Yorker.*

NEW FRUITS AND VEGETABLES.

The Finest Fruit in the World.—The Durian, a fruit about which very little is known in England, but which is reckoned by natives and Europeans in the Malay Archipelago to be the finest fruit in the world, grows in great abundance in Java and Borneo. It grows on a large and lofty forest tree, somewhat resembling an Elm in its general character, but with a more smooth and scaly bark. The fruit is round or slightly oval, about the size of a large Cocoanut, of a green color, and covered all over with short, stout spines, the bases of which touch each other, and are consequently somewhat hexagonal, while the points are very strong and sharp. It is so completely armed, that if the stalk is broken off it is a difficult matter to lift one from the ground. The outer rind is so thick and tough, that from whatever height it may fall it is never broken. From the base to the apex five very faint lines may be traced, over which the spines arch a little; these are the sutures of the carpels, and show where the fruit may be divided with a heavy knife and a strong hand. The five cells are satiny white within, and are each filled with an oval mass of cream-colored pulp, imbedded in which are two or three seeds about the size of Chestnuts. This pulp is the eatable part, and its consistency and flavor are indescribable. A rich butter-like custard highly flavored with almond gives the best general idea of it, but intermingled with it come wafts of flavor that call to mind cream-cheese, onion-sauce, brown-sherry, and other incongruities. Then there is a rich glutinous smoothness in the pulp which nothing else possesses, but which adds to its delicacy. It is neither acid, nor sweet, nor juicy, yet one feels the want of none of these qualities, for it is perfect as it is. It produces no nausea or other bad effect, and the more you eat of it the less you feel inclined to stop. In fact, to eat Durians is a new sensation, worth a voyage to the East to experience.—*Garden.*

An Early Pea.—The "Philadelphia" is the name of a fine variety of the Pea, a sample of which has been left at our office by E. Rishel, Esq., of this county. Mr. Rishel says this Pea is very early, and will shell out in five weeks from planting.—*Central Union Agriculturist.*

Seedling Raspberry from Mr. Price.—This is a dark variety—same color as Philadelphia, but belongs to the Antwerp stock. The fruit is medium size, of good flavor, and evidently produced in great abundance. Its positive value will depend on comparison while growing together with other kinds.—*Gardener's Monthly.*

Garrya Elliptica.—This forms a fine hardy evergreen bush, which grows from six to ten feet high, and has a rather dense and spreading head, furnished with numerous slender shoots, which are downy when young, but quite smooth when fully matured. It is a native of North-west America and California, and was first introduced into England in 1828. It is easily increased either by layers or by means of cuttings of the half-ripened shoots, and grows freely in any good garden soil. The leaves are opposite, somewhat oblong or elliptic, with a small acute point, rather wavy when young, thick and leathery in texture, set on short footstalks, persistent, of a dark shining green above and hoary beneath. The flowers, which are unisexual and on distinct plants, are arranged in pendulous catkin-like racemes with connate bracts, and are produced

from December to March. The male flowers form very long, slender pendulous catkins, from six to ten inches in length, and are of a greenish-white or yellowish color, while the female ones are produced in short green catkins not more than three or four inches in length, and are very deficient in graceful appearance compared with that of the male ones. The fruit, which is produced in compact bunches, is a berried pericarp containing two hard bony seeds, as large as a moderate-sized black currant, and of nearly the same color.

Begonia.—This foliage plant is a very desirable one for the conservatory, the silver markings, distinctly formed, render it an object of great beauty. The hybrids of this plant now being produced, are gorgeous in the extreme.

Imperialis—Very pale green leaves, suffused with rosy crimson, shaded red.

Vittata—Blotched silvery white; leaves pointed.

Sanguinea—Leaves deep glassy green; under side of a deep blood red.

Rex—Leaves very large, purplish green, with a changeable metallic lustre, with a broad silvery zone around the leaf midway from the centre; under side purple.

Madam Wagner—Leaves silvery green, spotted, with very dark edge and centre.

Urania—Nearly black green shiny leaves, all edged with crimson.

Punctata—Dark green leaves distinctly spotted.

Maincata—Very large leaves, light green, bordered with crimson; dotted under side, with crimson spikes.

Argentea—Silvery green leaves, tinged purple.

Nebulosa—Silvery green, with plainly marked dark margin.

Maculata Ricinifolia—Very large leaves, artistically cut and very curiously marked.

The Begonias do not succeed well out-doors; at least, if bedded out, should have a shaded border. They require plenty of moisture and warmth, with a soil formed of peaty mould and sand. To those who have not had much experience in growing house-plants, we would advise them not to attempt the Begonia only upon a limited scale: to the conservatory they are indispensable.—*Ex.*

WORK FOR THE MONTH.

BY F. A. MILLER.

Although we had a heavy rain at the beginning of October, which moistened the ground several inches deep, the strong winds which followed absorbed all the moisture, and we are once again in the dry season; however, an early winter is anticipated, and if indications prove true, we will have more rain early in November. This should put us in mind of some work which ought to be done before the wet weather commences. Seeds of various kinds of plants are now ripe and should be gathered; this should be done in the afternoon of a pleasant day, as the seeds are damp in the morning. As soon as sufficiently dry, clean them and put them away in a dry, cool place, after marking carefully each kind. This will relieve you of purchasing the same kinds of seeds, and you have the advantage of knowing that they are fresh.

Some Pansy and Mignonette, Candytuft and Sweet Alyssum seed should be preserved for winter use; they flower well with us in winter.

The Gladiolus bulbs which have flowered during summer, should be taken up now; expose them to the atmosphere

for a few days to dry them sufficiently, then put them away in boxes, and in some dry place until spring.

Dahlias should be cut down to within six inches of the ground, and in a week or two after they should be taken up and treated in the same manner as Gladiolus. It is always well to mark them before cutting them down, so that the colors may be known when planting time comes.

I will call attention again to the planting of all kinds of Dutch bulbs, such as Hyacinths, Tulips, Narcissus, Crocus, Anemones, Ranunculus, Lily of the Valley, Crown Imperials; particularly those which are intended for home-culture. Do not plant them all at once, but keep a few on hand for later planting, so that some flowers may be had after the first lot has done blooming. Hyacinths, Narcissus, and Lily of the Valley, are particularly well adapted for home-culture, as they are easily taken care of. If planted in pots or in glasses, they should be set in a dark room for two weeks, where they will make roots and produce better stalks, which will at first appear rather yellow, but will soon assume a healthy green color, after being placed in the light for a day or two. The best soil for Hyacinths is one-third loam, one-third sand, and one-third of old rotten manure. Always see that the soil is well drained by putting several pieces of broken pots over the hole in the bottom of the pot. Plant the bulbs so that the tops may just be seen on the surface, and settle the soil firmly all around the bulb. For the cultivation of the Lily of the Valley, I would refer the reader to page 261 of the present volume of the HORTICULTURIST.

Camellias may now be kept tolerably moist, and should have a syringing overhead two or three times a week. It will also be very beneficial to carefully wash the foliage with a soft sponge. Not more than two buds should be left in a cluster, if good and perfect flowers are desired. They must also be kept screened from the sun.

Azaleas are forming their flower-buds, and a little more water may be given. From my own experience, I would advise to syringe them frequently overhead. It is most important that Azaleas should have good drainage, and a little coarse charcoal at the bottom of the pots is of very good service, keeping the soil sweet, etc.

The present month is the best time to make Rose cuttings for planting in frames as well as in the open ground. If to be grown under glass, the cuttings should not be longer than two to three inches, and should be planted in pure sand; if intended for the open ground, make your cuttings four to six inches long of strong wood, and plant them in deep sandy loam well worked up.

To be successful with Rose cuttings under glass, a little bottom heat should be made up of fresh manure and tan, in which the boxes filled with cuttings as above stated, should be plunged after a thorough watering. The glass must not be lifted until the cuttings have made roots; and the most important point is, that they should never be watered until they are well rooted. Moisture is easily kept up by keeping the frame close, as no evaporation can then take place.

HOTEIA (SPIRÆA) JAPONICA.—This, although hardy, is an excellent plant for forcing. Its lively green foliage and charming white flowers make it extremely useful in all kinds of ways, and the demand for bouquet work, as well as for furnishing purposes, is very great. It is easily grown, and no establishment should be without it.—*The Garden.*

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

The cultivation of the Grape is now of course one of the most important and valuable interests in California. It is somewhat interesting to observe from history, at what an early period, in England, the Grape vine was cultivated for wine and other purposes. The vale of Gloucester, according to William of Malmesbury, in the twelfth century, was planted very thick with vineyards, and they produced Grapes in the greatest abundance, and of the sweetest taste. The wine made there had no disagreeable tartness, and was said to have been very little inferior to the wines of France. In Normandy, there was a vineyard from which wine was made as early as 1561. In 1550 there was no English wine, the climate probably, even in the warmest locations, being too cold. But in 1781, Lord Teynham, in a very warm aspect, had such quantities of Grapes in Kent, that some years they made two or three tuns of white wine, little, if any inferior to Lisbon. In general history the making of wine is recorded in the very earliest history of nations. In the United States, wine making is comparatively of a recent date. The Swiss planted in the West the first vineyard, at Vevay, Indiana, on the Ohio River. They manufactured a wine similar to the "Cape wine" made at the Dutch colonies, at the Cape of Good Hope.

About the year 1829, Nicholas Longworth, of Cincinnati, planted the first cuttings of the Catawba and Isabella grapes, in his garden there, which had been discovered growing on the river Catawba, in North Carolina. His tenants, most of them Germans, soon planted large vineyards of these vines, and made a good, but somewhat acid wine, which suited their tastes, and also, after they got used to it, of many Americans. Mr. Longworth is justly entitled to the name of the father of Grape culture in the West. During his time and since, many valuable seedlings from the Catawba and Isabella, and others, have been raised, the most popular of which, for a red wine, is Ives' Seedling. Grape-growing has extended to Missouri and other States, and to the islands of Lake Erie, and the lake shore. New varieties are still being introduced in the States east of us, which are freer from disease than those originally planted. However the profit of growing Grapes for wine in the Eastern States may be questioned, there can be no doubt of its success in this State. There is a fair foreign, as well as domestic demand for our Grapes and wine.

We say, then, to all, plant more Grapes. There is no more healthful, life-giving, delicious fruit. Every farmer and country resident should plant them for his family. Every man who has a garden or patch of ground should cultivate a few vines. There is no mystery about Grape-growing; a man who can grow corn, can grow Grapes, and one who can make cider can make wine. This country is not only a large consumer of fruit, but it is becoming rapidly one of the largest wine-consuming countries in the world. In California, at any rate, we can produce wine at a price low enough to be within the reach of the people, and probably thereby promote temperance, and this can easily be continued, and still be one of the most remunerative crops the husbandman can raise. But we must be wise. The wool-grower of to-day does not raise the common and coarse wool-producing sheep that he did twenty years ago.

Why? Because improved breeds have been introduced, yielding a wool of finer texture, and commanding a higher price. So the Grape-grower must yield his prejudices, give up some of the old sorts, and plant such as command the popular taste. Our climate is favorable for every known variety of any value. Our soil is new and fertile, and our Grapes are rich, even if anything too rich, in saccharine material, and produce wine of finest quality without anything added. Remember that in wine-growing we are yet in our infancy. We have a character to make, which is of more importance to us than dollars and cents at present. We must stick to the pure juice of the Grape. We say to all, plant Grapes; for what is more delicious in the heat of the day in summer, than to sit under your own vine, and in the cool of autumn to eat of the fruit thereof?

Quinces have now been marketed for some time, and bring such prices per bushel as pay the growers very well. We observe that numbers of boxes have been sent by railroad to New York, and have proved profitable to the owner. The Apple Quince is the best variety, and can be grown on any good land that will grow well other varieties of fruit; but, like the Pear, we think a location where the soil is not subject to extremes of dryness or moisture, is much the best. Where a choice must be taken of either of these extremes, moisture or proper irrigation is best suited for the Quince. Bushes should be planted ten or twelve feet apart, and cultivated annually, as other orchards. If well done, they will be, on this climatic forcing slope, in good bearing in three or four years from the time of planting out.

While on the subject of the general cultivation of fruit, I will here state that our most highly esteemed and eminent Pomologist, Marshall P. Wilder, President of the U. S. Pomological Society, in his address at Boston, in September last, among other excellent information and advice, after naming the wonders which had been effected within forty years in the United States in fruit raising, observed:

"These considerations should excite us to greater enterprise and renewed exertions. * * * We have but just entered upon it. How vast and inviting the field that lies spread out before us! * * * Were I never to address you again, I would repeat the counsel I have so often given, in regard to the production of new and fine fruits [let us apply this to California], viz.: *To plant the most mature and perfect seeds, of the most hardy, vigorous, and valuable varieties; and, as a shorter process, ensuring more certain and happy results, cross or hybridize your best fruits.*" Mr. Wilder, speaking of the golden fruits of California, said they were "more precious than her golden sands;" and he wound up his admirable address by saying, "And as our members, from time to time, shall assemble to gather in the fruit of their researches, may they have reason to rejoice more and more in the benefactions which it bestows on mankind; and when at last we shall be called to relinquish the cultivation of our orchards, gardens, and vineyards on earth, may we permitted to participate in the cultivation of

> 'That tree which bears immortal fruit,
> Without canker at the root;
> Its healing leaves to us be given,
> Its bloom on earth, its fruit in Heaven!' "

In our markets, for more than six weeks, Strawberries have been quite abundant and of good quality. The first rain we had this fall helped the vines in their bearing, independently

of what irrigation they had. The fruit was of good size from the first, and still continues so to be. They have sold from 15 to 20 cts. per pound.

Bartlett Pears were nearly out by the middle of last month. The Winter Nelis is now beginning to be in fine eating order, with the Glout Morceau, and one or two more winter sorts.

There was no material change in the fruit market October 24th. A few varieties of fruit are noticeable as being absent. Plums are among the number. The supply of Grapes showed no signs, then, of diminution, and prices continued low. Beautiful Black Moroccos were retailing, about that time, at 12½ cts. per pound. The range of all kinds was from 8 to 15 cts. per pound. Strawberries were in fair demand at 15 to 20 cts. per pound. Oranges were, at the last of October, virtually out of the market; and the prices of what few were to be found at one or two of the stalls were $1.50 and upwards. A few Peaches, only fit for cooking, were offered for 6 cts. per pound, at the beginning of the present month (November). A further consignment of Bartlett Pears were received from Pleasant Valley, about the above date. The fruit was small, but found a ready sale at 15 cts. per pound.

About the 25th of October, we had several frosty nights, of a severity, for us, thus early, quite rare at this season of the year. These frosts have somewhat curtailed the supply of several kinds of vegetables. We have had several fine lots of new Green Peas from Half Moon Bay and other places, which have been received with appreciation. These and String Beans have been a shade higher in price. Asparagus, in limited quantities, has come forward from the Mission gardens, and has sold at 50 cts. In addition to the above list, we quote Salsify, 8@10 cts. per bunch; Lettuce, 25 cts. per dozen; Mint, 10 cts. per bunch; Pickles, 50@75 cts. per gallon; Potatoes, by the sack, delivered, $1.50@1.75 per 100 pounds.

The supply of Strawberries was light the last of October, and prices were correspondingly high. More Bartlett Pears arrived about the same time from Pleasant Valley, Solano County, retailing at 15 cts. per pound. Plums and Peaches will soon disappear. Grapes are still plentiful (1st November). Some Lemons are still coming by each steamer from Los Angeles, but more liberal quantities and much better fruit comes from the Mediterranean.

Mr. S. B. Higgins, author of the work on *Ophidians*, transmits by mail some notes on the action of rattlesnake poison, by which it appears that the poison first affects the plasma, then the nerve-centre, communicating to the former a distinctly acid condition. It defibrinates it; renders it thus permanently diffluent, that is, incapable of coagulating, and this acid condition reacting upon the corpuscles, almost immediately affects their color by attacking the hematosis, and separating it from the other component elements. The sensory nerves are first affected, then the motor nerves; but the latter appear to be most especially influenced, and in quite a different way from what they are by the cobra poison. The fatal result is quicker in the former than in the latter case, but none less surely (though sometimes it is many hours after the wound) death ensues. Days may elapse before the bitten person dies, as in case of bites by a hydrophis, a marine type of the snake. Cases of a hydrophis bite are known to have occurred where the bitten person has recovered.

Editorial Gleanings.

Now that the construction of an aquarium at Central Park is being urged, and our readers are becoming familiar with the great interest and value of such an institution, it is with pleasure that we are able to present the following description of the Aquarium at Woodward's Gardens, San Francisco. At present this work is not only the largest, but the only public aquarium of any size this side of the Atlantic; and, from a recent conversation with Mr. Woodward, we learn that no means is to be spared to make it equal to the greatest. At an early day we hope to present an illustrated description of this aquarium, with its surroundings; in the mean time, the following from the *Weekly Alta* will serve to convey an idea as to its size and general form: "The aquarium building is situated between the seal-pond and the entrance from the garden to the amphitheatre. The arrangement for the tanks beneath is very simple. They are sixteen in number, raised on each side so that one side of each tank is on a level with a man's shoulder. A person passing through this lower apartment sees on each side of him, as it were, sections of the sea containing marine life. The side of the tank toward him is glass; the water is open to the sunlight above, and no light can reach the passage-way, except by first passing through the water in the tanks and the glass fronts. The tanks are made of Frear stone. The water for the marine fish is brought from the deep sea, near the Farallones, where it is found clear as crystal. It is kept constantly in motion, and aërated by the falling of a stream."

In the interview with Mr. Woodward, to which we have referred, that gentleman informed us that, though his aquarium was yet in its infancy, and in many particulars not what he designs that it shall be, yet it is to the people the most attractive feature of his gardens, successfully rivaling in interest the Zoological and Botanical Gardens, the Art Gallery, and many other attractions. Mr. Woodward expressed himself full of sympathy with our movement for the establishment of a similar institution at Central Park, and assured us that we could not overrate its importance, or present its claims in too strong language. —*Appleton's Journal.*

A Yew Flowering in Winter.—About six weeks ago I nipped a small spray off a dwarf yew-tree, protruding through the snow, in my neighbor's garden. It was my intention to press it; but for immediate convenience it was put in a glass of water, in the sitting-room, and for some time no more was thought about it. A few days ago (Feb. 7), I was astonished to find a number of full blown flowers on the spray. These pretty, diminutive objects were accompanied with an interesting phenomenon. The anthers kept up a little fusillade of explosions, throwing off the yellow pollen in tiny clouds. My thumb-nail, which happened to be near one of the little globular catkins about the size of a canary's eye, was quite yellow with the ejected powder. I shook off some on the side of a microscope. They were, in form, when under a lens of high power, like angular pebbles, and although I had barely touched the slide with my nail, yet the number of pollen grains under the microscope was innumerable. To me, this affair was intensely interesting, and a very pleasant episode in a sick-room. The entire process can doubtless be repeated by any one, with the certainty of success, even in midwinter. The pretty little strangers still

continue blooming on my table, and impart a cheeriness to this unusually bleak St. Valentine's Day.— S. L., *in Monmouth Democrat, Freehold, N. J.*

Plants as Doctors.—In addition to the pleasure that may be derived from Floriculture, the sanitary value of flowers and plants is a feature of the subject so important as to call for special mention. It was known many years ago that ozone is one of the forms in which oxygen exists in the air, and that it possesses extraordinary powers as an oxidant, disinfectant, and deodorizer. Now, one of the most important of late discoveries in chemistry, is that made by Professor Mantegazza, of Pavia, to the effect that ozone is generated in immense quantities by all plants and flowers possessing green leaves and aromatic odors. Hyacinths, Mignonette, Heliotrope, Lemon, Mint, Lavender, Narcissus, Cherry, Laurel, and the like, all throw off ozone largely on exposure to the sun's rays; and so powerful is this great atmospheric purifier, that it is the belief of chemists, that whole districts can be redeemed from the deadly malaria which infests them, by simply covering them with aromatic vegetation. The bearing of this upon flower culture in our large cities is also very important. Experiments have proved that the air of cities contains less ozone than that of the surrounding country, and the thickly inhabited parts of cities less than the more sparsely built, or than the parks and open squares. Plants, and flowers, and green trees can alone restore the balance; so that every little flower-pot is not merely a thing of beauty, while it lasts, but has a direct and beneficial influence upon the health of the neighborhood in which it is found. Surely, it is a beautiful provision of Nature, that something which is at once the most dainty of occupations, and most delightful of amusements, should be intimately bound up with the solution of problems so important as the health of our cities and the redemption of fever-infected districts in the country. —*Appleton's Journal.*

Plants in the Sleeping-room.—In a recent letter addressed by Professor Kedzie, of the Michigan Agricultural College, to Governor Holt, there were recorded facts which go far toward dissipating a popular error, that the presence of plants in the sleeping-room endangers the health of the sleepers. The following is an extract from Professor Kedzie's letter: "Not to leave this matter in the condition of mere conjecture, I have gathered and analyzed specimens of air from a room where the influence of growing plants would be exhibited in a greatly exaggerated form. Thus, instead of taking the air from a room containing a few plants, I gathered it from the college greenhouse, where more than 6,000 plants are growing. I gathered the air before sunrise on the mornings of April 16th and 17th; the room had been closed for more than twelve hours, and, if the plants exhaled carbonic acid to an injurious extent, the analysis of air from such a room would certainly disclose the fact. The three specimens of air gathered on the morning of April 16th, from different parts of the room, gave 4.11, 4.00 parts of carbonic acid in 10,000 of air, or an average of 4.03 in 10,000. The two specimens of air gathered April 17th gave 3.80 and 3.80 parts of carbonic acid in 10,000, or an average, on the whole, of 3.94 parts of carbonic acid in 10,000 of air; while the out-door air contains four parts in

10,000. It will thus be seen that the air in the greenhouse was better than "pure country air." This deficiency of carbonic acid was doubtless due to the absorption of carbonic acid and consequent accumulation of oxygen during daylight, since the windows of the greenhouse were closed day and night on account of the cool weather. Now, if a room in which were more than 6,000 plants contains less carbonic acid than any sleeping-room on this continent, we may safely conclude that one or two dozen plants in a room will not exhale enough carbonic acid by night to injure the sleepers."

Trout Breeding on Long Island.—The trout breeding business is becoming very extensive on the south side of the island, and is proving very profitable. Mention has recently been made of the preparations of ex-Congressman Roosevelt, Mr. Lorillard, and other well-known New Yorkers, for going into the business on an extensive scale. There is talk of other similar enterprises, soon to be started. Among the establishments already in successful operation may be mentioned the following:

Mr. Bishop, of Fire Place, two years ago conceived the idea of having a trout pond. He dug out a swamp, built a hatching-house, and formed two artificial ponds. These he stocked with a few trout, which have increased to very nearly 20,000, valued at about $10,000. The entire capital invested by him does not exceed $1,500, and his net receipts will be at least $3,000 per annum. Mr. A. J. Hines of Palace Brook, near Patchogue, hatched 50,000 trout this spring. He owns three ponds, and a hundred yards of canals.

Mr. Nathaniel Miller, of Fire Place, has erected a hatching-house and dug out several small ponds, and now owns about 15,000 trout, all obtained by artificial hatching. Messrs. Dayton & Gregory, of Canaan, own a small pond, and half an acre of land ditched out. They devote their whole time to the business, which at present nets them $3,000 a year. Mr. Nelson C. Hawkins, of Bellfort has constructed a large trout pond this season.

The Messrs. Robinson, near the Swan Creek Mill, are constructing a pond and a series of canals, and propose to go extensively into the business. Mr. Robert Bland, of Patchogue, has constructed ponds and canals, and is now engaged in stocking them. Many others are going into the business on a smaller scale. —*Shoe and Leather Reporter.*

Floral Prizes for the Poor.—Owing to the efforts of a London gentlewoman, Lady Augusta Stanley, a show of window plants cultivated by the poor of the parishes of St. Margaret's and St. John's, was lately held at Westminster. The working men and women—the term in this district meaning generally the laboring and not the artisan class—formed the first class, the children in the local schools formed the second, and the inmates, or sometime inmates, of the local workhouses and Westminster hospital made the third. The judging was in the hands of a gentleman from the Horticultural Society, and the prizes were distributed by Lord Shaftsbury in the evening, and he made a happy speech on the occasion.

It is often a surprise to American travelers to observe how many windows in the poorer parts of English and continental cities, are adorned by carefully nurtured flowering plants, displaying a degree of taste which such an occasion as the above is admirably calculated to recognize and encourage.

The Plantain.—The Plantain (*Musa paradisaica*) is one of the best gifts of Providence to the teeming multitudes of tropical lands, living as many of them do, without stated homes, and gathering food and drink as they find them, on the roadside and in the jungle. Under a friendly palm the simple peasants find needed shelter from the sun by day and the dews by night, while a bunch of Plantains or Bananas plucked fresh from the tree will furnish an abundant meal, and the water of a green Cocoanut all the drink they desire. The Plaintain tree grows to be about twenty feet in height, its round soft stem being composed of the elongated footstalks of the leaves, and its cone of a nodding flower-spike or cluster of purple blossoms that are very graceful and beautiful. Like the Palms, this tree has no branches, but its smooth, glossy leaves are from six to eight feet in length and two or more in breadth. At the root of a leaf a double row of fruit comes out half round the stalk; the stem then elongates a few inches, and another leaf is deflected, revealing another double row; and so on, till there come to be some thirty rows containing about two hundred Plantains, weighing in all sixty or seventy pounds. This mammoth bunch is the sole product of the tree for the time; after the fruit is plucked the stalk is cut down, and another shoots up from the same root; and it is thus constantly renewed for many successive years. The incalculable blessing of such a tree, in regions where the intolerable heat renders all labor oppressive, may be conceived from the estimate of Humboldt, who reckons the surface of ground needed to the production of four thousand pounds of ripe Plantains, to suffice for the raising of only thirty-three pounds of Wheat, or ninety-nine pounds of Potatoes. What would induce the indolent East Indian to make the exchange of crops?—*Lippincott's Magazine.*

Rooting Cuttings of Carnations.—An amateur from Des Moines, Iowa, having complained of ill success in rooting cuttings of Carnations or Pinks, though successful with Fuchsias, Geraniums, Coleus, and Begonias, he is advised as follows by *The Agriculturist:*

"The varieties he succeeds with we all find to root quicker than the Carnation or Pink, but not more surely if the proper conditions be observed. These conditions are, that the plant of Carnation or Pink from which the cuttings are taken must be in a healthy growing condition. The temperature of the sand of the propagating bench in which the cutting is inserted should range from sixty-five to seventy-five degrees, and the atmosphere fifteen degrees less. The sand must always be kept moist, and great care must be taken that neither sun nor draught of air strike the cuttings long enough to wilt or shrivel them, for if once shrivelled nearly all hope of rooting them is gone."

Campanula Turbinata Elegans. — Of all the dwarf Campanulas suitable for beds, this is the most ornamental in the large and beautiful family of bell-flowers, forming as it does, a compact leaf growth, and yielding from seed a mass of comparatively large, rich, purplish-blue, white, and porcelain-white flowers during the summer months. To have it in bloom during the first season, it should be sown in the earliest spring months, and thus treated, it will flower in the summer and autumn; or, if the plants bedded one season are again divided for planting in May, these will bloom effectively in the summer months; and if sown in May, vigorous plants

will be secured for the following year. *Campanula turbinata elegans*, sent out by Messrs. E. G. Henderson, is a hybrid between *C. turbinata* and *C. carpatica*, and it is greatly superior to both its parents as a decorative summer flower. —*The Garden.*

The Agricultural Show — Pure and simple, without government patronage—is peculiarly an English institution, but English colonies seem to vie with the old country in the matter. In New South Wales, say the papers, "the opening-day is made the occasion of an almost regal pageant." Governors, members of Parliament, foreign agents, heads of the learned professions, with their ladies, all lend *eclat* to the affair. The prizes offered are small, and exhibitors have to pay for the feed consumed by their stock. But they turn out well, nevertheless; and many sales are made, which last fact is quite contrary to our experience in this country. At the last show it is said that Short-Horns changed hands to the amount of £17,000—one cow going for £1,150, and well-bred bull calves ranging from £100 to £200.

Sheep in Orchards.—J. Higgins stated at a late meeting of the Alton Horticultural Society, that he had long been in the practice of turning sheep into his Apple-orchards, and as long as they have green pasture they will not touch the bark of the trees; but they are carefully watched. He has one old sheep only that knows how good Apple-bark is. When there is snow on the ground, the sheep will of course eat the bark. But the only time when the presence of the sheep is needed, is in summer when the wormy fruit is dropping. We know a farmer in western New York who turns his sheep in his large orchard during the day, and into another field at night; they never touch the trees, and he finds the codling moth growing scarcer each successive year.—*Country Gentleman.*

Transportation of Milk.—The milk cans in which the milk is conveyed over the railways in France are made of a similar shape to ours, but the lids are so arranged that by turning a screw they can be forced down on the milk, and thus prevent all motion. The cans are wrapped in woolen cloths, and these are wet from time to time as they may need it. The evaporation of the moisture keeps down the temperature of the milk, and no difficulty is experienced in carrying it a long distance, even in warm weather.

METEOROLOGICAL RECORD,

For the Month Ending Oct. 31st, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.14 in.
do 12 M.	30.13
do 3 P. M.	30.13
do 6 P. M.	30.12
Greatest height, on the 27th at 9 A. M. and 12 M.	30.25
Least height, on the 2d at 6 P. M.	29.95

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	57°
do 12 M.	63°
do 3 P. M.	64°
do 6 P. M.	56°
Greatest height, on the 12th at 12 M.	76°
Least height, on the 21st at 6 P. M.	48°

SELF-REGISTERING THERMOMETER.

Mean height during the night	49°
Greatest height, on nights of 12th and 19th	65°
Least height, on night of 26th	39°

WINDS.

North and north-west on 13 days; south and south-west on 4 days; east and north-east on 4 days; west on 10 days.

WEATHER.

Clear on 22 days; variable on 8 days; cloudy on 3 days.

RAIN GAUGE.

October 6th	0.14 inches.
October 8th	0.54 "
Total	0.68 "
Total rain of the season up to date	0.86 "

PARLOR GARDENING.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. III. DECEMBER, 1873. No. 12.

OUR CALIFORNIA FERNS.

BY F. A. MILLER.

Strange as it may seem, our native Ferns are very little known, and hardly any of them are under cultivation with us or abroad. Within the last year, I have paid much attention to Ferns in general, and to our native varieties in particular, and I am pleased to say that a large number of them are very meritorious, and are much improved by proper cultivation. There are some which have not yet been classified by our botanists, and, undoubtedly, there will yet be found a great many species which are entirely unknown at the present time. I think, in another year, I shall be able to enumerate forty distinct species of native Ferns.

At present, we cultivate some twenty-five distinct varieties, and most of these seem to thrive exceedingly well under proper treatment. In making up collections of Ferns, our native kinds should not be overlooked, inasmuch as they form a decided contrast to those which are annually imported from foreign countries. There is no good reason why we should prefer foreign plants to our native ones, if these are as meritorious as the former; and yet, I must acknowledge the fact that I can sooner dispose of foreign Ferns, at a price five and ten times higher than we are in the habit of asking for our native varieties. For rockeries in the open air, our California Ferns are preferable to any others, and, intermingled with foreign Ferns in greenhouse or conservatory collections, they form a very desirable contrast.

The following varieties I. have under cultivation now, and with few exceptions they have done well:

Polypodium Californicum is found nearly everywhere in California growing upon shaded rocks; under cultivation, the fronds grow much larger and finer, and almost upright. It requires no care whatever, and thrives best in a shady and moist situation. Fronds seven to eight inches long, and two inches wide, of a very bright green.

Polypodium Scouleri is one of the rarest Ferns we have, and is a very distinct form. Fronds very fleshy lobed; the fruit-dots upon the back of the frond are unusually large and showy. It is found upon rocks at the highest points of the Coast Range mountains, exposed to the heaviest winds; evergreen; behaves well under ordinary treatment; requires good drainage.

Pellæa andromedæfolia is one of a class well represented in California. All of them produce pretty and graceful fronds. This Fern is of very light green color, with brown stems. It is much improved by cultivation, and is a strong grower. Its natural habitat is under the shade of shrubs and small trees.

Pellæa mucronata is of a more upright growth; fronds delicate and graceful; dark green, with a dark brown stem. Changes its habit very much, for the better, under cultivation. It is found upon bare, dry hill-sides near the Coast Range.

Pellæa accuminata is the most graceful and delicate of this class; fronds of a sea-green color; leaflets in single rows; stems dark brown; slow grower, but otherwise improves under cultivation; it is found in the Sierra Nevada mountains, at an elevation of about 5,000 feet; not common.

Pellæa Bridgesii is one of the rarest and prettiest of our California Ferns. The leaflets are large oval, of a downy white color; stem black, producing a most pleasing effect. It is extremely slow in adapting itself to cultivation; but I have now a number of the plants which are readily producing well developed fronds. It is found in the Sierra Nevada, at an elevation of 6,000 to 7,000 feet, and grows upon bare, rocky bluffs, formed of limestone.

Pellæa densa is a pretty little dwarf-growing Fern of a peculiar form, and of a very dark green color, with brown stems.

Pellæa sp., a variety not yet described, I found associated with *Pellæa Bridgesii;* fronds growing eight to ten inches high, of a downy white color; leaflets very small.

Gymnogramma triangularis—our California Goldfern—is found in all parts of the State. It is easily cultivated, and deserves a place in every collection. Succeeds best if kept moderately moist and half shaded. The backs of the triangularly formed fronds are covered with bright golden yellow powder, with dark brown veins.

Woodwardia radicans, sp. Californica, differs from the *W. radicans* cultivated in Europe. The fronds of the former grow more upright and robust. However, our California variety is a most exquisite Fern; well-developed fronds reach the height of ten feet. The *Woodwardia* is very fond of moisture, and is found near springs and creeks. Under cultivation it thrives well, if an abundance of moisture is provided.

Aspidium argutum is found plentifully all over California; its fronds are tender, and do not bear handling; color, light green.

Aspidium munitum is found in the ravines of the Coast Range mountains, and is undoubtedly the finest native Fern. It is also found in the Sierra Nevada, but very rare, and, in my opinion, there are two distinct species. The one growing near the coast is a very strong grower, of upright habit, and light green color, while the other one, found in the Sierra Nevada, is of a dark green color, and its fronds spread close to the surface of the ground. Both are varieties well worth having, and easily cultivated.

Aspidium Californicum is my best grower, and can be most advantageously used for ferneries, rockeries, baskets, and bouquets, either in the shade or in exposed situations, in a moist or dry locality; its fronds are of a most pleasing form and color, always perfect.

Cheilanthes Californicum—a Fern which is found plentifully in the Sierra Nevada, but which I have not yet succeeded in cultivating with any degree of success. The back of the frond is

covered with a brown powder-like substance, while the face of it is of a very dark green color.

Cheilanthes gracillima is, I think, the most valuable of our Ferns; of a most distinct form and character. The form of the frond is very pretty and graceful, the color is of downy white, closely resembling that of *Cineraria maritima*. Very rarely found in the southern parts of the State.

Cheilanthes sp., a variety not yet described, and found near the boundary line of California and Arizona; of a more dwarfish growth than the former, equally as graceful; very rare.

Blechnum borealis, one of the best Blechnums that ever came under my observation. The fronds are of good substance, and perfectly hardy; a really good Fern, but not often met with, except in one or two localities of the northern part of California; plant worth having.

Cystopteris fragilis and *C. montana* are two beautiful Ferns of excellent habit, and easy culture. They are found in the Santa Cruz mountains, rather plentifully.

Botrychium sp., not yet described by any one. During last summer, I found two distinct species, which I have now under cultivation, with very fair success. The fronds are most remarkably fleshy and spreading, of a dark green color. Another species found, produces much lighter fronds, of a light green color.

Asplenium ebeneum; a pretty plant lately discovered, and giving every indication that it will figure as a valuable addition to our Ferns.

Dr. Kellogg says that he has found, during his recent stay in Yosemite Valley, a "*Woodsia.*" I have not yet been able to see the plant, and can not say anything in regard to its merits; but it is evident that a good number will be added to those already known, during the next twelve months.

TREATMENT OF THE AMARYLLIS.

BY CONRO KRETCHMAR.

The different sorts of Amaryllis are indisputably the most beautiful, and by far the most grateful in returns of bulbous plants for the green and hot house. These are also well adapted for the sitting-room. The finest kinds can be brought into bloom there, and often in the winter season, when every flower is of double value.

The Amaryllis family, like the Dracænas, Aletris, Charlivodia, Cordyline, Dianella, etc., has been divided by botanists according to the diversity in the formation of flowers, the pollen of flowers, the seed capsule, etc., etc., into different genera, viz:

1, *Amaryllis* (A. belladonna); 2, *Ammocharis* (A. ancoranica); 3, *Brunsrigia* (A. Josephine); 4, *Buphone* (A. toxicaria); 5, *Coburgia* (A. seticulata); 6, *Hyppeastrum* (A. reginæ); 7, *Lycoris* (A. aurea); 8, *Nerine* (A. sarniensis); 9, *Oporantheus* (A. lutea); 10, *Spreclia* (A. formosissima); 11, *Strumaria* (A. crispa); 12, *Vallotta* (A. purpurea).

Notwithstanding the many strictly divided or classified genera, they are to the florist and amateur, in all their varieties, a favorite flower.

Only a few species preserve their leaves through the whole year. Most of them have a period of rest, which is absolutely necessary to the perfection of a free and luxuriant flowering. The different sorts do not approach their rest at the same time—some entering upon it in summer, others in winter. It requires only a little attention to discover this. When no more new leaves

are seen, and the old ones stop growth, by degrees become enfeebled and lose their succulent green, or begin to turn yellow at the leaves, the time of rest is at hand.

If these signs are observed, watering should be withheld by degrees; and when the leaves turn yellow and wilt down, they must be deprived of it altogether. When arrived at this state, the pots containing the bulbs should be put on a back shelf in the green or hot house, or any other suitable place where they are out of the influence of the sun. They should be left there till a new growth takes place, which can be discovered in the appearance of new leaves, or a flower-bud and stem; the latter, in some sorts, making their appearance before the leaves. Then is the time to repot them. Take the bulbs from the pots and shake out all the soil from between the roots. Care should be taken not to break or wound the latter, as it will hinder their activity in growth, or bring on decay of the bulb. All sound roots should be left untouched, but the dead, rotten, or damaged should be cut off with a sharp knife. As soon as the earth has been removed, and the bulbs cleansed of all useless and dead skins, they should be replanted. For this purpose use six or seven-inch pots. Put a handful of bits of broken pots at the bottom and cover them with soil made up in the shape of a hill of the proper height, to receive the base of a bulb. Place the bulb upon it, and spread the roots evenly on all sides of it, holding the neck of the bulb with one hand, and filling in the soil with the other. Give the pots a slight shaking to settle the earth among the roots. When the pot is full, the earth should be pressed down gently, so as to leave a space of half an inch between it and the top of the pot for the reception of water. In planting, the bulb should be set so that the neck rises high above the ground; and the longer the neck, the more necessary this arrangement, so as to bring the strong influence of the sun upon the bulb, which is needful for the formation of new flower-germs.

With respect to the soil, the Amaryllis does not make as strong claims as many other species of plants. However, this rule must be strictly regarded, that no fresh undecomposed vegetable or animal matter be mixed with it, as the consequences would be the rapid decay of the bulb. The best compost for the Amaryllis is well-rotted turfy peat, or a mixture of loam and leaf mold, or hot-bed muck. To each add a good quantity of sharp white sand.

The watering of the Amaryllis should not be done in an indifferent way, but must keep equal pace with their growth. With the exception of evergreen species, they should not be watered at all during their periods of rest. When the bulbs show signs of new life, and are already repotted, if there is some moisture in the earth, do not water them for the first few days. If the soil gets very dry, or is dry already, when potting the bulb pour a little water around the edge of the pot, but do not moisten the bulb itself. In general they should be watered so that the water enters the earth near the outer edge of the pot, and never *over* the bulb, as only the ends of the root, and not the bulb itself, absorb the water, and such nutritious substances as are dissolved by it. If the growth is rapid, an abundance of water should be given. Once or twice a week a thin solution of sheep manure may be given, or horn chips, or scrapings from the combmakers worked in the soil. This is done when the roots are filling the pot, in order to perfect the flowers.

After blooming, water should be given according to the growth, and when diminishing, gradually withdrawn till the cessation of growth, when the watering should cease also.

The evergreen species should never be allowed to dry out, but must be kept moist, and at their time of growth receive a liberal supply of water.

Except during their period of rest, the Amaryllis can not be kept in too sunny a place. Their perfection, viz: a plentiful bloom, depends chiefly on the unbounded influence of the sun upon the bulbs. For this reason, whether in the greenhouse, sitting-room, or open air, the most sunny location should be chosen. The maturity, viz: the formation of the future flower-germs, is the more completely attained the more the bulb is under the influence of the sun.

The practice here and there of taking the bulbs out of the pots, and keeping them dry during their periods of rest, is in nowise to be recommended. By this method the roots dry up, and are consequently lost. However dry the bulbs may become in the pot during their periods of rest, still they will not be so dry, but that they will be enabled to start a new growth as soon as they are transplanted into fresh soil; consequently these have a great advantage over those which are deprived of their roots, and which must wait on the favors of time and nature to renew their strength and beauty.

The Amaryllis bulbs are propagated in two different ways. First, by offsets formed on the parental bulb; secondly, by seeds. The offsets are removed from the parent bulb, and repotted singly, or with several in one pot. As soon as they have reached an independent existence, they should be treated as old roots.

The seed should be sown, if the season is favorable, right after their maturity, or in the following spring. Sow them in seed pans, in a light Amaryllis compost. Water them moderately, and set them in a hot-bed. Keep a close observance of their condition, and see that a soft and equal moisture is preserved, when they will soon germinate. The seedlings require the same treatment as the offsets. If there are no hot-beds where the young seedlings or offsets can be planted out, they may be planted singly in the smallest sized pots that can be obtained. As often as the roots reach the outside of the pot, they should be transplanted to a larger sized one, without disturbing the ball of earth. The less the roots are disturbed, the sooner they will inclose the new earth again, and take their nourishment out of the same. This advice is only a *seeming* contradiction to that given in regard to the older bulbs. The latter commence annually a *new* period of growth, while the young bulbs require a growth uninterrupted, which would be intermitted if the earth was shaken from the roots, thus preventing the rapid acomplishment of their maturity.

Amaryllis bulbs imported either from Europe or their native country, are generally in a dry, shrunken condition on their arrival here, and without roots. Their condition would lead many to conclude that they should be placed immediately in the earth, and their growth renewed; but this would be the mistake of ignorance, because it might be in contradiction to the natural disposition of the species. With a knowledge of the nature of the respective species, it is easy to bring the growth of the bulb in unison with its natural period of activity; but if not thus acquainted with its nature, it is best to put the bulb into a pot of loaming sand, and set it aside in a dry place of mod-

erate temperature, where there is no danger of further shrinking in, or of premature dampness. Let their condition be under constant observation; and as soon as the least sign of growth is seen, either in the formation of the roots, or the swelling of the head of the bulb, then is the time to pot and advance the same in a raised temperature, which agrees with them. Bottom heat is best. To such bulbs the smallest pots possible should be given; but as often as they fill with roots, they should be shifted without hurting the roots.—*The Gardener's Monthly.*

Flowering of Aplectrum.—With us the flowering of *Aplectrum hyemale* Nutt. appears to be an exceedingly rare event; so much so, that close watching of the plant in our woods, for several years, on my part, has been unrewarded by a single instance of its blossoming. The experience of others corroborates the conclusion that it is a shy bloomer, at least in Michigan. I am anxious for information on the point referred to, as to other localities. A friend once succeeded in obtaining the flowers by taking up the plants in the spring, and keeping them in saucers of the rich black mould which the Aplectrum loves so well, thoroughly moistened. A plant which I once potted sent up a fine scape, several inches high, but, owing to the want of proper care during my absence from home, it did not come to perfection.

The Aplectrum was formerly well represented in the woods north of Detroit; but the encroachment of that city is fast destroying the station which was remarkable for the abundance of this now scarce plant. However, it is, even now, far from exhausted. On the 20th of April 1873, I took from a space about ten feet square, in a piece of beech woods, thirty of these plants, which I transplanted to my garden, in hope to see them blossom. I shall duly communicate the result. Some years ago, I gave several handsome roots to a Boston friend, for cultivation; but I have never heard since regarding them. Some which I have kept potted for three years invariably send up every summer their large, many plaited leaves, which remain throughout the winter as usual; but the flowers are not produced. It may be that, in order to procure the desired result, the pot should not be kept housed during the winter, but remain plunged in the open ground.

I have thought that perhaps the destruction of the native forest, depriving the plant of some element necessary to its perfect development, is the cause of its seldom or never blossoming here. This is a suggestion worthy of note as regards the history of other plants as well as of this one. Of late years the Aplectrum is, with us, of less luxuriant growth than formerly.—Henry Gillman, *Detroit, Michigan, in American Naturalist.*

The Lime or Linden, in Europe, is an important tree. Those in the town of Morat are celebrated in the history of Switzerland. One was planted in 1476, to commemorate the defeat of the Burgundians, under Charles the Bold; the other was a noted tree at the time of the battle, and is now nearly nine centuries old. But equally famous is the one at Wurtemburg, called the "Great Linden," six centuries ago. It is probably one thousand years old, and measures 35½ feet in girth. Four and a half centuries ago, its branches were supported by sixty-seven columns of stone, now increased to one hundred and six, many of which are "covered with inscriptions."

PEPPERMINT—(MENTHA PIPERITA.)

BY DR. C. A. STIVERS.

I have taken the liberty from time to time of using the columns of your journal, for the purpose of directing the attention of cultivators of the soil in this State to the various plants which might be grown with profit to themselves, and general benefit to all.

In furtherance of this plan of mine, I desire in this short article to speak of a simple little herb, which at present commands but little attention, and is cultivated but to a limited extent upon this coast, although it is one of considerable importance, and likely to yield a good return for the labor and money invested.

So common is the Peppermint herb, that it requires no description at my hands. It is a native of Great Britain, from whence it has spread over Europe and the United States, becoming as it were native even in these parts of the world.

In England and in the Eastern States, it is largely cultivated for its volatile oil—great quantities of which are used. The herb requires but little cultivation; merely a moist soil, and to be passably free from weeds. In order to maintain its flavor in perfection, and have it yield the largest percentage of oil, it is necessary to reset the roots every three years. The cutting of it should be done just as the flowers expand. The oil is obtained by distillation (which is a simple operation, and soon learned); four pounds of the fresh herb yield, according to Baumé, from one to three drams of the oil. This oil sells very readily at from $3.50 to $4.50 per pound, with a steady demand, there being nearly 500 pounds used in this city alone, per year. The dried herb is also an article of commerce, large quantities being thus prepared. At present, the bulk of the oil sold in the United States is produced in the State of Michigan, where the mint herb is raised in large quantities.

That the cultivation of the Peppermint would be remunerative in California, I have no doubt. There are vast areas of low swampy lands in the State well suited to its culture, and when we take into consideration the length of our growing season, the advantages, as all will see, must be greatly in our favor, and we might readily expect that the yield would be very large. Is not this matter worthy of a trial?

ADIANTUMS.

BY MANSFIELD MILTON, NORTH EASTON, PA.

Maiden-hair Ferns are univerally admired; no genus of Ferns being more graceful in character or better adapted for growing in glass cases than some of the species, and none excels them in the formation of bouquets. The culture of a good many of these species is very easy, and no collection of plants but ought to contain a few of them. They are propagated from spores and by division of the root.

Propagating from spores is the most interesting of horticultural operations. I shall give a few remarks upon the mode generally practiced, which may be applied to all Ferns grown from spores.

Mix a compost of small lumps of peat, charcoal, broken pieces of pots, and a good quantity of fine sand; take six-inch pots, give good drainage, and fill to about an inch of the rim with this compost; give a thorough watering, then scatter the seeds or spores evenly over the soil, laying a piece of glass on the rim of the pot, and set the pots in

pans containing about an inch of water, placing them under the stage of the greenhouse, or in some shady place where moisture and heat are plentiful. Change the water in the pans occasionally, and thus prevent the soil from souring.

On the surface of pots, on moist walls, and under stagings of houses where Ferns are grown, young plants will continually make their appearance. If those specially grown in pots, as also those coming up spontaneously through the house, are planted into flats about an inch apart, as soon as the first frond appears, and allowed to remain until large enough for potting singly into thumb pots, then judiciously managed by regular shifting, and otherwise treating properly, you will soon attain large specimens.

Adiantums thrive best in soil composed of three parts peat and one part good fresh loam, with plenty of white sand. Allow the compost to lie a few days previous to using. Give pretty large pots with plenty of drainage, which should be done thoroughly, as good drainage is indispensable to all plants requiring a good supply of water. Although a class of plants the foliage of which repels water, a good many species are very impatient with much syringing over-head, especially the *trapeziforme* group, the foliage of which gets black with too much of it.

The following are some of the most beautiful and easiest cultivated:

A. assimile.—A beautiful evergreen species with dark green foliage, from Australia, of easy culture, requiring shade and plenty of moisture. As the centre of large plants is apt to get open, it is well to divide the plants and grow in medium sized pots for handsome specimens.

A. cuneatum.—The best known of the Maiden-hair Ferns; one of the most useful for bouquet making, and easy of culture; native of Brazil.

A. colpodes.—Another beautiful Fern for cutting, requiring more heat than the preceding, being a native of tropical America.

A. concinnum.—A beautiful Fern for exhibition, having a drooping habit and very distinct; variety *lætum;* is a good deal superior in habit and general beauty. Requires plenty of heat to see its real loveliness.

A. excisum multifidum.—A garden variety, making a handsome plant when well grown, suitable for bouquet making; the apex of the frond is divided, forming a beautiful "tassel." It does well in greenhouse temperature, but attains a looser habit when grown in a stove.

A. Farleyense.—The most magnificent Fern in cultivation, having broad pendulous fronds, the sterile pinnæ being beautifully fringed. Although only introduced into England from Barbadoes in 1865, some superb plants of it are possessed by several of the London nurserymen, but two plants in the excellent collection of Mr. Such, New Jersey, are said to equal any in cultivation. Too much praise can not be given it. No one can see it without admiring its gracefulness; and none having accommodation for growing, ought to be without a plant of it.

A. formosum.—A fine greenhouse species, easily grown, and admirably adapted for cutting and exhibition purposes.

A. fulaum.—Another easily cultivated Fern from New Zealand.

A. macrophyllum.—A handsome hothouse Fern from the West Indies, having large erect-growing fronds, the pinnæ being a faint pink when young, changing to dark green.

A. tenerum.—An evergreen hothouse

species with large fronds, growing very strong with plenty of heat and moisture. From the spores of this species, *A. Farleyense* and *A. Gheesbrighti* are supposed to have been raised.

A. trapeziforme var. Lanctæ Catharinæ.—A noble Fern of easy culture, beautifully adapted for decorative purposes, requiring a brisk heat when sending up its fronds, but will do remarkably well in a greenhouse temperature. Great care should be taken not to syringe overhead, as it causes the pinnæ to get black; nor the young fronds to be handled, as it destroys them.—*Gardener's Monthly.*

HOW TO PLANT AND MANAGE HONEY LOCUST HEDGES.

We extract the following from one of Jas. D. Budd's circulars, in regard to Honey Locust Hedges:

The Honey Locust belongs to a family of plants which do not sprout, and upon which the borer never works. The Red Bud and Kentucky Coffee-tree belongs to the same sub-order as the so-called Honey Locust. The plant is Three-thorned Acacia.

As to its being a larger tree — in a hedge-row the whole character of the plant is changed. Under pruning the leaves become smaller, the branches more numerous and subdivided, and thorny, and like the Norway Spruce it seems to fall naturally into a dwarfed habit.

All this is specially indicated in the old Honey Locust hedge at Elizabethtown, New Jersey. This hedge—now over forty years established — is one mile in length, has always been "pig tight and bull strong," and is at this time pronounced by competent judges the most perfect hedge in the United States.

My own young hedges, some three or four miles in extent, some of them ready to be turned out — demonstrate the question as to developing thorns by "cutting back." This point has been much discussed by the people, as it is found that a large proportion of the young plants as they come from the nursery are destitute of thorns. I have a Honey Locust hedge eighty rods in length originally set with select plants, every one of which was thornless. The tops were cut back when set. The cutting back and check in transplanting developed thorns upon half the plants the first summer. Every plant in the whole line is now not only thorny, but intensely thorny. A Honey Locust in good soil with free growth might be destitute of thorns; crowd it into a close hedge-row and subject it to cutting back, and not only will thorns come from the axils of the leaves, but from adventitious buds along the main stems and branches. I lay it down as a positive rule, that if any plants do not attain thorns under common treatment, every one of them may be made thorny by cutting back in midsummer.

No plant used in hedging is as easy to transplant as the Honey Locust. If the plants are in good shape, with common care in setting, not one in a thousand will miss doing well. Put in hedge-row about ten inches apart. Let the plants grow all they can the first summer. In the fall mulch with coarse manure. I have found this to be a great gain, in saving the newly set plants from being thrown out and injured by frost, and it also promotes a healthy, vigorous growth the next summer. If you resolve on growing a hedge upon the pyramid cutting-back plan, cut the plant back severely each spring, just before time of starting of the sap, for the first three years after setting. The fourth and fifth summers cut back

in spring and again in midsummer, to more completely thicken up the hedge, and to develop thorns. At the end of five years, with good care, you will have a hedge that will literally turn man and beast. If a fence is needed sooner, it can be turned out against any stock at the end of the fourth summer, by stretching one wire over the top, attached to stakes driven down in the line of the hedge. These stakes should not be so long as to interfere with the after trimming of the hedge, if the stakes and wires are left in the hedge.

Flowering Shrubs. — Our flowering shrubs have, and are, giving us a profusion of bloom; one variety in particular I propose to speak of at more length, the Weigela. This is a most beautiful, and by far too rare a plant in our rural gardens. It is easily propagated from layers, or cuttings started in a shaded hotbed. This beautiful shrub belongs to the genus Dervilla, but owes its popular name to the German botanist, Weigel, who introduced it into Europe. Of this genus there are several varieties, the most disseminated of which, being first introduced, is the *Weigela rosea*— in pronouncing the name give the soft sound of g. Many seedlings have been produced from this, some of which show decided improvements over the original. *Weigela rosea* and *Weigela amabilis* are the two first introduced. Some of the seedlings are: *Isoline*, flowers nearly white when they first open, but afterwards turn to a delicate pink; *Van Houtteii* has the habit of *amabilis*, but flowers of the *Rosea Deboisiana* have buds of a dark crimson and very dark flowers, the lower lobe of which is marked with a yellow band. The foliage is very robust, of a fine dark green; bush a fine erect habit, and is a profuse bloomer. There are also several variegated-leaved varieties; one with greenish yellow leaves, another the leaves of which are of a clear cream-white. *Weigela rosea* is the popular variety, and capable of great improvement over the same as generally cultivated. This shrub is covered with a profusion of blossoms in June, pink changing to white. The bloom is so profuse that the leaves are nearly all hid from view. The shrub is of somewhat dwarf growth, growing about three feet in height, and may be trained to form a very ornamental shrub, and one to give a very much more satisfactory show than is too frequently the case. Procure a plant and train it to the tree form by rubbing out all growth from the bottom, except one main stem, for eight or ten inches; head it in and allow the top to form bushy and thick, and our word for it, you will be so much better satisfied with it, that you will hardly recognize it as the same thing as when grown as a bush. The head is formed by successive pinching in, after which the culture is no more difficult than in the other way.

The Japan Quince (*Pyrus Japonica*) is another shrub, flowering somewhat earlier than the Weigela, well worthy of more general cultivation, as they offer us buds and flowers to weave in bouquets when flowers are somewhat scarce. There are white, red, double, and orange varieties, blossoming in early spring. The Japan Quince gives us beauty in the shining glossy green of its foliage after its flowers are gone; and then for awhile its fruit possesses an interest to the studiously inclined. This shrub is susceptible of the same improvement as the Weigela, and by careful training may be made an attractive ornament of the garden.—*N. E. Homestead.*

Adorn your homes with flowers.

INDIAN AND GERMAN FORESTS.

With an extraordinary damp climate and plenty of barren soil in the northern parts of the island, we have left our woods very much to the care of nature, while we have fed our fires from our coal-fields and peat mosses, and imported the better part of our timber. It is true that some proprietors, more enlightened than their neighbors, have been borrowing ideas from systems practiced on the Continent, and introducing a certain method into their forest management. The superintendents of Crown domains —notably at Windsor and in the New Forest—have been setting examples of advance in the same direction. But it was only as they became alive to the state of matters in India, that the government took up forestry in earnest. The population of India depends on its forests almost entirely, and as these cover an enormous area, it seemed never to have occurred to any one that their resources could be anything but inexhaustible. However, the alarm at last was given, and that illusion was suddenly dispelled. It was found that the most wanton waste had made ravages which could hardly be repaired in generations: the people hacked timber when they wanted it, without any regard to housing the supply; devastation by fires was frequent; there were forest nomadic tribes who kept capriciously clearing fresh spaces by incendiarism whenever it pleased them to change their dwelling-places; in short, destruction was proceeding apace, and the proper authorities did not interpose a moment too soon. Fortunately, when they did interpose, they interposed to some purpose, and a regular forest staff has been established, directed by eminently capable men. It was necessary, however, to educate the men who were to be in charge. In India forestry was an unknown art, and even in this country it had been very much neglected. But in France considerable attention had always been paid to it, while in northern Germany it has been cultivated as a science. Accordingly young men destined for the Indian forest service have been sent to educate themselves in the German forest schools, for in Germany precept and practice go hand in hand; while more experienced officials have gone thither to make their observations and to pick up what hints they can to carry back for application in India. It is to this policy that we owe the reports of Captain Walker, Deputy Conservator of the Madras Forests, which have been lately published. His reports are the fruits of a forest tour undertaken in the course of last summer, which extended over four months and a half, and carried him through forests in Hanover, Prussia, Saxony, Bavaria, Austria, and Baden. We may observe by the way that they are supplemented by a paper by Dr. Brandis, offering valuable suggestions on the professional studies of forest officers on leave.

We imagine few people have formed a conception of the extent of the remains of a vast forest that once stretched itself all over Germany. In Hanover alone, Captain Walker tells us, there are 900,000 acres of wood under State management; while nearly a fourth part of the area of Prussia is in forest, although the half of that is in private hands. As is well known, the forest administration in particular districts has long been famous, especially in Thuringia and the Hartz mountains. In North Germany generally the responsibilities are allotted in districts among a carefully organized body of officials, presided over by a Forstdirektor, who fills the post of commander-in-chief. The appointments are

fairly remunerated as far as remuneration goes in Germany; and they are so eagerly sought after that candidates will remain on their probation for years at their own cost, or with moderate and precarious pay, in the hope of being regularly enrolled in the corps at last. In Austria things are on somewhat a different footing. The Austrian forests are magnificent—so magnificent, indeed, that the people have been in the way of taking liberties with them, just like our own Indian subjects, and the forest management has been neglected. Now they have changed all that, and the State is doing its best to repair the consequences of its negligence. But as yet the Austrian forest service is comparatively in its infancy, and the pay is very indifferent. We may give an idea of what the system is when fairly organized, by taking Hanover as an illustration. In Hanover the staff consists of the forest director and over-forest master; 20 forest masters in charge of divisions, who constitute a council of management; 112 over-foresters in charge of districts; 403 assistant foresters; 343 under-foresters, besides occasional laborers, who are employed as their services are wanted. A check is established on the finances by appointing a cash-keeper to each district; the gross income is estimated approximately at £300,000, while the expenditure amounts to £128,000. Even in North Germany it is only comparatively recently that many of the forests have been worked to the best advantage. They had been hampered with troublesome rights of common and servitudes, which gave communities and private persons a claim to take liberties with the wood, while much damage was done by exercising the rights of grazing out of place and season. It has been the more recent policy of the government to buy up all these rights, dealing very liberally with the people, and Captain Walker points out that measures of this kind are absolutely necessary in India. But even after acquiring these rights the government do all in their power to make the forest lands generally useful. Where the growth of the trees places them beyond the reach of injury, cattle are freely admitted, and in all cases where it is practicable the woods are thrown open for recreation. As for the foresters, even in the lower ranks, they are highly educated in their special line. They are not only at home in the more immediately practical branches, but they understand all about diseases and insect plagues and the remedies for them. Of merely mechanical woodcraft they are masters. In the Black Forest especially, Captain Walker, with all his Indian experience, marveled at the adroitness with which they manage to bring down great trees, so that in their fall they should not injure the saplings. Then they have certain tools in use, simple enough in appearance, but which are exceedingly useful in their hands, and which might be adopted with advantage in England or India. The krempe, for instance, something between an adze and a pickaxe, is one, which lays fast hold of the trunks and exerts an extraordinary leverage; and by the aid of the krempe and a rope or two Captain Walker has seen half-a-dozen men do such work as they use elephants for in India.

We shall not trouble our readers with the valuable technical information Captain Walker collected as to methods of rotation, clearing, cutting, sowing, planting out, etc. What is of more general interest is his account of his visit to the Prince Furstenberg's forest at Rippoldau in the Grand Duchy of Baden. The forest is opened up in all directions by a regular system of roads arranged in-

to two classes. The first of these is twice the width of the other and carefully constructed with solid masonry, wooden bridges, etc. But most curious are the "Riesen," or slips, down which the timber is shot to the streams, and the artificial modes of floating the interminable rafts. The slips at Rippoldau are about six feet wide, and pieces of wood or rollers are placed along them at intervals of a couple of feet. The trough is formed of smooth timber stripped of its bark, so that there shall be little friction on the stems as they glide down it. Where the curve is too sharp the slip is disposed at something approaching a right angle; and the trunk which has been shot so far is turned by means of the krempe, and then launched forward on a fresh start. Three hundred stems can be sent down one of these slips in a single day. As for the mode of floating the timber, that must be seen to be believed, as Captain Walker remarks. The little mountain stream is cleared of its bowlders, and its bed prepared with pieces of cross-timber as the "Riesen" are. The water is dammed back in reservoirs, and, strange to say, the floating takes place when the stream is unusually low. The floss or float consists of stems of full-grown trees loosely knotted together at the ends by ropes of bark, and the length of the whole float is frequently 2,000 feet. "My first impression," Captain Walker remarks, "when I saw the floats . . . . lying zigzag in the bed of the mountain stream, was that it was simply impossible that they could ever be floated, still less steered down the stream with all its windings, and over the locks and rocks which occurred pretty frequently." The front consists of two or three stems abreast, with a prow formed like the bow of a whale-boat. "When all is ready, the water from above is let loose, and the raft or rafts which have hitherto been lying in the bed of the stream, which has probably not more than a foot of water in it, begin to float a little; but are not let go until about two-thirds of the water has passed. . . . . When let go it is exceedingly curious to see the forward part dart off at the rate of five or six miles an hour, and the several pieces or links which have been lying zigzag and more or less high and dry, gradually uncoil themselves and follow in its wake, till the whole dashes along apparently uncontrolled." Strange to say, sometimes when the decline is steep, the raft travels faster than the water, but if the stoppages are not too frequent, it can do its fifty miles a day. When it arrives at the Kinzig it is broken up and formed into those large rafts which are familiar to all travelers on the Rhine. In short, these reports of Captain Walker's will be found to combine entertainment with instruction, and had we more space to devote to them, we should invite our readers to accompany him on his excursions to the Scotch and English forests.—*Pall Mall Gazette.*

Asparagus and Manure.—I have tried all kinds of manure for Asparagus plants, and all sorts of treatment. Nothing, however, produced such a rank and thick growth as fresh cow manure. We have often used horse manure well rotted, and salt, and various other applications. But the pure cow manure, spread over the bed about three inches thick, proved the best. The year before the last we had the most wonderful growth, and, as we believe, entirely from this cause. We always leave our stalks until they are about one foot high before cutting them; we fancy they are much better, and we know we get three times as much vegetable food fit to eat.—*Exchange.*

The Mode of Life of Roots.—As the duties of the roots differ in the various plants, so do their modes of life vary. Some live wholly in the water, others (and these by far the greater number) live in the obscurity of the soil, while others, again, fasten upon the trunks and branches of plants larger than themselves. In the shape of the roots we find a corresponding diversity. Some are short and thick-set, as witness those of the beet and radish, from which fine, thread-like rootlets shoot out, in order to feed the main root; others are long and slender; some creep along near the surface of the ground, while others, again, dive deep down into the earth, as though seeking to penetrate its innermost secrets. But all, great and small, thick-set and slender, are provided with a wonderful amount of energy and perseverance, never failing, if unmolested, to perform the work allotted them with no small degree of intelligence.

Let us here give you an instance of this intelligence, which we learned but a few days since, from the lips of an eye-witness.

Most of our readers have doubtless seen descriptions of that beautiful orchid of the Isthmus of Panama, the Espiritu Santo, or Flower of the Holy Ghost, so called because of the wonderful representation of a dove, with bowed head and folded wings, which forms the centre of the pulpit-like flower. For some years the natives, regarding the plant with superstitious reverence, carefully concealed the knowledge of its existence from all foreigners; but at length it was discovered, and several bulbs were carried into the city of Panama, where they were planted in boxes, and assiduously nursed, but without success. The bulbs withered, and dried, and were at last thrown away in despair—a despair that proved their salvation. Cast out upon a heap of rubbish and stones, the bulbs, no longer buried in the earth by an ignorant master, exulted in their freedom, and striking down their roots through the stones, came back to life and vigor. Those bulbs knew (what their captor did not) that if buried, or even *half*-buried, in the earth, they must die; but note with what cogence and intelligence they seized upon the chance of life the moment it was accidentally thrown in their way! *They* knew, as the "lord of creation" did *not*, that their long, slender rootlets alone could be sunken into the earth. Says my informant, a scientific gentleman: "The bulb should be supported, above ground, by stones, until the roots have taken sufficient hold to steady it. This is the natural condition of the Espiritu Santo, and only thus will it flourish."—*Helen Harcourt in To-Day.*

Foliage Plants.—A great mistake is made by many in the arrangement of the garden, in not giving sufficient attention to foliage plants. A bed of flowers may be ever so rich, and the display of colors may be dazzling, but if there is no frame-work of living green, the effect on the eye is rather painful than otherwise. The fault of many gardens is, too much glare. Masses of brilliant flowers—red, yellow, white and scarlet—are grouped together, until the garden is all aflame with radiant colors, and its very gorgeousness is oppressive.

How refreshing it is to the eye to have here and there a clump of rich, dark-green foliage to rest on! While the gaudy hues of the flowers have a tendency to aggravate the heat of the summer day, the living green of the foliage is suggestive of cool, refreshing shade. In every flower garden there should be borders of emerald turf as a frame-work

to the beds, and to occupy space not allotted to the flowers. Foliage plants can be used with fine effect interspersed with the flowers, and in every garden green should be the predominant color, or ground, while the flowers form the embroidery.

In the arrangement of flowers in vases and baskets the same order should prevail. A bouquet without a background of cedar, arborvitæ, or some other evergreen, is never complete, and is all the more perfect if ferns and grasses are interspersed.—*Ex.*

UPON THE TERM "NATURAL," AS APPLIED TO LANDSCAPE.

BY E. J. HOOPER.

It is well for us to consider certain general laws by which Nature is governed in the grouping of plants, and the development of their forms; and it is highly important for us to endeavor to understand these laws. It is often denied that one scene is any more natural than another, if they are each the growth of Nature. An orchard, say these objectors, is just as natural as a wild forest, and a garden of tulips as natural as a tract of wild pasture, thickly overgrown with indigenous herbs, flowers, and shrubbery. Though, I think, it can not be denied that one is the production of Nature as well as the other, yet the former deviates more widely from the process, the direction and the forms of vegetation which Nature causes to appear on the face of the earth, when she is left to her own spontaneous efforts.

I will here speak of the importance of imitating the *modus operandi* of Nature, when developing landscapes and laying out pleasure-grounds, with the design of obtaining from them the greatest amount of enjoyment both to the eye and ear. It has been denied by some, much to my surprise, that the pursuit of this course will insure a more favorable result than by following one that is strictly artificial, as in the Dutch garden, or geometric style. I will freely admit that in horticultural operations, as in the planting of nurseries, arboretums, and beds for florists' flowers, any attempt to imitate Nature would be as absurd as to attempt it in a corn-field or in the kitchen garden. The objectors remark that the tangled wilderness is far from agreeable, either as a place for recreation or as a scene for the entertainment of the eye; that it is destitute both of beauty and comfort, and that we always take more pleasure in a garden that is well kept, than in one that is overgrown with weeds. These objections are based on a misconception of the true meaning of the natural as distinguished from the artificial in landscape. There is a vagueness in the significance of the terms which it is rather difficult to clear up. I am dsiposed to apply the term natural to all scenes in which art has wrought in harmony with Nature; and I believe it will be found that in all old settlements, a pleasure-ground that extends beyond the space of an acre will afford satisfaction to the visitor in proportion as it is made to resemble the work of Nature, without her defects.

In the close vicinity of our dwelling-houses it is useless to attempt an imitation of Nature in the embellishment of the inclosures. Neatness, beauty, and convenience are to be regarded above all other considerations. But in more extensive tracts, which are designed for rural recreation, the more nearly we can imitate the ways of Nature, consistently with the attainment of other needful purposes, the more satisfaction shall we

derive. There is an air of freedom and seclusion about a place that seems entirely inartificial, that fills the soul with the most agreeable emotions. We feel secure from interruption, and a pleasing sense of our right to ramble and loiter there. The first highly-wrought fence, or other artificial structure, immediately suggests the idea that we may be trespassing, and that we may meet some one who, as guardian or proprietor, may dispute our right to enter upon his grounds. It does not follow that there is anything like envy combined with this feeling; but every object that is palpably artificial produces a sense of constraint, and damps the poetic emotions of solitude. Though the proprietor of a place may feel disposed to disregard these influences on the minds of strangers, I am confident that, in the same proportion as, on any account, it would fail in exciting agreeable emotions in the minds of others, it would also fail in yielding pleasure to him and his family.

Though complete and uninterrupted solitude would be hardly preferable to death, yet every man of reflective mind delights in occasional retirement. He loves to go out so far in the fields and woods that he may not be liable to interruption; and he feels this charming seclusion most powerfully in scenes of native wildness, or in those in which the planter or landscape gardener has designedly or otherwise imitated the spontaneous ways of Nature. How much I experienced these feelings when last summer I visited that wild and romantic estate—Napa Soda Springs—near the city of Napa, covered with the finest Oaks and a variety of other beautiful forest-trees, shrubs, and wild flowers of every hue, through the natural grounds of which long winding walks, rustic bridges, and seats, and stone steps, led in every direction to waterfalls, towering cliffs, shaded recesses, Fern wildernesses, and other objects of rural, picturesque, and natural attractiveness. No sooner does the visitor of such charming scenes perceive this apparently careless irregularity, unmixed with the too elaborate, costly works of art, than he feels he is alone, as I did there. If, at the same time, as I experienced on these premises, the solitary birds of the wilderness are seen and heard around him, the emotion of solitude is the more vividly impressed on the mind. Indeed, this feeling is seldom complete, until he hears those wild notes from creatures that cautiously avoid the busy town and its vicinity. It seems to me, therefore, an important principle in the art of creating landscape, that there should be present in it everything agreeable that is found in a wildwood, and that everything prominently artificial should be excluded that would disturb those poetic feelings which are awakened by the real scenes of Nature.

(Conclusion next month.)

THE PARLOR GARDEN.

[SEE ILLUSTRATION, FRONTISPIECE.]

It is not always easy to cultivate ornamental plants in an inhabited room; still, far from complaining of this difficulty, we should, on the contrary, congratulate ourselves, for is it not a great pleasure to attempt a difficult thing and succeed in doing it? We would not, however, have this remark discourage the beginner; very limited appliances and means, with the ordinary experiences gained in a surprisingly short space of time, will afford much of gratification and of pleasure. The extent to which parlor-gardening can be carried on, the kinds and varieties of plants it may em-

brace, the time of the year in which we can occupy ourselves in it with the most pleasure and success; all this varies according to the space we may have at our disposal, and the fitness of the situation for the experiments. We shall take into consideration all these things, as they present themselves in the natural course of ordinary life.

Watering.—Plants confined within our dwellings require watering, some rarely and sparingly, others often and profusely; but it should always be with water of the *same temperature* as that of the earth in which they are placed. This is a very important point, and one upon which most people who have flowers in pots in their chambers are perfectly ignorant. You, ladies, do yourselves like a comfortable degree of warmth; so, also, do your plants. Yet mark what frequently happens. Some beautiful Camellia is your delight, and, to judge by the profusion of buds with which it is loaded, it promises a splendid bloom in the early months of the year. You have, in the meantime, been enjoined not to fail to water it when required, and this injunction you punctually fulfill. But in what way? You go to the sideboard for the water-jug; you find it empty; you at once have it replenished from the tap or the pump, the water of which is of an exceedingly low temperature, and this you pour upon the roots of your favorite Camellia! Suppose some one were to pour icy water upon your feet, would not the shock make you cry out? Your Camellia, although silent, does not suffer less. Its sap, that was in full activity, slackens—stops—and that it may begin to flow again, all the buds drop one after another; not a single one can bloom! The best thing to be done is to place in the chamber a vessel containing the quantity of water necessary to water the plants next morning. This water and the earth in the pots will then become of the same temperature.

[To be continued.]

Editorial Portfolio.

We have battled through another year, and the present number closes the third volume of the "California Horticulturist and Floral Magazine," which our spirited publishers have embellished with many excellent illustrations.

In reviewing the labors of the past twelve months, we feel sincerely thankful to our many contributors for the very many excellent articles which have appeared in our periodical.

To our numerous subscribers we beg to express our gratitude for their support, and to assure them it will be our endeavor to render the ensuing numbers additionally interesting and instructive; and from the abundant promises of valuable assistance which we have received from many able practical men, we feel confident that our magazine will, by a large accession to our original articles, be still more acceptable in the future to our readers.

Our programme for the ensuing volume will comprise the important and varied subjects of Irrigation, Forest and Tree Culture, Floriculture, Horticulture in all its branches; the Botany of the Pacific Coast, with original notes of some of the enterprising and persevering explorers of the present day; papers on indigenous Ferns and Orchids, and on the Algæ of this coast; while our columns will be open to occasional contributions and selected articles on various kindred subjects: and by exercising all due care in the selection and revision of whatever appears in our numbers, we hope to render our magazine so far acceptable to our numerous readers as

to insure us the much-extended support which a publication of this kind requires.

REPORTS OF SOCIETIES.

REPORT OF THE SECRETARY OF THE BAY DISTRICT HORTICULTURAL SOCIETY.—*Gentlemen:*—In submitting this Third Annual Report to you, I can not do otherwise than express a feeling of regret that our Society is moving so slowly in accomplishing its mission; unfortunately its financial condition is not of a very encouraging nature. The interest taken in the Society by the public, is not, I am sorry to say, equal to the severe task of fostering and developing the horticultural and floricultural products which the State of California is capable of producing.

It can not be denied that a Horticultural Society is a most important institution in a new country, and particularly so where the resources are unlimited. The usefulness of such a Society consists not only in the discussion of subjects pertaining to Horticulture—in pointing out what our State might produce, and in exhibiting the products of our soil under the most favorable circumstances to the public—but to be of real service to our State, and to the people who occupy its lands, the discussions and deliberations of practical men should be made public by its means and disseminated throughout the rural districts. The trees, shrubs, and plants which, after mature deliberation, are considered of a useful as well as ornamental character, and adapted to our soil and climate, should be introduced by the Society, and acclimatized, in order that their fitness and usefulness may be practically demonstrated at its exhibitions, with the resultant success in all its variations brought about by the influences of soil, climate, and other conditions.

This, I am well aware, can not be done with the resources at your command at the present time, which are barely sufficient to cover the expense of room-rent, gas, and petty incidentals. To enable you, therefore, to make yourselves more useful to the public, you must increase your revenues, which at present can only be done by adding regular members. It will be strange, indeed, if the population of California can not or will not sustain an institution of this kind, and swell the list of its regular members to a number sufficient to accomplish your purpose. It is my opinion, that a sufficiently strong effort to do this has not yet been made. I would also call your attention to that portion of your Constitution and By-Laws, which grants life-membership on payment of twenty-five dollars. This is too small an amount compared with the requirements of other less important and less useful societies.

True, that during the past year a class of men have been admitted as members of this Society, of which we may well be proud; but there are hundreds more, I believe, who would help you along financially and practically, if this aid was solicited in a proper way.

It is the opinion of horticulturists in this State, that an Experimental Garden should be established, for the purpose of introducing new and desirable trees, plants, etc. Such a garden might be properly conducted under your supervision. And if a suitable appropriation were made by the State for that purpose, an immense benefit might be derived from it.

The subject of forest culture has been thoroughly discussed during the last two years, and our scientific men are unanimous as to the many benefits

which the State would derive from a proper system of forest culture. Your Society should be a strong advocate of this industry, and be instrumental in soliciting proper legislation on the subject.

We have no one to protect and advance the interest of Horticulture on this coast. The politicians seem to have no time for the consideration of laws intended to effect useful internal improvements. We must show a bold front, and demand proper legislation for the development of our most important resources and industries.

In the laying out and the maintenance of our public squares, parks, and grounds, many abuses and blunders have been committed, and thousands of dollars have been squandered by injudicious management; contracts have been made, without due public notice, in favor of a few, when in many cases evidence can be produced that the work of laying out grounds, furnishing material, trees, and shrubs, could be done much better, and in a more workmanlike manner, for one-half the amount actually expended. I think the attention of the public should be called to these defects, and the officials who have the management of these affairs should be exposed.

During the year 1873, the Society held two exhibitions, one in the spring and another in the autumn. While the Spring Exhibition was confined to the display of useful and ornamental trees, shrubs, and plants, the Autumn Exhibition consisted of a general display of various horticultural, floricultural, and pomological products. Both of these exhibitions were most meritorious, and the highest praise is due to all who aided in the efforts of the Society to make the display worthy of the reputation which California enjoys at home and abroad. The arrangements in the hall for the Spring Exhibition were in most pleasing and elegant style, and nothing was wanting to render the display most successful. At the Autumn Exhibition the Fruit department was most complete, and the best ever made in San Francisco. The exhibition of Apples was the best ever made in the State.

In the department of Plants, the new and rare plants of recent introduction were most promising features, and attracted universal attention.

The quality of trees and plants was invariably better than ever before, and our nurserymen and florists showed a great deal of perseverance and sacrifice of time in cultivating specimens particularly and especially for the exhibitions. In regard to variety and quality of plants, it is conceded that much has been gained during the past two years.

A most meritorious exhibit of preserved fruits and jellies was displayed, which was certainly the best ever placed on exhibition in San Francisco.

Although the Society may well feel proud in accomplishing so glorious a result, it is a most lamentable fact, that both of the exhibitions were financial failures, the Society sustaining severe losses; which demonstrates clearly that without the aid of a suitable appropriation from the State, similar to the one made for the past two years, it would be impossible to continue similar exhibitions. For this reason, besides many others, it is to be hoped that the Legislature, which is to meet during the coming winter, will act promptly in voting the necessary aid for the continuance of our Horticultural Exhibitions.

Various circumstances plainly point out the error which was made in holding two exhibitions in one year, and

the suggestion is timely, that one exhibition annually is all that can be expected.

Much gratified at the appreciation, by a numerous and enlightened portion of the community, of our untiring labors to advance Horticulture and Floriculture in all their branches, and encouraged by a strong hope that during the coming year the revenues of the Society will be increased three-fold, I am respectfully yours, F. A. Miller,

Secretary.

WOODWARD'S GARDENS.

These Gardens have become an indispensable necessity to that enlightened portion of our community who, having families, avail themselves of this invaluable opportunity for combining recreation with instruction in educating their children; and instead of merely transient explorations at wide intervals, we perceive that it has become a practice with many parents to make continuous and oft-repeated visits, attended by the children, making use of the Guide and Catalogue (of which a great number have been sold) to assist in identifying the many objects of interest. This is as it should be. It is the best, and most pleasant, effective mode of imparting instruction; and the vast and increasing number of noteworthy objects stimulate the curiosity and please the eye, while the memory is more readily impressed with facts and forms received under a condition of pleasurable excitement. We notice that while some discursively wander over the entire grounds at every visit, on the butterfly principle, nevertheless enjoying themselves and picking up much knowledge; others, more systematic, confine their attention to one department at a time. Sometimes it is Botany which is ardently studied; at another time it is Mineralogy; again it is Zoology, and either the birds or the animals receive exclusive attention. Nor are the children with their parents the only students. Many visitors from widely distant sections of the country make these Gardens a resort, as well as the more mature and educated members of the community—the latter, like the Athenians of old, in search of something new, in which they are frequently gratified, as the energetic proprietor is continually adding new attractions, modifying, and improving, and purchasing whatever will increase interest and gratify the public. The Aquarium is being remodeled; and the replacing of the thinner glass with its supporting bars by the heavy and costly sheets, (some of them an inch in thickness), is a magnificent improvement. The glazing of the Aviary for the smaller and more delicate birds (of which several hundreds have been recently added) with plate glass, is also a decided and noteworthy change for the better. Great alterations are being made in the accommodation for the animals in the amphitheatre; and many other additions and improvements are in progress. The Conservatories are in fine order, and a considerable number of new plants, etc., have been received from the East and Europe.

CATALOGUES RECEIVED.

Vick's Floral Guide, for 1874—An excellent catalogue, copiously illustrated. It is published quarterly, 25 cents per annum, and may be obtained of James Vick, Rochester, N. Y.

We are in receipt of *Catalogue No.* 3, of Messrs. Miller & Sievers, 27 Post Street, San Francisco—a copious catalogue of choice and well selected plants, etc.; and we doubt not that our floral

friends will award to these energetic and enterprising gentlemen the support they so richly deserve for their industry and perseverance in importing for the market of California the rich variety of new and rare plants, etc., etc., which are detailed in their lists, at such moderate prices.

OUR EXCHANGE TABLE.

The Horticulturist.—A journal of rural life, etc., published by Henry T. Williams, 5 Beekman Street, New York, $2.50 per annum—a monthly magazine, replete with valuable information.

The Gardener's Monthly, price $2 per annum; published by Chas. H. Marot, 814 Chestnut Street, Philadelphia, and edited by Thos. Meehan—a very excellent monthly.

The Ladies' Floral Cabinet, monthly, by Henry T. Williams, New York. Very good and useful; price 75 cents per annum.

The California Farmer, by Warren & Co., San Francisco, Cal., $4 per annum.

FAVORS RECEIVED.

We have to acknowledge the receipt of the Annual Report, for 1873, of the Hon. Frederick Watts, Commissioner of Agriculture at Washington.

We are indebted to E. W. Bruswell, Esq., Treasurer and Corresponding Secretary of the Massachusetts Horticultural Society, for a catalogue of the library of that institution, copious, and comprising many valuable works.

The Overland Monthly.—The December number of this excellent monthly is, by courtesy of the publishers, before us. It is, as usual, replete with interesting matter: "Chips from an Indian Workshop," "Life in Mazatlan," "New Zealand," "Parks and Pleasure Grounds," and "Seeking the Golden Fleece"—all well written and interesting articles. "Etc." and "Current Literature" have all their usual discriminating character and piquancy.

We are indebted to Messrs. Tucker & Son, of Albany, N. Y., for their *Illustrated Annual Register of Rural Affairs*, for 1874. This is a very concise and useful publication, and contains much valuable information. Price 30 cents.

WORK FOR THE MONTH.

BY F. A. MILLER.

We have had sufficient rain to begin winter operations in our gardens, and the weather is now most favorable for outside work of all kinds. As a rule, I would advise all to prepare the ground early and to plant early, with the exception of such plants and trees as are not quite hardy.

Lawns and flower gardens ought to have a good top-dressing of manure, which may be allowed to remain on the lawn or grass-plat for a few weeks, in order that all the fertilizing ingredients may be washed into the ground by the occasional rains, while the manure spread over the flower borders should be dug into the ground by trenching the soil to the depth of twelve inches.

Pansies which have been sown in September or October may now be planted out where they are desired; the soil for them should be particularly enriched and well prepared. Our winter season is the season for Pansies, Violets, Daisies, Primulas, Aubrietias, and all other hardy border-plants, and they will do better if they are transplanted at this time.

If any of the Gladiolus and Dahlia

roots still remain in the ground, they should be taken up at once and stored away in a dry, airy place. Gladioli which were planted in September will flower now and during the coming month. We have a fine lot in full bloom out-of-doors at present, which were planted in September; and as bright flowers are now becoming scarce, they help us out to a great extent. I can say the same of Lilium auratums, which are exceedingly well adapted for winter flowering out-of-doors, if they are planted in August and September in some protected place.

Those who have not already planted the Hyacynth, Narcissus, Crocus, etc., should not delay to do so, both for the garden and the house. Tulips, I am satisfied, ought to be planted early to do well in California. Planting late in the season is the cause of frequent failures. All of the bulbs and roots named will do best in a warm and sunny exposure, protected from strong winds.

This month is still a favorable time to plant your Rose-cuttings, both in frames and in the open ground. If planted in frames, a moderate bottom heat should be provided; if planted in the open ground, the cuttings ought to be at least four inches long, and of a strong healthy wood. Prepare the ground well and deeply before planting, and if too heavy, add some sand. Some of our deciduous shrubs grow well from cuttings made in the same way, and the wood is now in a proper condition for that purpose. There is no necessity for planting the cuttings immediately, if not convenient; they may be tied up and kept in a shady place, and partly covered up with soil. Some Tea and Bengal Roses, which make very little new wood in comparison with the more robust-growing Perpetuals and Bourbons, would be better grown in frames, as short cuttings of three or four eyes only are required under this method.

The plants in the greenhouse and conservatory must now be kept rather dry, as all the soft-wood and succulent varieties are apt to damp off during our cool nights, particularly in wet weather.

Tender plants in our greenhouses and conservatories suffer not so much from the effect of cold as from dampness, and to have the Begonia, Coleus, Maranta, and other tender ornamental foliage plants, do well during our winter months, some artificial warmth should be provided. The various kinds of apparatus in use for heating, in the East and in Europe, are too expensive for us. We require some mode which will give a moderate amount of warmth during the nights and the cold rainy days, which will disperse and rarify some of the moisture which penetrates our greenhouses and does so much mischief. The thermometer rarely falls below 45 or 50; and I think that, with a very simple heating apparatus, we may be able to keep above 55. At our nurseries we are now introducing a very simple and cheap apparatus, which I think will answer the purpose.

Unless bottom heat (which can be made of fresh manure and tan-bark) can be applied, propagating, at this time, can not be safely undertaken; and at the same time it is a well-established fact, that greenhouse plants in general should be propagated in October, November, and December. In fact, these three months answer very well for the propagation of hardy plants also. Artificial heat is therefore most desirable for such work.

The want of flowers is particularly felt during our winter months, and with a small degree of warmth, our plants in the greenhouses and conservatories may be kept in full bloom throughout the

winter. Under all circumstances the houses should be well ventilated when the weather permits it.

Unless plants can be kept in a growing condition by artificial heat, they will do much better in small pots. I would therefore caution against the over-potting of plants. Last winter we kept tender foliage plants in a remarkably good condition in three-inch pots, while those in large pots suffered most.

The necessity for thorough drainage at the bottom of the pots and boxes is imperative, and should be looked after at once. A good effect is also produced by the application of warm water, whenever the plants actually need moisture.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

The extension of those three great improvements—Railways, Telegraphs, and Fruit-growing—make notable the last thirty years as a remarkable and wonderful era in the progress of man. The benefits conferred by the extensive cultivation of fruit-trees are almost equal in importance with those of the first two combined. Hardly anything has occurred in the history of man which can compare with the extent of fruit gardens and orchards which have been, and still are being, set out year by year. All the nurseries in every part of the world are annually pouring forth their millions of trees into every country, and yet the demand for them fully equals the supply. There is a reason for all this. One is the discovered value of fine fruit, and the other is the loss of myriads of young trees by bad management and the want of care in defending them from the damage of cattle, etc. On these two points I propose to offer a few remarks.

First, on the value of fruit: On this subject but few words will be needed, for the whole community are rapidly discovering that a few acres of orchard —particularly if convenient to a market—often yield more profit than all the rest of a large farm, and that one to three hundred dollars per acre annually is no unusual return, under good management; while, in rare cases, a single tree will nearly pay for an acre of ground by the product of one season only. Besides this, not a few are learning that a good supply for family use saves a great many hard-earned dollars which otherwise are yearly paid to the miller and butcher, or what is the same thing, an equal amount forwarded to market. The use of apples alone, where a constant supply may be had for baking, stewing, for puddings and for pies, saves to many families at least a hundred dollars annually; and by using rich, high-flavored sorts, the use of hundreds of pounds of sugar is obviated, otherwise required for sweetening and supplying the requisite flavor. But this is so well understood, that I need not dwell upon the subject any longer, except merely to allude to the pleasure and satisfaction which it must afford everyone to be furnished with a succession of delicious fruits, which our California affords during the whole of the year, commencing with Strawberries for six to eight months at least, and including Cherries, Currants, Raspberries, Blackberries, Apricots, Nectarines, Pears, Plums, Peaches, Apples, and Grapes, some of which may, with care, be had for use during every day of the year.

In relation to management a great deal may be profitably said. The ground for every orchard and fruit garden, in

the first place, should be properly enriched, if it is not naturally as productive as is common in our State; secondly, the trees should be well set out; and thirdly, and most important of all, good and constant cultivation must be given. There is no "royal road" to the raising of good fruit; and an orchard requires attention and labor quite as much as a field of corn or potatoes.

Here is the great and fatal error of a large portion who attempt the cultivation of fruit: 1st. Those who have procured their trees destroy them at once by drying them in the sun or wind, or freezing them in the cold, before setting out. 2d. Those who destroy them by crowding the roots into small holes cut out of a sod, where, if they live, they maintain a stunted and feeble existence, like the half-starved cattle of a neglectful farmer. 3d. Others set them out well, and then consider their labors as having closed. They are subsequently suffered to become choked with grass, weeds, or crops of grain. Some live and linger, others die under the hardship, or else are demolished by cattle, or are broken down or their bark wounded by the team which cultivates the ground. All low *hoed* crops are best for young orchards, such as Beans, Turnips, Field-beets, and Carrots. Sown grain crops are bad, and meadows still worse. But even hoed crops operate in some degree as weeds, and hence the most successful orchardists keep the whole surface in clean, mellow cultivation, without any crop whatever, and find it most profitable. The only exception they make is in planting a portion of the space in very young orchards, several feet distant from each tree.

Mulching, in connection with a mellow surface, will, in addition to proper irrigation, be a great assistance in long droughts. This is nothing more than covering the ground about the tree with old straw, coarse barn-yard litter, leaves from the woods, saw-dust, tan, or other material tending to retain the moisture of the soil, which is otherwise constantly escaping from the earth below. It is usually applied much too thinly, and in much too small a circle about the tree. We all know the roots extend to a great distance. It is better to leave a small space uncovered immediately about the trunk, otherwise mice or insects may harbor under it and eat or injure the bark.

In laying out ground for transplanting it is absolutely necessary to know the distances for each sort. If too remote from each other, a waste of land is the result; if too near, they crowd each other (rather common in California), and prevent the growth and ripening of the fruit to the best advantage. The usual distance for Apples in this region is about twenty-five to thirty-three feet; Pears, fifteen to eighteen feet; Peaches, twelve to fifteen feet; Cherries, fifteen feet; Plums, fifteen feet; Apricots, eighteen feet; Quinces, eight feet; Grapes, eight feet; Gooseberries and Currants, four to five feet; Raspberries and Blackberries, three to four feet.

But it is time to refer to the condition of our markets. The effects of winter can now be plainly traced on the fruit stalls. Most of the summer fruits have disappeared, and what remain are of course of poor quality, and find but slow sale at low prices. About the 27th of October there arrived a large shipment of Oranges from Tahiti, commanding ready sale at 75 cents to $1 per dozen. There were but few changes in the prices of vegetables up to the last of October, some of which begin to show the effects of frosty nights. Tomatoes were still tolerably

abundant, and of fair quality; but the supply of Green Corn, Summer Squash, and Cucumbers was nearly at an end. String Beans, Green Peas, and Okra were very scarce and higher.

Many of the Strawberry patches were visited by frosts, and the supply of fruit was very light. The few coming forward, however, met with ready sale at high prices. Peaches were out of market, and Plums were very scarce; Apples and Pears plentiful at former rates. Grapes were still abundant, but a large portion of them had been frosted and were of inferior quality. The market was well supplied with Malaga and Sicily Lemons, and a few from Los Angeles were received by each steamer. Bananas were quoted at 50 to 75 cts. per dozen; Pomegranates, $1 per dozen; Smyrna Figs, 35 cts. per dozen; Apples, by the box delivered, 75 cts. to $1; Pears, $1 to $2.

There was no change in the prices of food about the 20th of November. Of Grapes, at that time, Mission was still quoted at 8c. per pound; Black Hamburg and Muscat, each 12½c; Tokay, 15c; and Black Morocco, 15 to 25c. The Rose of Peru variety became then out of season. A few boxes of White Napoleon made their appearance occasionally, and sold readily at 15c. per pound; Blue Plums, 20c; Pears, Apples, Oranges, Limes, and Lemons continued at the then last week's prices. The contest between the Italian gardeners and the Board of Supervisors being at an end, the market resumed its former equilibrium. We quote Cabbage Sprouts at 12½c; Asparagus, 50c; Dried Okra, 50c; Red Pepper, 50c; Green Pepper, of which there are three kinds in the market, 15@25c. per pound; Red Cabbage, 10@15c. each; Carrots, 20c. per dozen bunches; Green Corn, 50c. per dozen ears; Black Radish, 20c. per dozen bunches: Kale, 50c. per dozen; Celery, 10c. per head. On the 21st of November the supply of summer fruits was nearly out.

The Italian gardeners, after resuming their occupation of Sansome Street, were, by the trial of a case in law against them, compelled to vacate that location. During the late strike it transpired that, notwithstanding the injury done to housekeepers through the high prices they were compelled to pay generally for vegetables, occasioned by the inadequacy of the supply from first hands, the gardeners themselves were the principal sufferers. The sales of vegetables by the Italian gardeners from their wagons are computed at $3,000 per day, making the aggregate loss during the period of suspension from $18,000 to $20,000. The stock of vegetables in first hands accumulated so much during that time that an overabundance glutted the market. The larger Greens, such as Cabbage and Cauliflower, rotted for want of purchasers at almost any price. Notwithstanding the existence of such a state of things among the gardeners themselves, retail green-grocers succeeded pretty well in keeping up the prices—that is, the decline from the retail famine prices to those above quoted did not correspond with the decline of the wholesalers' quotations. These middlemen thus reaped abundant harvests, while the grower and consumer suffered. At the beginning of this month the vegetable gardeners commenced to return to Sansome Street, and this movement has been tolerated by the city authorities at present.

The feature in vegetables the latter part of last week was the appearance of new Potatoes from the Presidio, and they retailed at 12½ cts. per pound. Asparagus was more plentiful, but still

sells at 50 cts. per pound. Green Peas and Tomatoes are abundant. Strawberries have been scarce for a time, and have brought fancy prices. What of those that came from Solano County? This is late for this fruit, certainly. The first Medlars have arrived, and are retailing at 20@25c. per pound; Bananas, 50@75c. per pound; Pomegranates, $1 per dozen; Smyrna Figs, 35c. per pound; Apples, by the box delivered, $1@1.75; Pears, $1@1.75.

The stormy weather is now said by the retail dealers to be retarding gardeners from bringing their produce to market, the roads leading to the city being in an almost impassable state. Artichokes are 75 cts. per pound, and Asparagus sells at the same figures. There are two varieties of Orange offered, from Los Angeles, and the Lorado Orange from Mexico. The former variety is quoted at $1 per dozen, and the latter at 75 cts. Grapes are as follows: Mission, 12½c; Muscat, 15c; Tokay, 15@25c; and Black Hamburg, 25c. per pound.

No Strawberries have been received during the past few days, and no more are expected until warm pleasant weather returns. The feature in the fruit market this week has been the arrival of the first of the new crop of Los Angeles Oranges. This shipment came three weeks earlier than the first last season, and are quite as ripe, though rather too sour to sell readily. Small consignments of Peaches continue to arrive from Solano County, but do not meet with ready sale.

Otto of Roses.—*The Attar or Otto of Roses*, most precious of all perfumes, is made almost entirely among the Balkan mountains. There are at least one hundred and fifty places where its preparation is carried on, the most important of all being Kizanlick. The Roses are planted in rows, like vines. The flowers are gathered in May, and with the green calyx leaves attached, are subjected to distillation. Five thousand pounds of Roses yield one pound of oil.

Planting Slips.—*The Gazette des Campagnes* recommends to dip the extremities of the slip in collodion, containing twice as much cotton as the ordinary material used in photography. Let the first coat dry and then dip again. After planting the slip, the development of the roots will take place promptly. This method is said to be particularly efficacious in woody slips, Geraniums, Fuchsias, and similar plants.

METEOROLOGICAL RECORD,

For the Month Ending Nov. 30th, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.16 in.
do 12 M.	30.16
do 3 P. M.	30.15
do 6 P. M.	30.15
Greatest height, on the 16th at 9 A. M.	30.33
Least height, on the 14th at 6 P. M.	30.03

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	54°
do 12 M.	59°
do 3 P. M.	60°
do 6 P. M.	54°
Greatest height, on the 9th at 12 M.	73°
Least height, on the 26th at 9 A. M.	46°

SELF-REGISTERING THERMOMETER.

Mean height during the night	48°
Greatest height, on night of 6th	54°
Least height, on nights of 2d, 3d, 25th and 26th	43°

WINDS.

North and north-west on 12 days; south and south-west on 5 days; east and north-east on 2 days; west on 11 days.

WEATHER.

Clear on 9 days; variable on 7 days; cloudy and foggy on 14 days.

RAIN GAUGE.

November 5th	0.14	inches.
" 6th	0.20	"
" 13th	0.07	"
" 21st	0.06	"
" 29th	0.06	"
" 30th	0.78	"
Total	1.31	"
Total rain of the season up to date	2.17	"

LILIUM BLOOMERIANUM.

THE California Horticulturist

AND FLORAL MAGAZINE.

VOL. IV. JANUARY, 1874. No. 1.

MORE VARIETY IN OUR FLOWER GARDENS.

BY F. A. MILLER.

[Continued.]

In my last communication on this subject I enumerated certain trees and shrubs which we do not so frequently meet with as their merits entitle them to, and I will now say a few words in favor of flowering plants, which ought to be more generally cultivated in our gardens.

There is no doubt that Fuchsias and Pelargoniums will for the future be as popular with us as they have been in the past. They thrive admirably everywhere, and under any kind of treatment. Here in San Francisco they flower freely, both in summer and winter, and give a most cheerful appearance to our gardens. It is not surprising, therefore, that they are cultivated so extensively. I would, however, suggest that some of the newer varieties should be introduced, and some of the older and less meritorious kinds be discarded. Such sorts as Smith's Avalanche, Brilliant, Duchesse de Gerolstein, Extraordinary, General Grant, Lucretia Borgia, Lizzie Haxson, Wave of Life, Tower of London, Rappee, and Talma are really magnificent Fuchsias, and can now be recommended as adapted to our soil and climate. They are far superior to most of the old sorts that have been introduced here during the past ten years.

Of Roses we can not have too many; they will always form the chief attractions in our gardens. However, there are many sorts cultivated which might be replaced by much better varieties of later introduction, and which can now be obtained of some of our larger nurseries. Some of the new Tea Roses are really excellent, and bloom freely throughout the winter season.

The Pink is also one of those popular flowers which are always admired, and give general satisfaction. Our gardens contain some splendid varieties, better, perhaps, than I have seen anywhere else.

The varieties of Verbenas generally cultivated are of poor quality, and I think that more attention should be paid to the introduction of better sorts. The large auricula-flowered varieties are of very excellent quality and habit, most of them deliciously fragrant, of brilliant colors, and with large yellow or white eyes. Some of our nurserymen keep on hand an assortment of the

best varieties, and every one has an opportunity of obtaining them. They are required in every garden, and as they flower abundantly with us, both in summer and winter, they should be considered important features in the borders. There are from twenty to twenty-five new varieties introduced of late, every one of which is a gem of its kind.

While Roses, Pinks, Pelargoniums, and Verbenas may form the leading features in our gardens, other plants are wanted to furnish contrast, variety, and completeness, without which our gardens can not give the recreation, enjoyment, and effect, for which they are created.

The plants which are particularly wanting here are flowering bulbs and roots of all kinds, which now are considered indispensable in the East and in Europe; and I would certainly urge their introduction into every garden, for several reasons. First of all, our climate is favorable to their growth; secondly, they can remain undisturbed in the ground for a number of years, (very few sorts excepted); thirdly, we can have most of them in bloom in winter as well as in summer; and fourthly, their qualities are most desirable for beauty of flowers, fragrance, and pleasing effect.

A few varieties of the Gladiolus we meet with here and there, mostly of the old scarlet sorts, which amount to very little, compared with the elegant spikes of exquisitely colored flowers produced by the newer varieties lately offered for sale. I plant some of them every month, and have the grand satisfaction of seeing them in bloom at all seasons of the year. The same method could be carried out in every garden with the same success, only on a smaller scale. From thirty to forty varieties can now be obtained at a small expense in this market. If three of these were planted every month, their flowers would prove a continued ornament to the garden; and as bright flowers are generally very scarce during our winter months, they are particularly valuable then. As cut-flowers for vases and table bouquets, they are invaluable, as every bud will develop itself in perfection if placed in water.

Hyacinths ought to be grown much more extensively, and I would recommend early planting—the roots to remain in the ground undisturbed for several years.

The Amaryllis is a magnificent flowering bulb, and is rarely met with here. If grown in the garden, most of the varieties will flower abundantly.

The *Agapanthus umbellatus*, generally known as a greenhouse plant, is perfectly hardy here—at least in San Francisco and surroundings—and in the cooler districts of California its roots would not suffer in winter, even if the foliage should perish. Its charming clusters of blue flowers are very ornamental and most useful for bouquets. No garden should be without it.

The *Dielytra spectabilis*, (Bleeding Heart) is another exquisite bulbous root, and well known, although but very few plants are found in California. It is perfectly hardy, and succeeds well in our soil and climate. Once established, it forms large clumps of roots, and produces a profusion of flowers during spring and early summer. Its graceful racemes of heart-shaped pink flowers are most pleasing ornaments.

[To be continued.]

A Pretty Annual.—Though rarely met with in gardens, one of the most fragrant of annuals is the dwarf and curious *Schizopetalon Walkeri*. When sown in spring it blooms in June or

July, and its flowers are deliciously scented, even more so than Mignonette; a few flowers in a tumbler of water being sufficient to scent a room for several days. So says the *Garden*.

COLORS IN PLANTING.

In the modern American gardens, our latest and strongest aims now seem to be, to gain *color*, as well as beauty of forms in our plants. Subtropical gardening is exactly adapted to our climate; our brilliant skies and glorious sunny weather give a possibility and appropriateness to the use of high-colored foliage plants; and trees of rich hue become *mammoth paintings* on our lawns and in our flower gardens. In the *Garden*, a correspondent discussing this subject, says justly, *garden scenery is brightened immensely by means of color*. "The leaves of the new-born summer, the matured ones of autumn—how much they owe to delicate and multitudinous coloring! But for freshness of touch, that neither painting nor wood-coloring can reproduce, commend us to the bursting buds of April—the newly unrolled beauty of May leaves. Among these, what more beautiful than the Beech and the Purple-leaved Filbert? There are two more varieties of each, one larger and of more substance than the other. In fact, of the Beech there are many varieties, for the red reproduces itself from seed, and in a batch of seedlings there are tints of many degrees, ranging from dull greens to those of fiery glow. We have, however, never yet seen a seedling to equal in brilliancy the common variety, which is mostly increased by grafting it on the common Beech; and another with larger leaves, that keeps its color later in autumn. But Purple Filberts are easily multiplied by means of suckers—a mode of increase not always to be depended upon in Purple Beeches on their own roots. Beeches seldom produce suckers, yet they occasionally throw little bunches from the surface roots, and I have seen these green on purple seedlings, and purple on grafted plants—rather a singular circumstance. The Filbert is also so fully purpled over and through, that we never remember to have seen it throw out a green sucker. It is most useful in shrubberies, contrasting admirably with such plants as Lilacs, Laburnums, Guelder Roses, Deutzias, etc. It seems actually to glow with the intensity of its coloring, and is to the fore and middle ground of shrubberies what the taller Beech is among other trees. The Beech has a soft fluffiness and semi-transparency about it that the Filbert, glorious as it is, lacks; and the richest coloring treat—a very feast of glowing magnificence—is spread around every far-reaching Purple Beech. One of the best modes of enjoying it to the full is to put the trees between the beholder and the sun, and look through the leaves toward him soon after he has risen, or a few hours before his setting. The purple is thus flooded with golden magnificence, and each leaf and branchlet is set off to admirable advantage. Purple Beeches are especially rich as foreground to masses of green Oaks, Elms, or other deciduous trees; or set against Larches, Birches, or Limes, the light foliage of these or the flowers of Service-trees—wild Crabs, Pears, Apples, etc.—give a deep tone to the glowing purple. Further, the young leaves especially contrast admirably with most conifers; though it must be admitted that the darker hues of the Purple Beech in autumn become too sombre accompaniments for most Pine-trees. The place for the Purple

Beech is the background of shrubberies, home plantations, belts, the park, and even the woods and forests; for the Purple Beech is not weakened by its color. It grows as fast, and forms timber neither better nor worse than any other Beech, and assuredly its more general use would give a glow to forest scenery that would add much to its beauty, and to the breaking of its dead monotony of color as well as form. Clumps of Purple Beech here and there would change the face of our landscapes and render them more agreeable, without their being one whit less profitable. What with our want of direct sunshine, and our dripping clouds, and leaden skies, we have often a deficiency of cheering color, and there could hardly be an easier and cheaper method of supplying this want than the planting of our copses with groups of Purple-leaved Filberts, and our woods with Purple Beeches.—*The Horticulturist.*

New Shrubs.—The Dwarf Almond, *Amygdalus nana*, is a deciduous shrub of low growth, which, in the opinion of the florist and pomologist, should oftener find its way into ornamental shrubberies. It is, however, one of the old-fashioned things which seem to be overlooked nowadays. M. Carriere has recently described (*Rev. Hort.* 1872, 340) two new varieties, which he calls *A. n. microflora* and *A. n. campanuloides*. *Amygdalus nana microflora* is a branched bush with sub-erect ramifications, having the leaves like those of the type, oblong lanceolate, and the flowers small, spreading, with narrow petals, often more numerous than usual, thus showing a tendency to duplication, of a lovely rose, each marked at the top, exteriorly, with a deep spot.—*The Horticulturist.*

LILIUM BLOOMERIANUM.

BY A. KELLOGG., M. D.

We extract the following description of this Lily from the Proceedings of the California Academy of Sciences, of May 5th, 1873. The illustration accompanying this issue of the Horticulturist is a faithful representation of this flower:

"Bulb purple, scales as in the original species, but bulb often compound, three to six inches in diameter. Stems one to five from a single or compound conglobate bulb; five to seven or eight feet high, sub-glabrous or slightly striguloid scabrulose above, more or less purplish tinged; flowering at the summit only; three to eight blossoms on somewhat erect-spreading peduncles, three to six inches in length, bent down and shortly curved at an abrupt angle beneath the flower, rarely bracted, except at the base. Leaves in whorls of five to ten, sessile, lanceolate, four to four and a half inches long, three-fourths to one inch in breadth, five-nerved, glabrous above, lamina densely sub-discoid scabrulose beneath, and scabrous along the mid-rib below, margins waved scabrous, tips and upper margins usually purplish tinged. Flowers stiffly nodding. Campanulate, sepals many-crested at the base chiefly on the inner series, three outer sepals plain above, at length more revolute than the inner series, claw one-fifth to one-sixth the blade; inner sepals somewhat broader, claws much shorter, one-ninth to one-tenth the blade, or longer than the mountain form; a double folded medium elevation marks the face, and a truncate slightly grooved ridge along the back the entire length; base reflexed, the upper two-thirds gently recurved and aspiring aloft; all the sepals at the margins above and apiculate tips papillose. Color light orange

ground, studded with ocellate blotches as if spattered with a dark purple pigment that had spread and tinged an aureola around the spots, the lower third or base being spotted with more numerous darker or nearly black and clean well-defined dots; stamens shorter than the style; the curved ascending style slightly streaked with broken purple lines, apex triangular-clavate, stigma undivided.

"There are two varieties of *L. Bloomerianum* found growing together in the interior; one with bold, distinct, and well defined dark dots and spots, with longer sepals more attenuated above; the other with ocellate or nipple-like blotches, being broader and of more continuously oblong form. The same distinction into masculine and feminine form is observed among these maritime Lilies. The Island Lily has slightly scabrulose stems, and more discoidly-scabrulose under surface to the leaves, and are always scabrous along the mid-rib beneath; whereas the Sierra Mountain Lilies are mostly glabrose—sometimes pubescent on both mid-rib and nerves, but never scabrous; they also sport more leaves in the whorls, etc.; these also are broader, hence the greater number of nerves; the numerous flowers are usually, if not always, alternately distributed on longer and more divaricate peduncles. The slightly purplish scales of those of the mountains become very remarkably purple on the islands. The enormous gregarious bulb, with its numerous stems, is a peculiar feature not observed in the thousands of specimens hitherto examined.

"Found by Mr. W. G. W. Harford, of U. S. Coast Survey, on Santa Rosa Island, growing on the west side of deep sheltered ravines, trending nearly north and south, hence, only where they get the *morning sun*; but are shaded from the ardent meridian or post-meridian heat, which burns the leaves and kills them out on opposite exposures of the same locality. They are found growing in loose gravelly detritus of sweet freshly made soils, on the high and dry well-drained or leaching benches, or steeper declivities, where, thus sheltered, they thrive the best, mid fogs and fierce cold winds.

"We find no evidence of any proper description of this Lily. The catalogue refers to scores of new Lilies from this coast, among which is *L. Humboldtii* It is proper to say, this has been kindly figured and sent to me by Max. Lichten, of Baden; but that drawing is certainly our *L. pardalinum;* so far as our translation of the remarks of the author enables us to judge—together with the excellent painting—there can be no doubt as to the correctness of this conclusion."

New Weeping Tree Fern.—This is one of the most beautiful of all Tree Ferns. It is a native of South Africa—is rather difficult to import in good condition, as the trunks have to be brought some hundreds of miles down the country before they are shipped, and frequently suffer on the journey. In habit it is perhaps the most graceful of all Tree Ferns, its ample light-green feathery fronds sweeping elegantly downwards. It may be grown in an ordinary greenhouse or cool conservatory, and, when fully developed, forms a most attractive object. It grows freely in the usual compost, making fine pendant fronds from four to six feet long, and from two to two and a half feet in breadth in the widest part. The stout reddish purple mid-ribs are tubercled, and furnished at the base with a profuse quantity of slender chaffy scales. The trunk is dark-colored, and nearly a foot in diameter

in the widest parts, the imported specimens varying from five to ten feet in height.

SHRUBS FOR THE LAWN AND DOOR-YARD—CARE NECESSARY.

The art (for it is an art) of pruning and keeping shrubs in neat shape is yet to be learned by most of the ruralists of the country. We have known of cases of people so stupidly ignorant that they pruned Spiræa, Deutzia, and Dwarf Almond, before the spring growth commenced, and then wondered why they never got a blossom. They had not yet learned, or at least observed, that the blossoms are borne almost entirely upon last year's wood before the coming of the leaves. The best way of growing shrubs nowadays is in groups or well-planted masses, thus giving a mutual protection, and effective display. But, as *The Country Gentleman* observes:

"When they are grown as isolated plants in front door-yards, it is necessary to make them hold their heads up, and look trim and tidy. Every day we see examples of such bushes tied up in compact bunches, with a stake to secure greater uprightness; but towards April it is common to see stake and all dangling helplessly over. Then they are straightened by re-setting the stake, and by cropping the disheveled tops by barbarous pruning-shears or knife. This treatment is senseless. It directly defeats the main object, which we suppose to be the securing of a plant of neat figure, robed in luxuriant leaves, and brightened with well-expanded flowers. For it is obvious that not one of these crowded shoots can open its leaves to the light, and as they were similarly suffocated last summer, they have nothing laid up—no means nor substance from which to produce good flowers this year, even if there were room to display them. Next summer they will, of course, be barren too, if the leaves are given no room to turn. But the bush will do something, so long as it has roots safe and sound, and as it can do nothing else well, it will go back to the primitive course of throwing up fresh sprouts from the ground, thus adding to and aggravating the crowded condition above. The right treatment in such a case is to use a strong, narrow knife, or saw, or sharp-pointed pruning shears, such as French gardeners use, or a suitable chisel and mallet, and cut out all the old exhausted shoots, and all the young ones that are weak or unripe, close at the surface wherever possible, or beneath it, for neatness' sake, leaving only those which have been first selected as the best placed. Separate these by tying or spreading, using a light hoop, if necessary, to secure a well-balanced and evenly distributed figure, with full room around each shoot for its flowering branchlets and leaves, and full access of light and free air throughout. If a stake seems needful, it will not look amiss, provided it is set erect and centrally, even although it may be thick and tall. In that position it may be even taller than the shoots. The shoots left to bloom should not be shortened further than to take out ill-turned, unsymmetrical branchlets, or slender ones incapable of bloom. If this care is supplemented by a trifling attention, in May or June, to pinch out the sprouts that will appear numerously then, leaving only the suitably placed few that are wanted to fill vacancies, or to renew good blooming canes, according to the nature of the plant, the fullest rewards of successful training will be attained. Some plants make a rank growth from the tops in August or September, and in their case

a pinching of the ends of wild or wanton shoots is advisable. Climbing Roses, Raspberries, Currants, Gooseberries, etc., class under the above rule of treatment. When shrubs are grouped in masses they are not tied up in any formal figure. Pendent branchlets or low growing sorts placed in front of erect ones hide the stems, and present to the sight only leaves and flowers, as in natural boscage."

Oldest Worked Wood in the World.—Probably the oldest timber in the world, which has been subjected to the use of man, is that which is found in the ancient temples of Egypt. It is found in connection with stone work which is known to be at least four thousand years old. The wood, and the only wood used in the construction of the temple, is in the form of ties, holding the end of one stone to another in its upper surface. When two blocks were laid in place, then it appears that an excavation about an inch deep was made in each block, into which an hour-glass-shaped tie was driven. It is therefore very difficult to force any stone from its position. The ties appear to have been the Tamarisk, or Shittim wood, of which the ark was constructed, a sacred tree in ancient Egypt, and now very rarely found in the valley of the Nile. These dove-tailed ties are just as sound now as on the day of their insertion. Although fuel is extremely scarce in that country, these bits of wood are not large enough to make it an object with the Arabs to heave off layer after layer of heavy stone for so small a prize. Had they been of bronze, half the old temples would have been destroyed ages ago, so precious would they have been for various purposes.—*Journal of the Farm.*

HOME TREES AND FLOWERS.

BY R. E. C. STEARNS.

If you are fortunate enough to possess a homestead, consider the importance of devoting a small portion of your time and money to the adornment of it. With a very small expenditure of the latter, and the judicious use of such leisure moments as may occasionally be spared from the hurry of business, the homestead grounds can be made to "blossom like the rose."

The ornamenting of the grounds surrounding a house is of as much importance as the embellishment of the interior, and both are alike worthy of consideration, and should never be neglected. Make the homestead, in-doors and out, the most attractive place within the reach of your children, and the boys will be less likely to become vicious, or the girls to go astray.

The beauty of a place depends not so much upon showy buildings as upon green shady trees and climbing vines. The roughest whitewashed cottage, surrounded by trees and flowers, presents a beautiful appearance, and the costly mansion without these looks desolate and unattractive. The reason why the houses and villages of New England are so pleasant is due to the numerous trees which surround them, and with which the streets are lined. Many an old farm-house, unattractive in itself, is rendered picturesque by some grand old Elm. All the expense incurred, all the labor expended, will repay you a hundred-fold.

Home! Trees! Flowers! A blessed trinity! Flowers! ever pleasing the eye with their diversity of form, and regaling the nostrils with delightful perfume! Flowers and trees! Who ever forgets the trees and flowers which grew about

the old homestead—"the cot where I was born?"

"It stood 'mid the shadow of green dark trees,
The cot that my childhood knew;
Around it the violets, the children of Spring,
And the early Roses grew."

Wherever you have a spare corner in your garden plant a tree; you will never regret it. You may live to enjoy its shade, and you will have done something to beautify the earth. If nothing more, the morning song of the bird that sings among the branches will be your benediction.

EUCALYPTUS GLOBULUS,

ITS USE IN IMPROVING THE SALUBRITY OF MARSHY AND MALARIAL DISTRICTS.

The many very interesting accounts which have been published with regard to the *Eucalyptus globulus* do not seem to have exposed all of its values. And we find in *Comptes Rendus* of October 6th a note presented to the French Academy of Sciences by M. Gimbert, in which he describes another value equally as great as those with which all are so familiar. From reports received from various reliable sources, it seems to have been determined that in localities where the Eucalyptus flourishes there has been a complete disappearance of intermittent fevers. "A tree," says the author, "springing up with incredible rapidity, capable of absorbing from the soil ten times its weight of water in twenty-four hours, and giving to the atmosphere antiseptic camphorated emanations, should play a very important part in improving the health of malarious districts." It has the property of absorbing directly and rapidly the water of shallow marshes, thus preventing fermentations which are produced, and paralyzing the animal miasma proceeding from them which might arise from them. The predictions with this regard, which were made in 1869, have in all cases been realized. The author furnishes a few of the numerous results, which are very interesting.

The English were the first to experiment in their sanitary plantations in Cape Colony, where they were eminently successful. Two or three years were found sufficient to change the climatic conditions, and the aspect of the malarious districts of their possessions.

Some years ago the Algerians took occasion to spread the Eucalyptus throughout the French possessions in Africa, and the following are some of the results obtained, as communicated by M. Trottier:

"About twenty miles from Alger, at Pondouk," he says, "I owned a property situated near the river Hamyze, the emanations from which produced intermittent fever among the farmers and their servants every year. In the spring of 1867 I planted upon this farm 13,000 plants of the *Eucalyptus globulus*. In July of that year, the season in which the fevers appear, the farmers were completely free from them. In the mean time the trees had scarcely attained a height of more than eight or ten feet. Since that time the settled population has been entirely free from fevers."

Fourteen thousand Eucalyptus trees were planted upon the farm of Ben Machydlin, in the vicinity of Constantine. It has for several years past been noted for its insalubrity, being surrounded with marshes throughout the entire year. The trouble entirely disappeared, and the soil became perfectly dry in five years. The atmosphere is constantly charged with aromatic vapors, the farmers are no longer troubled with disease, and their children are bright with health and vigor.

The operations of the manufactory of Gué in Constantine were rendered wholly impracticable during the summer on account of the pestilential emanations from the marshes with which it was surrounded. M. Saulier conceived and put into practice the idea of planting a large number of Eucalyptus trees in these marshes, and in three years about twelve and a half acres of the marshy soil were converted into a magnificent park. The water completely disappeared, and the health of the workmen has since been in good condition.

In consequence of the large grove of *Eucalyptus globulus* on the farm of Maison-Carrée, which is situated in a district in which the inhabitants formerly succumbed to the malaria, similar hygienic revolutions have taken place.

It is stated by land-owners in Cuba that there, also, the paludal and telluric diseases have disappeared from the malarial districts where the Eucalyptus has been cultivated.

According to Ramel, Australia is very healthy where the Eucalyptus flourishes, and unhealthy where the tree is not found.

On the banks of the Var, near the entrance of a railroad bridge, is situated a garrison-house, near which earth-works were thrown up to dam the river in order to build the bridge. The malaria arising from it made it necessary to change the guard each year. Two years ago, M. Villard, the engineer in charge of that section of the road, planted forty trees in the vicinity of the building, and since that time this post has been the most healthy in the country.

These evidences fully establish the fact that the *Eucalyptus globulus* has a good effect in preventing the spread of malarial diseases, and that it may serve decidedly practical purposes in this particular. Throughout our entire South and Southwest many valuable enterprises have been wholly impracticable from causes stated above; and if the examples thus set before us were followed throughout the South, there is no doubt that many of the dismal, swampy, and marshy districts, hitherto entirely worthless, may be transformed into beautiful, pleasant, and healthy sections.—*Monthly Report of the Department of Agriculture.*

A Rampant Wisteria.—The foreign journals speak of a beautiful Wisteria—recently in full bloom—covering the front of a well known hotel near Slough, in England, and running around each end for some distance, making altogether a length of about 150 feet. It was planted against a strong iron support of the veranda, which support it long since lifted bodily from the ground, and broke in pieces with the seeming ease with which a man would break a lucifer match. A Laburnum grows against the building on one flank, and the contrast between the clusters of blue and yellow flowers is declared to be "perfectly charming."

Potash in Plants.—A correspondent of the *Country Gentleman* gives the following table, showing the amount of potash contained in 1,000 lbs. of ashes made by burning different kinds of wood: pine, ½ lb.; poplar, ¾ lb.; beech, 1½ lb.; maple, 4 lb.; wheat-straw, 4 lbs.; corn-stalks, 17 lbs.; oak-leaves, 24 lbs.; stems of potatoes, 55 lbs.: wormwood, 72 lbs.; sunflower stalks, 19 lbs.; oak, 2½ lbs.; beach bark, 6 lbs. The remaining portion of the ash, consisting of carbonate and phosphate of lime, iron, manganese, alumina, and silicia, is an excellent fertilizer.

UPON THE TERM "NATURAL," AS APPLIED TO LANDSCAPE.

BY E. J. HOOPER.

[Continued from December Number.]

A landscape may be considered as natural—we will instance Napa Soda Springs, by way of example—when we find in it all those productions which we meet with in a forest, except its redundancies. All the indigenous plants must be there, though their condition may be improved by trimming and lopping off superfluities, thus reducing the dense forest to a less crowded entanglement than in the unadapted wilderness. The trees may be allowed wider spread, and the shrubbery may grow more independently outside of the thickest woods, instead of forming only a meagre skirting of undergrowth. The hand of man may assist the plants in obtaining their full development without excluding any species. The birds and other animals that are the true tenants of the wildwood must be present and be preserved, as well as some domestic animals, whose appearance in moderate numbers is the best evidence that the harmony of Nature has not been too greatly disturbed. We find in the primitive forest an entangled and crowded growth that renders the charms of Nature unavailable to us, and many places inaccessible. A great entanglement obstructs our passage and interferes with the course of vegetation. Then, the removal of these impediments does, in truth, render Nature more natural, as a plant becomes more natural when removed from a dark cellar into the open air. So long as no species of plant is destroyed which would be found in the place if it had not been subject to culture, and so long as each plant and animal enjoys its native habitat and circumstances of growth, the landscape has not been *denaturalized* by the removal of any excrescences.

The word *natural* is not sufficiently precise to be used in philosophical discussion. I should prefer a more specific term, which has not been generalized into unmeaningness by universal inappropriate use. The term should express a combination of all the properties and characteristics of a wild scene, divested of its inconveniences and of everything that interferes with the growth and development of all those plants which Nature is struggling to develop, from the minutest Moss, or Fern, or Lichen, to the tallest Pine, or the widest-spreading Oak. Just so far as we improve the development of the indigenous plants and animals, without deranging their natural proportions and relations to one another, so do we improve Nature without destroying her characteristics. Nature, when left to herself, admits of an excessive crowding of species, as was exemplified in the Springs above alluded to, before the improvements were made; and it is only in occasional situations that she is enabled to afford any one tree or other plant its full proportions.

It may be averred, that a scene is more natural in which everything has grown up with these imperfections; but we may with the same propriety contend that the dense and stived population of a crowded city—the Chinese quarters of San Francisco, for example—only half developed in their physical proportions, from the want of light and fresh air, are more natural than the well-developed inhabitants of the country, or the less crowded and better portions of the cities. It seems to me that we may *denaturalize* a place in the two following ways: Either by depriving it of some of the individual species and groups that belong to it, or by ar-

ranging them in an order that can only be attained by art. Nature has made certain groups to harmonize with one another, and to depend on each other; and if we too artfully disturb these relations, we do violence to her system. And though there may be certain noxious plants — the Poison-oak, for instance, pretty as it is — and sundry animals, which must for our own safety be extirpated, the offense we thereby commit against the order of Nature is a necessary deviation from a general principle.

Some of the English artists in landscape, and their followers, have omitted to take all these things into consideration, and have believed themselves pupils of Nature, when they have simply imitated her irregularities, in the arrangement of the different objects in their grounds, while they have omitted to copy her other graces or characteristics. It is true that Nature does not plant her herbs, trees, and shrubs in rows, or according to any mathematical lines or figures; but it does not follow that one who plants in the same irregular manner, produces a work that is modeled after Nature. As well might we call him a mathematician who places his figures in mathematical columns, while the figures have no relation to one another, and lead to no result. We must form our opinion of the character of any tract by the decision of Nature herself. If we find within it all those indigenous plants which would have been found there, had the grounds never been too greatly disturbed, and all the indigenous birds and animals accepting it as their home, then will we be justified in believing Nature to be truly the presiding goddess, receiving the homage of all her creatures.

The little solitary birds that flee the park and orchard, and reside only in the woods where certain of their natural conditions still remain, will not inquire whether the planter has arranged his trees or shrubs in rows, or scattered them at random; but whether he has left the wild bushes, grasses, and vines in which they are accustomed to nestle, and the wild fruits and seeds that afford them sustenance. Howsoever geometrically the trees and shrubs may be arranged, if they are attended by the same groups and species that form their bedding and undergrowth in the wilderness, the tract thus arranged is more natural than a park consisting only of selected trees and lawn, without any undergrowth of native plants. In the one case, every natural circumstance is present, except the irregular planting; in the other case, every natural circumstance, except the irregular planting, is absent. Those improvers, therefore, who flatter themselves that they are copyists of Nature when they introduce the custom of irregular planting and of curved and straggling walks, while the surface is all smooth lawn and the walks neatly graveled, are as far from Nature as a lady florist, who, for the same reasons, scatters flower-pots in wild irregularity over her parlor carpet.

A straight wagon-road is frequently made by our farmers through a level piece of woodland, and is then left to Nature, who embroiders its sides with all the herbs and flowers that habitually inhabit such places. It never seems to me, when strolling through one of these rustic avenues, that it savors any less of Nature on account of its direct course; although, if very long, a walk in it is not so pleasant as in an irregular or winding avenue. Both are artificial, for Nature makes no paths at all, unless we except the tracks of wild animals. But the plants arranged in almost straight lines in the one case, and in

curvilinear lines in the other, are all equally natural, because they are in such case the spontaneous growth of Nature.

Those situations in which Nature has been subdued by man, and afterward allowed to resume her sceptre, are of all places the most delightful, when she has completely re-established her empire over them. Such, I am confident, is their influence upon the majority of sensitive minds; not that these have more sympathy with Nature than with humanity, but that they enjoy more happiness among the simple scenes of the natural world than among the ambitious works of art. Hence comes that serene pleasure that always attends us when we behold the rural deities resuming their habitation in grounds once despoiled by man, and making known their presence by knolls tufted with moss, by plats of wild flowers, by tangled bowers, and the voice of the solitary bird that flees the haunts of luxurious wealth and sings only to the children of the rural regions.

NOTE ON ADIANTUM FARLEYENSE AND BEGONIA SANGUINEA.—*Adiantum Farleyense* is a native of Trinidad; was found on the estate of Farley Hall, thereby its name; was sent to England by a ship from Barbadoes. My plant, now two feet high and two and a half feet wide, came from its native locality in Trinidad, and has not the least affinity to *A. tenerum*, which is not, I believe, found on the same island.

Begonia sanguinea takes its name from the blood-colored leaves. The flowers are pure white. Was introduced about forty years ago from Brazil. It is a very attractive window-plant, and should be in every collection, large or small.—*R. Buist, Sr., in Gardener's Monthly.*

THE CULTURE OF THE CINCHONA.

The importance of an enterprise looking to the growing of the Cinchona-tree in sections of the world other than South America, can not be overrated. It is a question equally interesting to the botanist, the pharmaceutist, and votary of economic science. In the last number of *Nature* there is an excellent account of the various efforts made to propagate this tree in India and Ceylon, from which we make the following brief summary:

The Dutch Government took the initiative steps, directing their efforts to the introduction of the tree in Java. The first Cinchona-trees sent out to that colony were specimens of the *C. calisaya* raised in Bolivia. In 1852 the Dutch government sent a Mr. Hasskarl on a mission to South America to procure plants and seeds. The collection made was divided into two parts, one-half being sent to Java direct, and the remainder to Amsterdam. In 1856, there were 260 plants on the island of Java. Many serious troubles attended the early efforts to raise the trees, arising from insects, wild animals, and badly chosen localities on the island. At last, in 1860, success crowned their labors, and in 1863 the total number of trees in Java numbered 1,150,180. It was found that the *C. calisaya* in Java was the best adapted for the locality, the *C. Pahudiana* containing much less of the alkaloid. The efforts of the British Government were commenced as early as 1839. In 1852 the East India Company sent to the British consular agents in South America for seeds of the various species, but it was not until 1859 that the matter was fully taken in hand. During this year Mr. Markham proposed a fourfold expedition to South America, and the plan being sanctioned

by the Secretary of State for India, the scheme was carried out. Expeditions were sent to Bolivia, Caravaya, to Cuerica and Loxa in Ecuador, and to New Grenada and to the Chimborazo districts. The illness and privation suffered by the searchers after these trees rendered the task a difficult one. At last a fair stock was collected, but most of the plants were killed during the Red Sea transit to India. Once in India, however, the few that survived throve immediately. At Ootamacuna a station was established in 1860, and in 1861, 1,128 fine young Cinchona-trees were reported as alive. In 1863 the number was 248,166.

The efforts of the British Government have not been directed alone to acclimatize the Cinchona in India, for in Ceylon in 1863 they had 20,000 young trees.

In referring to India matters (Blue Book of 1870) in the Bengal and Madras Presidencies, no less than four millions and a half Cinchona-trees are reported.

Experiments with the Cinchona have been tried in the South of Europe, in the Caucasus, in the Brazils, Philippines, Australia, and Jamaica, but not of sufficient extent to have any significance.

Of all the fine species of trees, the following seems to be the results as to alkaloids: *C. calisaya*, only a small proportion realizes expectation in its yields of quinine; *C. Hasskarliana* (called a hybrid), which appears to be of little value in respect of alkaloids; *C. Pahudiana*, deficient in the same particulars, but producing a bark which finds a ready market for pharmaceutical purposes in England; *C. officinalis*, which, in British India, appears to be the most generally satisfactory; and *C. succirubra*, which, notwithstanding certain exceptional samples, has not turned out altogether well. — *Forest and Stream.*

Climbing-plants for In-door Decorations.—There is nothing which will do more to beautify and give a home appearance to a room, than a few nicely arranged climbers, properly trained over windows, picture frames and glasses. Many seem to have imbibed the idea that such plants require great art and skill in their production and proper treatment; but such is not the case, for no plants are more readily taken care of than these. My favorites are the Maurandias, and particularly the M. Barclay vine.

If raised from the seed, the sowing should not be later than the middle of June, but cuttings may be put into proper soil in August, which will make good plants for winter growth. Layers may sometimes be put down early in September, which, by plentiful watering, may make good plants. My best out-door specimen is now fourteen feet long, and will cover at least thirty square feet of surface. The colors vary with the variety, and are matters of taste. Next in order of favoritism comes the *Cobœa scandens*, or Mexican vine. There is some difficulty in starting the seeds of this plant in the open ground, though, with care, it can be done. From five seeds planted, this season, I have three fine plants for winter flowering. For filling pots for winter climbing vines, a mixture of equal parts of garden soil, sand, and leaf mold is best, and occasional waterings with liquid manure should be given. Some succeed very well with many of the varieties of Passiflora, or Passion Flower. The selection will depend upon taste as to color, but my favorite would be *P. cerulea*, or *P. pernissa*.— *Journal of the Farm.*

LOUIS AGASSIZ:

THE INVESTIGATOR, THE TEACHER, THE PHILOSOPHER, AND THE BELIEVER.

Born in Motier, Switzerland, May 28th, 1807.
Died in Cambridge, Mass., December 14th, 1873.

THE FIFTIETH BIRTHDAY OF AGASSIZ,
May 28, 1857.

BY H. W. LONGFELLOW.

It was fifty years ago
In the pleasant month of May,
In the beautiful Pays de Vaud,
A child in its cradle lay.

And Nature, the old nurse, took
The child upon her knee,
Saying: "Here is a story-book
Thy father has written for thee."

"Come, wander with me," she said,
Into regions yet untrod;
And read what is still unread
In the manuscripts of God."

And he wandered away and away
With Nature, the dear old nurse,
Who sang to him night and day
The rhymes of the universe.

And whenever the way seemed long,
Or his heart began to fail,
She would sing a more wonderful song,
Or tell a more marvelous tale.

So she keeps him still a child,
And will not let him go,
Though at times his heart beats wild
For the beautiful Pays de Vaud.

Though at times he hears in his dreams
The Ranz des Vaches of old,
And the rush of the mountain streams
From glaciers clear and cold;

And the mother at home says, "Hark!
For his voice I listen and yearn;
It is growing late and dark,
And my boy does not return!"

CULTIVATION OF DATURA ARBOREA.

The *Datura arborea*, sometimes called *Brugmansia*, is a rapid grower, with large foliage. There are several varieties. The one generally found in our greenhouses is called *Datura Knightii;* it has interesting double white funnel-shaped flowers, and very fragrant, which it bears profusely. The bloom is, however, of rather short duration; still they are worthy of a place in every greenhouse. Can be stowed away under the stage, or in any odd, dark corner during the winter months. They can be propagated from eyes. The whole of the last season's wood can be used as you would a grape vine, that is, with half an inch of wood to each bud, which can be placed in small pots, or a number in shallow pans or boxes, as most convenient to the cultivator. If a gentle bottom heat is available they will root much quicker. They must be kept moist, but not wet. The young plants will do well during the winter, if a temperature of from 50° to 55° can be maintained. Early in the spring they may be potted into four-inch pots, and started into growth in the hothouse; they will soon make rapid growth if assisted with bottom heat. From the time they are first potted, they must be constantly attended to in that respect. As soon as the roots have reached the sides of the pot, shift into larger size ones till they have reached fifteen or eighteen inches; large plants are required. If you wish to grow dwarf standards, put stakes to them, taking care to keep the stem perfectly upright, then the side shoots must be pinched off, leaving three or four at the top. When the plant has attained the height you wish—from two to three feet is a convenient height, and looks well—pinch out the top. After this is done, the three or four side shoots not rubbed off will grow fast, and are the foundation of the head. These shoots can each have their terminal bud pinched out in the same way as you did the top of the plant. After they are three or four inches long they will then throw out several shoots each, and quickly form a head. If any cross-growing shoots show themselves, cut them clean away, or any other shoots that would tend to crowd the plant. The main shoots must not be stopped after this, but allowed to grow till they produce flower-buds; they had then better be removed to the coolest part of the house for a few days, previous to their removal to the greenhouse or conservatory, where they will continue to flower for a long time, filling the house with their powerful fragrance. They grow best in a compost loam, (sod cut from an old pasture), Jersey peat, and cow-dung, about two parts of the first and equal parts of the latter. If sod from a pasture is cut and laid by until it is well rotted, it is then enriched with vegetable matter, and will then grow anything. Plants of a succulent nature, like the Datura, will *grow better* if a portion of the peat and cow-dung, or leaf mold is added. If the plants are to be placed on the lawn, or any other conspicuous place about the grounds, protect them as much as possible from the wind, which, as the foliage is large and brittle, is very liable to be broken. They may be planted out about the time the ordinary bedding subjects are put in their summer quarters, taking care to support them with stout stakes and neatly tied. They can either be plunged in their pots, or turned out.

Before frost appears, they must of course be taken up with a ball of earth, and packed closely under the stage (if room is an object) upon the ground,

keeping them without water; and after they have dropped their leaves, they may be pruned, top and root, then potted in fresh soil prepared as stated, slightly watered, placed in the back part of the hothouse or greenhouse until the buds commence to grow, then at once remove the light.

In pruning the head cut in rather close to the stem, that is within two or three buds; you can then select the best placed ones that will make the handsomest head, cutting the others entirely away. All they will require this season is to stop any shoots that show a tendency to become more vigorous than their fellows.

The *Acarus tellarius*, or Red Spider, is the greatest pest, and care must be taken to frequently syringe the plants, more particularly the under-side of the leaves. They can not exist where syringing is well attended to. Water is death to the Red Spider.—*Thos. F. Webb in the Gardener's Monthly.*

Vicia Stativa—(Common Vetch, or Tare), 17th class and 4th order of Linnæus; *Diadelphia decandra*—a valuable herbage plant. Some consider the winter variety a distinct species, but Prof. Martin proved by cultivating both, that they were not even very distinct varieties. The winter variety is sown in September and October, and the summer at different periods, from February to June. For successive cuttings, the soil requires to be in good condition; otherwise they will produce but a poor crop of herbage. On a good soil they will yield ten or twelve tons per acre, which is found to be excellent for milch cows and working stock. The crop is seldom left to ripen its seeds, except when the seeds are wanted; the only use made of them is for sowing or feeding pigeons. There are from thirty-eight to one hundred species in this genus, and some of them highly esteemed by European farmers. Subscriber.

ELÆAGNUS PARVIFOLIUS.

This plant (Silver Thorn) is destined, in all probability, to play an important part in the rural affairs of the United States. No one but at once grants the gravity of the fence question. It is admitted, that if the whole farm land of the Union were to be called on at once to renew the timber fences, the best part of our farmers would become bankrupt. A cheap live fence, and one easily managed, would be one of the greatest blessings to the people of this nation.

So far, the best thing has been the Osage Orange. This is the best chiefly because the seed can be easily procured, and because the plants are very easily and rapidly raised from the seed. These are great advantages; but the disadvantages are its tree-like character, which requires much skillful labor to keep it down to proper dimensions; and also that it only produces thorns on its young growth. Wood once formed never gets thornier; and should perchance naked places occur, it is almost impossible to fill these places in. As a sort of sop to this disposition, plashing and other patching schemes have been adopted, all of which are tolerably successful in the hands of intelligent men who are not afraid to work. The fact, however, is patent as we travel through the country, that nine-tenths of the Osage Orange hedges planted in this country have become nuisances to everybody that has any relation to them.

Heretofore few plants which are but naturally shrubs, grow fast enough to make a protective hedge within a reasonable time, or if they do, are deficient

in some other element of a good hedge. This *Elæagnus* seems to be nearer our idea of a good hedge plant than anything we have seen. Some years ago a small quantity was set out for trial on the grounds of the Experimental Garden at Washington; and when the writer saw it, in company with Mr. Wm. Saunders, he was informed that it had proved entirely satisfactory in every respect.

It does not grow more than a few inches high the first year from seed; but these small seedlings dibbled out in the hedge-row, grow as rapidly as Osage Orange transplanted the first season.

We saw, recently, a line half a mile long set out last spring, mere threads then, most of which are two feet high, and thick and bushy now. They look very harmless the first year, having no thorns; but there are large numbers of short branches, from a quarter of an inch to two inches in length, and these become *sharp spines* the next year. The older the plants the spinier they become —an excellent feature in a first-class hedge plant. The second and third years branches are produced from three to five feet long, thus soon reaching a good hedge height. But the plant rarely shows any disposition to go above six or eight feet high, when the plants are massed together. When they reach this height, they grow by sending strong shoots out from the stems near the ground, thus perpetually self-thickening — another excellent feature. If pruned, they make a first-class hedge; if totally neglected, they are still protective, and not the useless eyesore of an Osage Orange. Plants three or four years old seed, so that in a few years with any moderate encouragement, plants in abundance could be obtained.

Besides its protective value, it has a very beautiful appearance; the under side of the leaf, as well as the young growing branches, are silvery, whence its common name. South of the Potomac it would probably be an evergreen. In Pennsylvania it holds its leaves to Christmas. The flowers are greenish-white, not showy, but resemble in fragrance the celebrated English Hawthorn. The berries which succeed are of a mottled red. How much cold it will stand before it becomes injured, is not known to the writer. It has remained uninjured in the slightest degree in one situation, when the last year's shoots of the Osage Orange and Honey Locust have been destroyed, and when the thermometer has been 14° below zero. It will probably endure much more.

It is called, in European catalogues, *E. reflexus*, and some other names, but De Candolle adopts Wallich's name, *E. parvifolius*. It is a native of the Himalaya Mountains.—*The Gardener's Monthly.*

The Osage Orange. — The *Maclura aurantiaca* has become a familiar shrub in most parts of the United States, from its general use as a hedge-plant; but it is now proposed to utilize the Osage Orange for other purposes. A decoction of the wood is said to yield a beautiful and very permanent yellow dye; and this decoction, carefully evaporated, forms a bright yellow extract called aurantine, which may be used in imparting its color to fabrics. In addition to this coloring-matter, the wood of the Osage Orange is rich in tannin. Experiments made in Texas represent that hides are tanned quicker with the wood of this tree than with oak-bark. The seeds yield a bland, limpid oil, resembling olive-oil, and which may, in general use, be substituted for it.—*Report of Department of Agriculture.*

Roses—American Culture.—The Rose never wearies us; we enjoy every mention of it; and though not a new beauty, yet its beauty never wears out. Read what *The American Rural Home* says about planting *Rose-beds:*

"The Rose likes a virgin soil, and the nearer the composition of our Rose-beds approximates to that, the greater will our success be likely to be. Hence decayed sods, and leaf-mould from the woods when it has been sweetened by the sun, are good fertilizers. The old-fashioned way of scattering Roses about the lawn is not the best way. Their culture, thus isolated, is apt to be neglected, and grass works in and chokes them; besides, the effect is not equal to where they they are grouped in a round or oblong bed, highest in the centre. Suppose that we decide to plant a bed of Hybrid Perpetuals. In the centre we would want a white Rose, or a cluster of white Roses, according to the size of the bed. Madame Alfred de Rougemont is one of the finest whites. Portland Blanche is another fine one. Next we could have a row of flesh color and light pink. Caroline de Sansal is one of the finest of the former, and Sydonie of the latter. Auguste Mie (rosy pink) would pretty nearly correspond with this shade. The next row should be still deeper—rose or deep rose. Of this shade, we have Baronne Prevost, Victor Verdier, and Madame Victor Verdier. In the next row we could have rosy crimson, rosy lilac, rosy carmine, and vermilion. Among those of these shades, Anne de Diesbach, General Washington, John Hopper, L. Reine, Mad. Fremion, Maurice Bernardin, and William Griffith, rank the highest. On the outside we could have the deepest shades, as deep red, crimson, and velvety. Dr. Arnal, Francoise Arago, Giant of Battles, General Jacqueminot, Jules Margottin, Pius the Ninth, Prince Camille de Rohan, and Triomphe de l'Exposition would fill the outer ring. We do not say that this order should be strictly adhered to, but we think the highest effect would be produced by having white in the centre, and gradually shading deeper to the circumference. All that we have named are first-class Roses, and our readers may be assured that in selecting from them they will get no inferior Rose."

Sesamum Orientale. — Bean or oily grain, *didynamia angiosperma*, 14th class and order 2d of Linnæus; *Pedalineæ* of Jussieu; two to four species, a native of the East Indies, etc. These plants were introduced into Jamaica by the Jews, and are now cultivated in most parts of that island. They are called Vanglo or Oil Plant, and the seeds are used in broths by many of the Europeans, but the Jews make them into cakes. Many of the oriental nations look upon the seed as a hearty and wholesome food, and press an oil from them similar to the oil of Almonds. It has also been manufactured into a salad oil.

S. Indicum is closely related to *Martynia* of the gardens. The seeds are small and yellowish, and contain a great deal of oil. Mr. Gordon, of Staten Island, has tried it; it grows about two feet high, but in tropical climates it grows to five or six feet; the oil is of excellent quality, and is used for the same purpose, as Olive oil.

Subscriber.

The Healthfulness of Lemons.—When people feel the need of an acid, if they would let vinegar alone, and use Lemons or Apples, they would feel as well satisfied, and receive no injury. A suggestion may not come amiss as to a

good plan, when Lemons are cheap in the market, to make good Lemon syrup.

Press your hand on the Lemon and roll it back and forth briskly on the table to make it squeeze more easily; then press the juice into a bowl or tumbler—never into a tin; strain out all the seeds, as they give a bad taste. Remove all the pulp from the peels, and boil in water—a pint for a dozen pulps, to extract the acid. A few minutes boiling is enough; then strain the water with the juice of the Lemons; put a pound of white sugar to a pint of the juice; boil ten minutes, bottle it, and your lemonade is ready. Put a tablespoonful or two of this Lemon syrup in a glass of water, and have a cooling, healthful drink.—*Farmers' Union.*

CURIOSITIES OF THE SEA BOTTOM.

Forest and Stream has a communication from Commodore Beardslee, commanding the steamer Blue Light, assisted by Professor Verrill, of Yale College, from which we copy the following passages:

Cape Cod is a dividing line upon our coast. South of it one class of creatures are found in profusion, but the quohog clam (the *Calista convexa*), certain star-fishes and worms, and the oyster, have not existed, or, having existed, have become extinct north of this line, except in a very few localities. A live *Calista convexa* (a species of clam), brought up in Casco Bay, upset at once the opinion held till then that it was extinct so far north. Quohog shells in plenty we find in the ancient Indian shell mounds, which dot every slope of the island, showing that once they existed in plenty. Now but one little bay—a mere cove at the head of Casco Bay—furnishes this creature, which, south of Cape Cod, is but the common plentiful clam. Oyster shells, of a size to which a Saddle Rock is but a pigmy, lie thickly planted six feet below the present bottom of Portland harbor. They too, however, are extinct.

In that great convulsion of nature that was so sweeping in its effects not a living oyster was left to fulfill a mission. It seems a sad mistake up here, where oysters could be eaten every day in the year, and the nightly blanket renders superfluous the mosquito bar. But the ocean is still well filled, and with fruits and flowers, with vegetables and plants, masons and well-diggers, robbers and cannibals, and each bearing in a greater or less degree a resemblance either in appearance or habits, to the creature or object above water that it is named for. Away down in the dark depths, animal life utilizes every inch of ground, and no square foot above the surface can equal in number or variety of forms the same space at the bottom of the sea. Strange, odd, horrible creatures, with none or many eyes, with speckled bodies, and long, slimy, clinging arms, changing at once their form and size at will, and, like the genii of the Arabian Tales, from a mere starting-point extend themselves almost indefinitely in size. Beautiful creatures, too, as the anemones and dahlias, at first frightened and jarred as we see them in the dredge, mere masses of pink or purple flesh, covered with a tough skin; left to themselves in a cool, dark place, they protrude, from an opening in their bodies, clusters of gay-colored and gracefully-moving antennæ, which in some branch like coral, in others bear close resemblance to the stamens and petals of flowers. Down here the animal kingdom takes from the floral tribe the duty of embellishing. Living, breathing, food-devouring flowers, and the

kitchen garden, too, and orchard, are not unrepresented. Sea cucumbers, (*Penlacta frondosa*), sea peaches (*Cynthia pyriformis*), sea pears (*Boltenia clavata*), and apples are found in plenty, the former so close a simile of the fruit, both in color and form, that it could be mistaken the one for the other.

The flowers, beautiful as they are, are but brigands; those graceful petals wave but to entice and grasp a victim, which, when seized, is pressed close to its mouth, and then, even if larger than its captor, is swallowed whole.

The process of swallowing whole a morsel larger than the swallower is rather an unusual proceeding among animals, and of course an unusual method has to be adopted. The anemone does it in this way: holding tightly its prey, it gradually protrudes its stomach from its mouth, and turning it inside out, envelopes its dinner, and then lies quietly awaiting the death and digestion. It rejects such portions as are not suitable, and stows away its stomach for future use. What a blessing some men would esteem this faculty to be!

The sea cucumber is another curious creature; first found it is a small, compact "gherkin;" left to itself, it will swell and develop to an immense cucumber, quite large enough to make a boat of, if the sea urchins had the same habits as did those urchins of whom I was once one.

New Shrub.—One of the finest and most remarkable hardy shrubs recently introduced into England is *Elœagnus longipes*. It comes from Japan. It is of medium size; the flowers are produced in great profusion, and are succeeded by berries, orange in color, oblong in form, speckled with brownish scales.

Editorial Portfolio.

OUR CITY PARK.

ITS AVAILABILITY FOR PRACTICAL PURPOSES.

As California is destined in the near future to become a great agricultural State, and even now is assuming her place in the front rank of cereal-growing countries, it is of the utmost importance that we should lay a sure and solid foundation upon which to rear this agricultural superstructure, so that it may, when once established, remain forever. The question might be asked, as very likely it will, how is this to be done? I answer, by knowledge — knowledge born of science and experience, practical and theoretical; that which springs from the mental labor of the student, as well as from the manual toil of the husbandman. A short time ago, when "book farming," as it is termed, first sprung into existence, it was an object of ridicule with many, and no sarcasm was too bitter, or wit too sharp, to be launched at it. Time, that great equalizer of all things, has somewhat changed the relation between theoretical and practical farming.

Mr. Mecchi, a perfumer of London, has given to all England that admirable system of sewerage farming, which is increasing her agricultural products fourfold. In our country the writings of Bridgeman and Downing have brought orchard and market gardening to a high state of perfection. In Australia the researches of Dr. Muller have added largely to the agricultural wealth of that country. Agricultural and horticultural magazines and papers, all over the world, have done good work in the dissemination of knowledge in their respective departments; and the labor, though often unrequited, is now bearing golden fruit.

But, with all this, another power should be brought into the field, and co-operate with those already occupying it; and this is, the State and city governments. In many countries this is done; and our own General Government has for many years been doing good service in the publication of the monthly and yearly agricultural reports. Still, in addition to this, each State should do something for the unfolding of her special agricultural resources — something that could be received alike by all her people and made of actual use. Her natural products, such as timber, grasses, and various useful plants, more especially, should receive proper care and attention. Reckless waste and extravagant use should be controlled, and the people within her borders taught the necessity of moderation in use and the great value of replacement. Cities should use their public parks as botanical gardens, and thus show the natural productions of the whole State. By this means the newly arrived agriculturist, with but a slight knowledge of Botany, might gather information in respect to the climate and soil of the different parts of the State.

In this article, which is but the outline of what could be written on the subject, I desire to speak of *our* Park. San Francisco is now engaged in establishing a park which will be of great value to her as a pleasure and health-giving spot, and can also, if rightly managed, be made of still greater value, as an index to the Botany of the Pacific coast. It has often been said that Botany is a mere ornamental study, and one of no great practical value. This is far from true. Botany is really an index to the character of climate and soil, and, therefore, is of great importance to agriculturists. The intelligent farmer, with a slight knowledge of this science, is enabled to judge of far-off countries and their adaptability for settlement.

In view of these facts, we should endeavor to so make known our resources and products, that all may see and understand their true value. In furtherance of this object a scientific man should be chosen as superintendent of the Park—one at the same time capable of imparting this knowledge to the people, who are more especially engaged in the kindred branches of Agriculture and Horticulture. Reports should be made from time to time by him of his observations in these branches. Under such management the Park would be no greater burden than at present, no pleasure would be lessened, while it would of necessity prove of great value to the State at large.

C. A. Stivers, M. D.

The request of "A Subscriber" for a list of plants adapted to a northern shady situation, will be complied with in the February number.

Woodward's Gardens.—Notwithstanding the inclemency of the weather at the present season, these grounds and conservatories are in fine order, and the plants in a growing condition—demanding, however, a large amount of additional attention. Considerable additions have been made to the aviaries, many valuable birds having been recently purchased. In other departments the work of renovation and improvement is progressing vigorously. Preparations are being made for a series of novel and interesting balloon ascensions; and every exertion is being used by the proprietor to render the approaching season gratifying and satisfactory to the public.

NOTICES OF SOCIETIES.

Fruit-growers' Society of Pennsylvania.—This Society will hold its annual meeting this season at Mechanicsburg, Cumberland County, on the 21st, 22d, and 23d of June, 1874. The practical details of fruit culture are generally fully discussed, and the meetings usually very fully attended. Mechanicsburg is on the railroad leading from Harrisburg to Chambersburg, and very easy of access. In one of the most successful fruit regions of the State, there is no doubt much useful information will be elicited by the meeting.

FAVORS RECEIVED.

It gives us pleasure to acknowledge the receipt of the *Monthly Report of the Department of Agriculture* for November. It is replete with valuable statistics and general information.

The Overland Monthly, for January, is decidedly the best number yet published of this really first-class magazine. "Abrasions of the Northwest Coast," "California Indians," "Summering in the Sierra," "New Zealand," "Seeking the Golden Fleece," are specially interesting.

No. 6 of the *Flower Garden* is at hand. This quarterly periodical combines the magazine with a copious catalogue and price-list. It is published by Beach, Son & Co., 76 Fulton Street, Brooklyn, N. Y. Terms, $1 per year.

During a recent passage from Havre to San Francisco, it became needful to economize in the use of fresh water. Bread mixed with sea-water was found not only to be better, but also to keep longer. It was made use of for a long period without resulting in a single case of sickness aboard.

FLORAL REVIEW.

BY F. A. MILLER.

That our gardens have a much brighter appearance during the winter months than those of our Eastern friends, is well known to every one; nevertheless flowers are rather scarce with us at this time, and our florists can not readily satisfy the demand. I would suggest that our amateurs, therefore, pay more attention to winter flowering plants, for the very reason that flowers are much more appreciated when they are less plentiful. While some shrubs and plants flower much better with us during winter than summer—for instance, the Laurustinus, Polygala, Veronica, Stevia, Chrysanthemum, Violet, Pansy, Diosma, and Erica—others may be had in bloom at this time by proper treatment—such as Roses, Stocks, Gladiolus, Lilies, Pinks, etc. To accomplish this, let some Roses rest during the months of July and August by keeping them dry, and then irrigate freely in September and October, occasionally working up the ground around them. This treatment will force out young wood and buds, which will come to perfection during the winter months, as the frost in our milder regions is not heavy enough to injure them. This can not be done with all the varieties of Roses which we cultivate. The best for that purpose are most of the Tea Roses, the Bengal (or China) Roses, and some of the Bourbons; a few of the Perpetuals, such as General Jacqueminot and Géant de Battailles, may also be successfully treated in this way.

Gladiolus and Lily roots will produce their flowers in winter, if planted in September and October. Stocks will also do as well, if the seed is planted late; and Pinks are sure to bloom throughout the winter months, if the

soil around them is well manured and worked up in September. Add to those already named the Pelargoniums, Heliotropes, Fuchsias, Abutilons, *Sollya heterophylla*, Hydrangea, Ageratum, and others, which bloom as freely in winter as summer with us, and I see no reason why our gardens should not look cheerful and bright at this time.

During the holidays just past, our florists had their hands full, the demand for flowers having been in excess of the supply. Probably $15,000 were paid for cut-flowers, bouquets, and floral decorations, which is a large amount for a city with less than 200,000 inhabitants. The bulk of the flowers used were Roses, Pinks, Stocks, Candy-tuft, Sweet Alyssum, Violets, Stevia, Gladiolus, Pelargoniums, Fuchsias, Pansies, Laurustinus, Diosma, Erica, Mignonette, Gypsophila, and Abutilon, all of which were grown in the open ground. The choice and more costly flowers from the greenhouses were, Camellias, Eucharis, Tuberoses, Epiphyllums, Agapanthus, Azalea, Heliotrope (also from the open ground), Spanish Jasmine, Cyclamen, Poinsettia, Chinese Primrose, Begonia, Cineraria, Orange-blossoms, and *Adiantum cuneatum*. The price for Camellia bouquets during the holidays was from $2.50 to $5, and for baskets of flowers, from $5 to $30, which is from thirty to forty per cent. higher than the prices usually paid.

This goes far to show that the people of San Francisco do love flowers, and are willing to pay their money for them. I believe I am correct when I state that the people of such cities as Chicago and St. Louis expend much less for this purpose. At the same time it is well known that our florists furnish much more for the same amount of money than the florists of the Eastern cities are in the habit of doing, during the winter season. This is mostly due to the large expense incurred there in cultivating all the flowering plants, under glass by artificial heat, at this time.

During the coming month Hyacinths and the Lily of the Valley will be in bloom, and continue to flower for several months, in the house or under glass; Cyclamen, Camellias, Eucharis, Azaleas, Epiphyllums, Bouvardias, Heliotropes, and many other choice house-plants will furnish their quota of flowers.

The weather for the past month has been very unfavorable for greenhouse plants, and little could be done in the open air on account of continual storm and rain, from the effects of which we suffer more in California than from severe cold. During such weather it is very important that plants in general be kept dry. This can not be well done unless the houses are artificially heated; and I believe we will have to come to this, if we wish to succeed in the cultivation of certain choice and more delicate house-plants. A very small heating apparatus will be sufficient to keep up the proper temperature in this climate, and to relieve us of the loss caused by "damping off" on account of superfluous moisture. Several parties here are now making preparations for heating apparatus, which experiments, I hope, will lead to some successful mode of heating houses.

There is yet time to plant the Hyacinth and Narcissus. For winter flowering they are indispensable. Bulbs and flowering roots have been imported plentifully this season, and many varieties are in the market, which heretofore have been very scarce, or could not be obtained.

In the open ground, Snowdrops, Crocuses, Ranunculus, Tulips, Anemones, Dielytrias, and Pæonies should be planted at once.

The planting of trees, shrubs, and hardy herbaceous plants should not be delayed. An occasional rain during the winter season will help them very much, and will double their growth next spring and summer.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

I have hitherto written of the various fruits, their conditions, and merits—except the different nuts, as found in our markets. I shall now say a few words concerning the latter productions. It is not usual for us to see all the varieties of nuts displayed in our market stalls, yet in plentiful seasons they can be purchased at some of them. The choicest nuts are usually sold in our fine groceries, fruit-stores, and at our confectioneries.

And first, with regard to Almonds. The part eaten is the kernel of the dry pit or shell of the Sweet Almond, some of which have shells so soft that they are easily crushed by the fingers. These are known as the Sultana, but more usually called Soft or Upper-shell, and Ladies' Thin-shell; the thick-shell are known as the Jordan or Hard-shell. They are now being much cultivated all over our State, especially in the southern parts of it, and with much success. Large supplies are also brought here from the south of Europe. The fresh or new nuts usually arrive in our winter months, when they are found very tender and sweet, with much of the "nutty flavor;" while the old nuts are hard, dry, and with but little of this excellent flavor.

Those excellent nuts, the Black Walnuts, when ripe, with the husk off, are round and very rough, and black on the exterior. They are not plentiful here, but may be had during January and February, and will keep for many months. The ripe kernel is very large, sweet and wholesome, particularly when eaten with a little salt. The immature fruit, while in the green, tender, outside shell, and before the internal shell has become hard, (which it usually does in the months of June and July, according to location), makes the Walnut catsup, or is used for pickling.

Brazil-nuts are natives of South America, and are of a dark-brown color, being rough-shelled and three-cornered, with a large white kernel, having the flavor of the Hazel-nut, and are very oily. The season for the new nuts is from April to June.

Butternuts, White Walnuts, or Oil-nuts, are a species of the Walnut, resembling, when young, the Black Walnut, but elongated and smaller. When ripe they are of an oval, oblong form, not quite so large nor so rough as the Black Walnut, and are of a different flavor, with an agreeable taste, and rich in oil. When green and soft, they are excellent for pickling. They ripen in the month of August. In the Eastern States these nuts are known as Oil-nuts, and in southern Ohio and other sections, as the White Walnut.

The Cashew-nuts are natives of the Indies, but are sometimes brought here. The nut or fruit is in size like an apple, some being of a white, red, or yellow color; and like the Cherry, they taste sweet and pleasant, but sometimes are sharp and astringent. The kidney-shaped seed grows on its summit, and when roasted, is superior to the Almond.

Of Chestnuts there are but two kinds represented here—the common American Chestnut and the large Spanish Chestnut. Great quantities of the latter are sold roasted, in a hot state, along

some of our public streets. The common Chestnut, however, is the best flavored, especially when fresh, and is excellent, either raw, roasted, or boiled. Their season commences in the beginning of September and continues good throughout the winter.

The Chincapin-nut, or Dwarf Chestnut, is a small variety of the Chestnut, growing on smaller trees, and is considered about the same quality. It is seldom seen here, but is quite plentiful in the markets of Baltimore and Philadelphia, and is known by some as the Dwarf Chestnut.

The Cocoanut is the best flavored of all the foreign kinds. They come from the islands of the Pacific, and from Baracoa, Brazil, and other places. The white kernel, although hard, woody, and tough, in its fresh state, is said to be very nutritious; and though in its unprepared state not very digestible, yet, when grated, it makes excellent puddings, pies, cakes, and is used in candies, etc. It contains a white liquid called milk, which is sweet and nourishing. The nuts should never be purchased except when this milk is heard to shake within them. The Cocoa-nut tree furnishes food, raiment, milk, oil, toddy, cups, bowls, cordage, brushes, mats—in fact, it is difficult to say what it does not furnish to the Indian.

"The Indian nut alone
Is clothing, meat, and trencher, drink and pan,
Boat, cable, sail, and needle—all in one."

Filberts are said to be an improved variety of the common Hazel-nut, but a great deal larger. The best kind is called the Red Filbert, known by its crimson skin; and also another, called the large Spanish Filbert. They are found in the East throughout the year, but the new nuts are received from October to January.

The Ground-nuts, Chufas, or Earth-Almonds, are small oval tubers. Having the name of nut applied to them is the reason why they are placed under this head. They are hardly ever seen in our market, no doubt in consequence of their smallness, although they are considered esculent, nutritious, and worthy of culture, which improves them in size. They are ready for use at the end of the summer months. When roasted, their taste is much like boiled Chestnuts; they are white, mealy, and well flavored, and when dried, their taste is somewhat similar to the Almond. In some parts of Europe they are used for making an *orgeat*, which, with water, makes a milky drink, much used in Spain and other hot climates where they are known.

Hazel-nuts, or Wild Filberts, are much of the shape, form, and color of the Filbert, but are smaller, thicker shelled, and better flavored. They grow on bushes alongside the borders of the woods and the fences, in clusters of frizzled husks; and when they begin to open, or show the end of the nut, they are fit to eat. They usually appear in July or August.

Of Hickory-nuts there are several varieties, which are often found mixed together, and it requires some knowledge of them to select the best. The choice nuts are generally known under the name of Shell-barks, or Shag-barks. These grow on the shaggy-bodied trees, having a thin shell, a very well-tasted full kernel, of a good size, and they ripen in September and October. Mocker-nuts, or Thick-shelled Hickories, are usually a larger and rounder nut, but with a very thick shell, while the kernel is small but sweet. There is also a smaller thick-shelled nut which some call the White-heart Hickory, but probably it is the same grown in a poorer soil.

Pig-nut Hickories, which are smaller,

fig-shaped nuts, have a kernel with a bitterish taste, though sometimes they are found pretty sweet. This tree produces the toughest wood of all the kinds.

For the want of space we must defer our descriptions of the remainder of the nut family to our next report.

A small lot of fine Oranges received during the last of December from Putah Creek, Solano County, found quick sales at $1.50 per dozen. It is a singular fact that, although some hundreds of miles farther north, Solano comes into market with some fruits a month ahead of Los Angeles. A new variety of fruit, not heretofore cultivated in this county, has thus come to market—a consignment of 350 Oranges from the ranch of J. R. Wolfskill. They were exceedingly fine specimens, large and fully ripened. They obtained nearly double the price of those which first arrived from Los Angeles. Thus Solano fruit-growers may be encouraged and induced thereby to plant Orange groves.

On the 26th of December new Potatoes were quoted at 6c. per pound; Cabbage-sprouts retailed at 12½c. per pound; Savoy Cabbage, 10@15c. each; Artichokes, $1 per dozen; Jerusalem Artichokes, 8c. per pound; Horse-radish, 25c. per pound; Parsley and Watercress, 20c. per dozen bunches. The various kinds of Lettuce ranged from 25 to 37½c. per dozen bunches; Kale, 50c. per dozen; Tomatoes, nearly given out. Ripe Tomatoes were not to be had at any price, and the green vegetable was quoted at 8c. per pound; extra fine quality of the same description, 25c.; cultivated Mushrooms from the gardens of Stockton, 25c. per pound.

The wholesale market price of Pineapples during the last week of December was exceedingly high, but there was no corresponding response in the price of the same descriptions of fruit by retailers, choice lots being offered at $1 each. Lady Apples, imported from Oregon for the holidays, brought 15 cts. per pound. Other kinds of Apples ranged from 5 to 8 cts. per pound. Oranges, on the 26th of December, became more abundant at the prices of the week before. Lemons were a trifle easier, inferior being obtainable at 75 cts. and choice at $1.25 per dozen. As usual during the holiday season, there was a very poor display of fruits, varieties being few and the quality inferior, though better and more various than could be found in the East at the same season. With the exception of those already mentioned, there was no change in supply or prices of other descriptions, compared with our last report in the December number of the Horticulturist.

Best Time to Cut Timber.—Dr. Hartig, who has made numerous experiments to determine the point, states that March and April are the best months in which to cut timber for building purposes, as it then contains its lowest per cent. of moisture, which he states to be forty-seven per cent. During the three previous months it has fifty-one per cent., and the three following ones, forty-eight. He further states that properly seasoned timber should not contain more than from twenty to twenty-five per cent. of moisture, and never less than ten per cent. If the moisture is removed to a still greater extent, the wood loses strength and becomes brittle. An English authority states that if trees are felled as soon as they are in full leaf, and allowed to remain undisturbed until the leaves dry up and fall off, the timber will be found well seasoned, the leaves having exhausted all the moisture.

NEW AND RARE PLANTS.

E. Verdier, the celebrated Rose-grower of Paris, sends to *The Gardener's Monthly* the following list and descriptions of the best new Roses of the past year:

HYBRID PERPETUALS, *(Hybrid remontants.)*

Antoine Castel.—Tree vigorous with strong erect shoots of a reddish tint, numerous dark spines, foliage with three to five leaflets round and leathery, very little serrated, and a pale green color. Flowers of medium size, very double; color bright rose or light cerise, shaded with a dark hue, and white stripes. Similar in growth as Prince Kotchoubey.

Ernest Herger.—Tree very vigorous with reddish shoots and numerous short straight pink spines. Leaves with five dark-green leaflets with purple points. Flowers large, full, of a deep bright purple.

Francis Courtin.—Tree very vigorous with strong erect dark-green shoots and numerous straight reddish spines; leaves with five leaflets, very large, of dark-green color, and but little serrated. Flowers large, full, fine cup-shape, frequently three top together, rarely solitary; outer petals large, reflexed and imbricated, color purplish cerise, outside rose with white stripes; very fragrant; a free and abundant bloomer and of the highest merit.

John Harrison.—Tree vigorous with erect reddish shoots, long and pointed spines; leaves with five leaflets deeply serrated. Flowers very large, full, of fine cup-shape; color dark brilliant crimson strongly shaded with a velvety blackish hue; very effective variety.

Madame Laison Lierval.—Tree vigorous with very strong light-green shoots; very few elongated slightly reflexed brownish spines. Leaves light-green, with five to seven leaflets deeply serrated. Flowers very large, very full and of fine form; color fine carmine with brilliant centre; calyx surrounded with very long sepals. A very free and continuous bloomer; seedling of Victor Verdier.

Miller Hayes.—Tree vigorous with erect reddish shoots and a few short brownish spines; leaves with three to five light-green leaflets and red leaf-stalks; flowers large, full, and of fine cup-shape, generally solitary, sometimes two or three together; thick petals, color crimson with bright centre and shaded dazzling velvety red. First-rate variety; seedling of Chas. Lefevre.

Pauline Talabot.—Tree vigorous with erect light-green shoots, and very rare short, straight reddish spines; large light-green leaves with three to five leaflets deeply serrated; flowers large, full, and of fine form; color dark dazzling rose or reddish carmine. A very free bloomer, and altogether of great merit.

President Hardy.—Tree vigorous with erect reddish shoots and irregular rosy spines; leaves light green with three to five leaflets deeply serrated; flowers large, full, and of fine globular form, and from four to eight together; color purplish carmine.

Theodore Bucheter.—Tree vigorous with erect reddish shoots, numerous brown irregular spines; leaves with five leaflets, deeply serrated, dark green; flowers large, full, and of fine form, purplish velvety violet with fiery centre.

Thomas Mills.—Tree very vigorous, erect, somewhat reflexed light-green shoots, irregular short nearly straight rosy spines. Leaves with five leaflets, large, acuminated, of a dark green, and finely serrated. Flowers extra-large, full, and of fine cup-shape; color

dazzling bright rosy carmine with whitish stripes; very free bloomer, and altogether of the greatest merit.

Double Cinerarias.—Among the most striking novelties of the past year are Double Cinerarias. These have occasionally appeared in the hands of English florists; but they have never succeeded in fixing them so as to produce a distinct race. The more patient Germans have, however, done the thing at last, and Haoge & Schmidt, the seedsmen of Erfurt, Prussia, announce that they will distribute the seeds this season. They are represented to be as double as the common Pompone Chrysanthemums, and to embrace most of the colors already known in single ones. We can imagine nothing more beautiful than such a set of improved Cinerarias will be, and we can not but regard the introduction of such novelties as these, after so many years of persevering attempts, as among the grandest floral triumphs of the age.—*Gardener's Monthly.*

Light seems to have no effect on the respiration of *Elodea canadensis*, the absorption being the same in the light as in the dark, but it differs from yeast in that during the diurnal respiration it gives off free oxygen. If a large quantity of the plant be immersed in a tolerably small quantity of water, and submitted to direct sunlight for an hour or two, numerous bubbles of gas will be liberated, and a supersaturated liquid will be obtained which may contain as much as twenty cubic centimeters (7.88 English inches nearly) of oxygen per litre, (1.76 English pints). The manner of absorption is the same for both plants, but in case of the *Elodea* the absorption is about ten times less.

Editorial Gleanings.

How Arizona lost her Forests.—A legend of the Utes, for which I am indebted to the perusal of Major Powell's MS. notes, explains the cause of the absence of woods in northern Arizona. It is not long, and there is something so inexpressibly novel in its movement, as well as in the fact of our drawing a new mythology and fresh imagery from the very heart of the continent, that I give it as it is remembered. It is called "The origin of fire," and tells how once upon a time a bright spark fell from the point of a reed, upon the ground, and the nightingale picked it up in its beak and found it was fire. And the mighty chief of the Utes asked what it was, and the nightingale said it was fire. And the chief asked if there were any more in the world, and the nightingale said, that far off in the south was a people dancing ever about a great fire, with songs and shouts. So the mighty chief of the Utes made ready, and put on a fine cap, with long eagle feathers upon it, and started for the people of the South. And, as he went, he stationed nimble runners of his tribe all the way from the land of the Utes to the Fire People, at intervals of a mile. And, journeying, he came, after many days, to the Fire People, dancing with songs and shouts about a great fire. And he mingled with them, but they saw he was a stranger, and looked askant at him. But he danced and sung and shouted with them, and suddenly stooping, thrust the end of his eagle plumes in the fire, and they blazed up mightily. And the Fire People would have caught him, but he leaped over their heads and ran to the first man of his tribe, and falling exhausted, handed him the blazing torch of plumes and told him to run. And he ran and fell

exhausted by the second man, handing him the plumes. And so they ran, each man catching the fire plumes from the hand of the runner, until the last man brought it to the land of the Utes. And they were so rejoiced, they put the torch to the roots of a mighty tree on the edge of the forest, and shouted as it burned. But a great wind sprung up and carried the fire into the forest, and it spread in every direction, and all the woods were destroyed. And the people of the Utes prayed long and loud to the god Tawotz, and at length he sent a mighty rain, which quenched the fire. But a turtle sat upon a spark of fire and kept it alive during the rain. And this was the origin of fire.

Old and New, for December.

THE DAHLIA.

A correspondent of the *Garden* explains the true origin of the Dahlia, first mentioned by Hernandez, in his *History of Mexico*, in 1651. But the first scientific description of the plant was given by the Abbé Cavanilles, from a specimen which flowered in Madrid, in 1790; and the Abbé named the plant after his friend, Andrew Dahl, the Swedish botanist. The Dahlia was sent to the Royal Gardens in Madrid, from the Royal Gardens in Mexico. It first flowered in Madrid in 1789, and was introduced by the Marchioness of Bute into England, in the same year.

But that plant soon perished; and the Dahlia did not reappear until 1803, when the old single variety, Coccinea, was flowered by Frazer, at Chelsea. Meanwhile, Cavanilles had sent the three varieties known in Madrid, to Paris, in 1802, and between that time and 1814, many varieties were raised. Humboldt sent home seed from Mexico, in 1804; and from this source the numerous varieties since obtained have been principally derived.

A Pretty Window Plant.—One of the best window plants, capable, as it appears, of resisting almost any hardships to which plants in such circumstances are subjected, is the *Aspidistra lurida*. This plant, and its variegated variety, is grown largely in France and Belgium, in windows, corridors, etc., and might with advantage be employed here for like purposes.—*Gardener's Chronicle.*

Fancy Prices for Plants.—At a recent sale of rare plants by Messrs. Backhouse, of York, England, the *Country Gentleman* says: "A mass of the *Oncidium tigrinum*, consisting of about thirty bulbs, sold for $150. Smaller plants or masses brought $15 to $60. A strong plant of *Oncidium macranthum* was sold for $45, and other plants, all of the same species, from $17 to $37.

Profits of Gardening.—The results of gardening in the "Garden of Retreat for the Insane," at Utica, New York, were published by Dr. Brigham. The land was good and yearly manured, and the product was as follows on one and a fourth acres of land: 1,100 heads of Lettuce, (large), 1,400 heads of Cabbage, 700 bunches Radish, 250 bunches Asparagus, 300 bunches Rhubarb, 14 bushels of Peas in the pod, 40 bushels of Beans, 419 dozen Sweet Corn (three plantings), 715 dozen Summer Squash, 45 dozen Squash Peppers, 756 dozen Cucumbers, 7 barrels Cucumber Pickles, 147 bushels Beets, 29 bushels Carrots, 26 bushels Parsnips, 120 bushels Onions, 180 bushels Turnips, 35 bushels Early Potatoes, 40 bushels Tomatoes; Winter Squash, — wagon loads; 500 heads Celery—all worth $621 in Utica

market, but supplied 130 persons in the Institution with what they could consume, and only one man to do all the labor.—*Gardening for the South.*

Excellent Glue.—According to the statement of a foreign chemist, an excellent paste may be prepared as follows: Four parts, by weight, of glue are soaked for several hours in fifteen parts of water, and then slowly warmed until a perfectly clear solution is formed. This solution is then diluted with sixty-five parts of boiling water, and thoroughly stirred. In the meantime thirty parts of starch are stirred into 200 parts of cold water, so as to form a thin milky liquid, free from lumps. Into this is poured the solution of glue, stirring continually and heating. When cold, ten drops of carbolic acid are added. The paste made in this way is said to possess extraordinary adhesive power, joining leather, paper, pasteboard, etc. By keeping it in closed vessels, so that the water can not evaporate, it may be preserved for years. Where no great strength is desired, ordinary flour or starch paste is used, a little carbolic acid being added to prevent souring.

Simple Ornaments.—A pretty mantel ornament may be obtained by suspending an acorn by a piece of thread tied around it, within half an inch of the surface of some water contained in a vase, tumbler, or saucer, and allowing it to remain undisturbed for several weeks. It will soon burst open, and small roots will seek the water; a straight and tapering stem, with beautiful glossy green leaves, will shoot upward, and present a very pleasing appearance. Chestnut trees may be grown in the same manner, but their leaves are not so beautiful as those of the oak. The water should be changed once a month, taking care to supply water of the same warmth; bits of charcoal added to it will prevent the water from souring. If the leaves turn yellow, add one drop of ammonia into the utensil which holds the water, and they will renew their luxuriance.

Another pretty ornament is made by wetting a sponge and sprinkling it with canary, hemp, and grass seeds. The sponge should be refreshed with water daily, so as to be kept moist. In a few days the seeds germinate, and the sponge will soon be covered with a mass of green foliage.—*Scientific American.*

Guano-water for Plants.—The *Farmer and Gardener*, in reply to a correspondent, says: "All guanos are not alike in soluble proportions; hence a pound of phospho-guano will go as far as two pounds of many other brands. We use about one gallon of the former to a barrel of water. Let it remain three or four days, stirring the mixture daily. When using we add an equal quantity of water, thus taking one gallon of phospho-guano to two barrels of water. Guano-water must only be applied to plants when in full growth, and not when they are at rest, as is the case during our warmest portion of the summer."

The Iris.—It is the fate of many good plants to get set aside for novelties not near so good. The Iris has been one of these unfortunates. The varieties are very numerous, and there is no flower capable of giving more interest than a collection of these. They flower as the Hyacinth goes out, and are excellent plants to go together with them.—*Gardener's Monthly.*

Asters as Decorative Plants.—The *Florist and Pomologist* says that the perennial Asters, sometimes termed *Autumn Daisies*, furnish some most valuable decorative plants for the open ground during autumn. *Aster amellus* is one of the best of them, bearing plenty of flowering stems numerously branched at the top, the flowers violet-blue; neat clumps of this dotted about shrubbery borders, or at the back of mixed beds, form most welcome masses of a very acceptable hue of color in our gardens, right up to November. A violet-colored variety of *A. amellus*, named *bessarabicus*, is a good decorative plant also.

Cutting Blossoms.—Lovers of flowers must remember that one blossom allowed to mature or "go to seed" injures the plant more than a dozen new buds. Cut your flowers then, all of them, before they begin to fade. Adorn your rooms with them; put them on your tables; send bouquets to your friends who have no flowers; or exchange favors with those who have. You will surely find that the more you cut off the more you will have. All Roses after they have ceased to bloom should be cut back, that the strength of the root may go to forming new roots for next year. On bushes not a seed should be allowed to mature.

Power of Insects.—Most of our readers have no doubt noticed the extraordinary power of insects, but Abbe Plessis seems to have been the first to measure and record this power. He attached a light box to a large horned beetle, and gradually loaded it with a weight of two and one-half pounds, and yet the insect moved it steadily over a smooth board. On comparing the load with the power, he found the former to be 315 times the latter. At the same rate a common farm-horse should draw *one hundred and eighty-one tons.—Journal of the Farm.*

A Pretty Floral Contrast.—A correspondent of *The Gardener's Chronicle* describes a pretty scene of climbing vines in a conservatory: "One of the prettiest floral sights that I have seen for a long time, is the result of allowing *Tacsonia Van-Volxemi*, *Clematis Jackmanni*, and *Mandevillea suaveolens* to grow together at their own sweet will. They were all in full bloom, and the plants having grown up the different rafters of a conservatory and met at the top of the house, the result was certainly a very striking contrast."

Wood of the Osage Orange.—A correspondent, who has been experimenting with the wood of the Osage Orange, informs us that it takes a fine polish, and is very durable. The wood grown in Texas is found to be durable in all situations, and none more so than in fence posts. It is largely used for wagon wheels, and the wheels made of it are said never to require a second hooping. In Pennsylvania it is of slow growth, but farther south it finds a congenial climate and grows rapidly. If seed is to be sowed, the trees should be planted in clumps, in order that fertilization may be perfect.—*Journal of the Farm.*

Saving Fuchsia Seed.—Mr. Cannell, the great Fuchsia-grower, says: "When the seed-pods are thoroughly ripened, partly dry them in the sun, after which cut them in halves and quarters with a moderately sharp knife, and minutely examine each part; the old self-colored

varieties produce seed very freely, but the choice kinds very sparingly, particularly the light varieties. An abundance of hollow seed will be found, but good plump seed is about half the size of that of the pansy, and easily distinguished and picked out."

Ornamental Hedges.—Edwin Marsh, nearly a mile west of Agawam Centre, has a very handsome hedge of White Pine. This tree was placed by Downing at the head of beautiful evergreens. Planted near it is a well-trimmed Hemlock hedge, and on the grounds of Mr. Goddard, opposite, a very beautiful hedge of the American Arborvitæ. On account of its brighter, never-changing green, we had, in this case, to give our preference to the White Pine. For dry sandy soil, it is peculiarly adapted.—*New England Homestead.*

Hide-bound Trees.—Trees that have long stems exposed to hot suns or drying wind, become what gardeners call "hide-bound." That is, the old bark becomes indurated—can not expand—and the tree suffers much in consequence. Such an evil is usually indicated by gray lichens, which feed on the decaying bark. In these cases a washing of weak lye or of lime-water is very useful; indeed, where the bark is healthy, it is beneficial thus to wash the trees, as many eggs of insects are thereby destroyed.

Moth Preventive.—The following recipe for keeping moths out of clothing is a favorite in some families: Mix half a pint of alcohol, the same quantity of spirits of turpentine, and two ounces of camphor. Keep in a stone bottle, and shake before using. The clothes or furs should be wrapped in linen, and crumpled pieces of blotting paper, dipped in the liquid, should be placed in the box with them, so that it smells strong. This requires renewing about once a year.

METEOROLOGICAL RECORD,

For the Month Ending Dec. 31st, 1873.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.10 in.
do	12 M.	30.10
do	3 P. M.	30.09
do	6 P. M.	30.08
Greatest height, on the 17th and 25th at 9 A. M.		30.32
Least height, on the 4th at 6 P. M.		29.67

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		47°
do	12 M.	51°
do	3 P. M.	50°
do	6 P. M.	48°
Greatest height, on the 5th at 12 M. and 31st, 3 P. M.		58°
Least height, on the 3rd at 9 A. M.		37°

SELF-REGISTERING THERMOMETER.

Mean height during the night	43°
Greatest height, on nights of 30th and 31st	50°
Least height, on night of 12th	35°

WINDS.

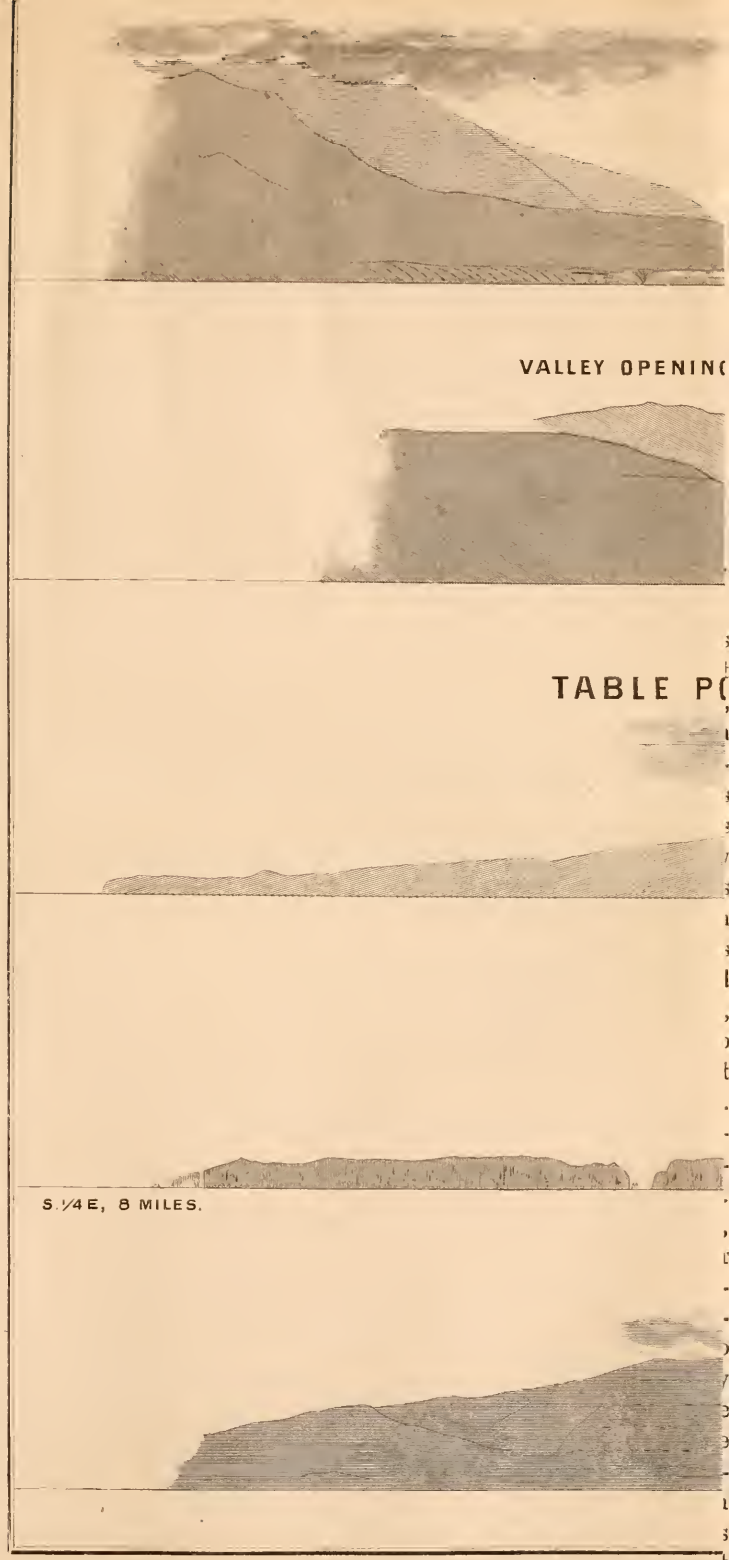
North and north-east on 5 days; south and south-east on 14 days; south-west on 6 days; east on 4 days; west on 2 days.

WEATHER.

Clear on 3 days; variable on 7 days; cloudy on 21 days; rain on 20 days.

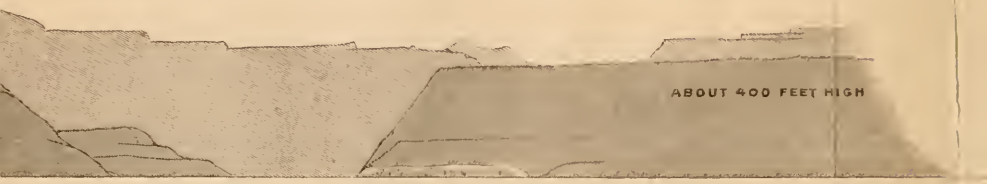
RAIN GAUGE.

December 1st	0.04	inches.
" 3d	1.89	"
" 4th	1.11	"
" 5th	0.27	"
" 6th	0.36	"
" 7th	0.39	"
" 8th	0.30	"
" 9th	0.97	"
" 10th	0.01	"
" 13th	0.28	"
" 14th	0 22	"
" 15th	0.08	"
" 16th	0.44	"
" 18th	0.02	"
" 19th	0.41	"
" 21st	0.32	"
" 28th	0.01	"
" 27th	0.42	"
" 29th	0.98	"
" 30th	1.60	"
Total	10.12	"
Total rain of the season up to date	12.29	"


VALLEY OPENING
TABLE P
S. 1/4 E, 8 MILES.

POINT DUME, BEARING E.¾N, 6 MILES.

ON COAST SOUTH OF TODOS SANTOS BAY (LOWER CALIFORNIA.)

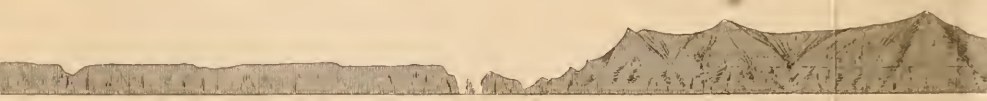


N.E.½ E, 5 MILES.

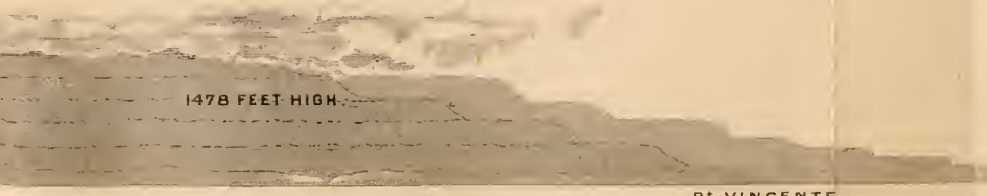
INT NORTH OF TODOS SANTOS BAY (LOWER CALIFORNIA.)

N. by W. 8½ MILES Nº 4 estimated 500 Ft.

ISLAND OF ANACAPA, CAL.



SAN PEDRO HILL.



Pt VINCENTE.

CONTINENTAL SHORES OF N.W. AMERICA. (see Pa

930 FEET HIGH.

Pt FERMIN.

E. 1/4 SOUTH
ABOUT 18 MILES DISTANT.

LITH. BRITTON & REY. S.F.

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THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. IV. FEBRUARY, 1874. No. 2.

CINERARIA.

BY F. A. MILLER.

But few flowering plants are more useful and give better satisfaction, than the Cineraria. One of its excellent qualities is, that it may be had in bloom at all times, in and out of doors, if properly managed. Another meritorious point is, that it furnishes a profusion of flowers of all shades of color, except yellow.

Cinerarias are raised from the seed, which grows readily, if planted in a pot or box filled with light and porous soil. The seed should be covered very lightly, and the pot or box placed in a warm, sunny place. During cold nights it is well to protect the young plants by covering them with a pane of glass. The plants begin to flower in about seven or eight months from the time the seed is sown; and by paying a little more attention to this fact, we may have them in bloom whenever the flowers are most desirable. If the seed is planted every three or four months, we can have them in bloom throughout the year. This applies to their cultivation in pots in the house. If treated as house-plants, they should be thrown out after they have done flowering, and young plants should take their place. It is true that by shaking the soil from the old plants, and dividing and replanting them in new soil and smaller pots, good flowering plants can be obtained; but this process is much more laborious and less satisfactory than the raising of new plants from the seed, except when it is desirable to cultivate a certain variety in particular. The soil for these plants should be rich, light, and porous, and be one-third well decomposed manure, one-third sand, and one-third loam, to which may be added a little bone-dust and charcoal, which is all that is needed.

Cinerarias are also very useful as garden plants, where they assume the character of perennials in this mild climate. I have seen them in bloom constantly, through summer and winter, for three or four years, and showing no lack of luxuriant growth. There is no other garden plant of which we can say so much, except, perhaps, the monthly blooming Pinks. At our garden we plant out all the old plants, which have done flowering and could not be disposed of, in the borders, and treat them the same as other hardy herbaceous plants, and they give us a large amount

of flowers throughout the year. This facility of growth and blooming should make the Cineraria one of the most popular plants on this coast.

If cultivated in the house, Cinerarias are very much subject to "damping off," and to the ravages of the "green fly." This can be prevented by giving plenty of fresh air, and by frequent fumigation with tobacco smoke. Watering overhead also has a very bad effect, and is apt to produce rot in the leaves and stems.

The extremely bright and pleasing colors of the Cineraria make it a most desirable flowering plant for the house as well as for the garden, and a fair trial is sure to bear me out in all that I have said in its favor.

In Germany, a great novelty has been produced in the way of a "double Cineraria." I have not yet seen the flower. In fact, the seed of this new acquisition has only recently been offered for sale for the first time. If this new variety proves to be what its originators claim for it, it is certainly a most valuable addition to flowering plants.

Causes of the Rotting of Fruit.—According to Decaisne, the rotting of fruit is produced by two microscopic fungi, which develop in moist, confined air; namely, *Mucor mucedo* and *Penicillium glaucum*, infinitely minute germs of which are continually floating in the atmosphere, and which attack more especially any injured or abraded portion of the surface. If now, the fruit be wrapped up in cotton, or with soft tissue paper, or, still better, with waxed paper or tin foil, the introduction of these germs will be prevented, and the fruit can be kept for a long time without any appreciable change.

RHODODENDRONS.

Hardy varieties. Rhododendron Catawbiensis.

Among the evergreen plants used for garden, lawn and other decorative situations, where one, six, or a larger number are to be used, commend us to the grand old Rhododendron. The king of the city garden, the pride of the village green, the pet flower of every ten by twelve grass plat, and, grandest of all, the flowering climax of every well-stocked, elegantly decorated park.

This magnificent flower is so well known, or should be to all lovers of beautiful plants, that a familiar description of the same would scarcely seem necessary. Yet such is not the case. There are many persons, ladies and gentlemen, too, of good taste, who delight in a well-stocked garden, who have never seen a Rhododendron in full bloom. Said a lady to me one day, "I saw a very beautiful flower in full bloom in front of a gentleman's house in New Jersey the other afternoon. I wish I knew what it was. It had bright glossy leaves, grew about three feet high, and had about ten short limbs, all covered with an orange shaped leaf, that looked like a leaf made from wax. From the middle of the bunches of green leaves there sprung a large pink colored flower as large as my hand, and O! so beautiful. I do much wish I knew its name. I want to purchase one, as I never saw a more beautiful plant."

This very natural exclamation of the lady would probably find a response in very many hearts when looking upon this plant for the first time. This would be the case with any one who could spend an hour in the garden of Messrs. Hovey, near Boston. There your eyes would be delighted with specimens of this beautiful flower twelve feet in

height, and in its season of blossom all covered with flowers.

We have been told that familiarity breeds contempt. Not so with the Rhododendron. Beautiful! indeed, the more we become acquainted with the rare qualities of this valued plant of the garden the more we love its bright shining leaves, its rich and enduring flowers, and well may the term of a "thing of beauty" be applied to it. Magnificent is a well-fitting title for the *Rhododendron Catawbiensis*. While there are many varieties of this flowering shrub which, with care, can be cultivated to perfection upon the lawn and beneath the shelter of the deepening woody borders of our gardens, we can recommend for hardy culture the *Catawbiensis* as perfectly reliable. Plant this kind and you will have a reliable plant. And a "sure thing" in the garden is a matter of much consideration to all our lady friends who love these beautiful flowers. This article upon the Rhododendron was written at the express solicitation of two of our lady friends, who know something about garden flowers.

The *R. Ponticum*, and many of the hardy varieties—hybrids—will grow well beneath the shady sides of woods, but we feel that all who do not tolerably understand their cultivation had better confine themselves to the culture of one or two of the perfectly hardy species. There are thirty varieties of the *Catawbiensis*—all hardy; from these they can choose their plants and go to work on a half-dozen or a dozen with a good degree of confidence in ultimate success.

Like the Azaleas, the Rhododendron does pretty well in ordinary garden soil, but is greatly improved in size and beauty of color by a skillful adaptation as near as possible to its natural soil and situations. Make them as much at home in their new home, by a judicious combination of soils, as they were before they were lifted, and your work is done.

There is not a more superb plant than the Rhododendron cultivated, and our earnest plea is for our pet plant. It can be planted in pots if you desire it, and you can keep it in the greenhouse in the winter and bring it out in the spring to beautify the plat or garden. Amateurs and others desirous of trying their hand with three or five of these plants, can obtain perfectly hardy varieties from any of our seedsmen.

If we could have but one "garden pet," our choice would be the Rhododendron. It is hardy, vigorous of constitution, not liable to insect attacks, possesses beauty and symmetry of growth, and when in flower it pays you a hundred times over for the care you bestow upon it. We have often felt surprise at the lack of appreciation this flower seemed to command, and were thus led seriously to consider why it was thus sparsely cultivated. Perhaps a prominent reason may be found in the fact that considerable care and attention is required to make an appropriate bed, soil, and situation for the growth of this plant.

In hopes of giving our lady friends and, incidentally, others a few reliable hints as to how to prepare a bed for the Rhododendron, I will tell them just how I made one for myself last week, and they are at liberty to improve upon my plan as much as they please. If our friends have patience sufficient to induce them to make such a bed as we describe, and sufficient faith in our experience, they will have as good a show of Rhododendrons as any of their neighbors.

First, this plant, to thrive well, requires a deep, well-prepared soil. Be-

longing to the family *Ericaceæ*, its rootlets are exceedingly delicate, and are always found very fine. Now, whenever you find these delicate rootlets dry, from any cause whatever, you may throw your plant away at once, for however green its leaves may appear your plant is dead.

On what are called the most "unseemly places" you can make your plant bed, as I did mine. The hillside upon which I have prepared a bed for the next spring planting faces the southeast. I first determined the size which I designed for my bed. This I staked out in outline, which I think a good plan, using sharpened sticks six inches long. The bed is of an oval form, in the longest measurement ten feet, in breadth, or shortest, five to six feet. Carefully cutting the sod with a sod cutter, I removed all the same from the top of the bed. This being done, I removed the earthy loam and placed it outside the excavation for future use. Then I removed the gravel to the depth of four feet; this gravel you will need to make the side of the lower embankment of your bed, for I made the upper side of my bed four feet below the level of the sod in its original form. From this level, to be determined by the circumstances of the case, by those who follow these suggestions, I, in making my bed, made a level bed, or plateau. This was the foundation, or pit, of my bed. Now comes the filling-up process. On a side hill like the one in question you will not often need much artificial drainage. You will, as I did, prepare for a too rapid drainage, which is death to your plant, by covering the whole bottom of your pit with pine needles, or oak leaves, or fine meadow hay, to the depth of from one to two feet. Now pass back again into the pit your loam, and your leaves are fixed, and should be trodden down to make what you have already placed there about six inches deep from the bottom. Now you are ready to place the old sod soil—the soil that should compose the bed, and that which I used was a mixture of one part peat, or well rotted leaf mold, one part of rich loam, and one part sharp sand. Let these be most thoroughly mixed, and let lay in a heap three or six days; then fill up all the space left of your bed, level with the former brow of the hill, and outwardly forming a level at the top of the embankment of some two or three feet, which should be sodded to prevent the earth of your bed from sliding down hill. Now you can, after doing this, leave your bed over the winter, and in April, on some bright warm day, spade the whole over preparatory to planting out your Rhododendrons.

You can always procure good plants from reliable nurserymen. If you want the cheapest of plants there are always humbugs enough to cheat you out of your money. Having obtained what you believe to be good plants, set them say from one foot to fourteen inches distant in rows lengthwise of your bed, or, a general rule adopted by some landscape gardeners is, "so that they shade the ground by their foliage just touching each other." This is as good a rule, perhaps, as can be given, and I adopt it whenever I set out grounds. If possible to obtain, I prefer to mulch, say two inches in depth, over the plants as soon as set out, with ground tan-bark, always easily obtained, and there can be nothing better.

Now let your bed alone, unless the summer should be extremely dry. Two copious waterings with the water-pot or hose will be all-sufficient, and nine chances out of ten you will not need any water. Because why? You have set out your bed as you should have

done, and they will probably live and thrive.

As a protection from frost and cold in winter, we use boughs of cedar, hemlock, or pine, the ends well sharpened, and a crow-bar to make holes to receive them, and the boughs firmly set about the bed is sufficient to shelter them from the coldest weather. More of these plants are killed from sunshine in winter than from the intense cold. *Protect them well from the winter sun.*

In the course of time, as your plants grow in size, you will of course make new beds by removing from the old bed every other plant year by year, until you have left one or two very large plants, whose value, singly, would pay a large percentage of time, care, and the money expended.—*Forest and Stream.*

Our Flannels.—The value of flannel next the skin cannot be overrated. It is invaluable to persons of both sexes, and all ages, in all countries, in all climates, at every season of the year, for the sick and the well—in brief, I can not conceive of any circumstances in which flannel next the skin is not a comfort and a source of health. It should not be changed from thick to thin before the settled hot weather of the summer, which in our Northern States is not much before the middle of June, and often not before the first of July, And the flannels for the summer must not be three-quarters cotton, but they must be all woolen, if you would have the best protection.

In the British army and navy they make the wearing of flannel a point of discipline. During the hot season the ship's doctor makes a daily examination of the men at unexpected hours, to make sure that they have not left off their flannels.—*Dio Lewis in To-Day.*

INCREASED DEMAND FOR CALIFORNIA TREES AND PLANTS IN EUROPE.

The business of collecting seeds of trees and plants indigenous to the Pacific Coast has expanded at a surprising rate, during the last three years, in response to orders from Europe, and at certain seasons of the year furnishes remuneration, through arduous labor, for hundreds of people. One firm in San Francisco, who are special dealers in tree and shrub seeds, have their representatives in Oregon, Washington Territory, California, Nevada, and even in the heart of Arizona, from whom are received valuable consignments of seeds at stated periods, generally in the fall and winter months. The mountain tree seeds of this coast, especially those of California, are deservedly popular abroad, on account of the beauty of the trees and the comparative ease and rapidity with which they grow and mature. The procurement of these seeds is always attended with a great deal of hard work and not a little hazardous adventure. The gatherer must possess a certain amount of botanical knowledge, both theoretical and practical, as well as a fair share of vim and muscle. His calling often brings him to the very summit of lofty and rugged mountains, where no other footstep, save his own and those of his associates, are known; along giddy trails, across mountain torrents, over treacherous snow-banks, on the verge of leaning crags inaccessible to anyone but an experienced mountain climber; in fact, wherever the Fir, Spruce, Pine, and Cedar abound, he must go, in order to secure his harvest of seeds. These venturesome men of the mountains seldom come within the actual confines of civilization, and more rarely reach the bustling cities, or even the large towns. They learn to love

the grand old mountains they roam about, and after a few years have no desire to take up a permanent residence at any point near the sea-level. It was the good fortune of the writer to meet one of these men of the mountains, an intelligent and adventurous young fellow, a few days since, and hear from his own lips accounts of his various expeditions after seeds. With his father and several brothers, he removed to the valley of the Yosemite in 1867, and still makes his home there. It was during that year that the flood occurred which caused the only material change in the appearance of the valley that has been known since its discovery by the whites. Up to that time the bed of the valley was covered by a beautiful greensward that stretched as a carpet from end to end. The heavy fall of snow, melting in the spring, came booming down the canyon, in the form of a broad sheet of water, bringing with it particles of disintegrated rock, and a *debris* that cut up and covered the grass and left the bed comparatively barren. Regarding the collection of seeds, the mountaineer said that his party, numbering four or five white men and fifteen Indians, who were provided with thirty horses and mules, made its excursions in the fall, generally occupying three weeks for the round trip, though at times protracting the absence to a couple of months. The cones are cut from the trees with pruning-knives attached to long poles. The pastoral suggestiveness of these implements, which greatly resemble in appearance the shepherd's crook, is dissipated by the sight of sundry bowie-knives and revolvers distributed about the persons of the bearers, and the ponderous Kentucky rifles, in hand or slung across the packs upon the animals. One of these trips netted five hundred sacks of cones. After the cones are gathered, they are often exposed to the sun for three weeks, or a month, according to their condition, though at times they ripen in a few days. The ripening of the cones to a nicety requires considerable botanical knowledge on the part of the operator. If he makes a mistake in his calculations, and fails to remove the seeds at the proper time, he will find them worthless. And here a question of honor arises. He could send the seeds to market and sell them as being healthy without fear of immediate detection. But eventually the fraud would be detected. A few years ago, certain persons, either through ignorance or indifference, palmed off a lot of inferior California seeds that never matured, and thereby worked a serious injury to the business. Some time elapsed before confidence could be restored among the seed dealers abroad, on account of the swindle, and of course the then growing demand abated. Under favorable circumstances, the trade has brightened up, as already stated, and orders are now pouring in thick and fast. The mountaineer expatiated upon this point at great length, and evinced an irrepressible enthusiasm in his calling. The party of which he is a member ranges from the Big-tree Grove, in Mariposa, to the eastern base of the Sierra Nevada Mountains, at altitudes from 4,000 to 13,000 feet above the level of the sea.

The Pacific Coast is constantly yielding up botanical treasures, and attracting the attention of the scientific world. The *parterres* of lovely flowers upon our hills and mountains are not appreciated until one has been abroad, and visited the gardens of Europe. In England, and in several countries on the continent, wild flowers from this State, where they are found in boundless profusion, are cultivated under glass, and nurtured

as botanical novelties. There are seventeen species of the Lupine in California, indigenous to the soil, and other wild flowers in proportion. Among the California plants held in high esteem by the Europeans, is the *Ceanothus*, or, "The Beauty of the Sierra," a charming flower, found in the mountains, as its name would imply, and also on the hills to the west of the city. The California Pitcher-plant, differing materially from the Pitcher-plant of the Eastern States, is also prized abroad as a novelty. Its leaves are in the form of tubes, and will hold water. Another popular plant is the *Scoliopus Bigelowii*, a plant discovered by the Mexican Boundary Commission, and named in honor of one of its members. This is a great botanical curiosity. It grows to the height of eighteen inches, has large green leaves, spotted with maroon, and bears purple flowers.

Among the tree seeds in demand among the Europeans are those of the *Sequoia gigantea*, or *Wellingtonia gigantea*, in compliment to the late Duke of Wellington, which is best known as the Big Tree of California. The English naturalist Lobb is supposed by many to have first met with the tree near the source of the Stanislaus River, in Calaveras County, though other writers attribute its discovery to Douglass in 1831; but perhaps the most probable statement is the one generally believed in California, and is, that a company of miners on a prospecting tour came accidentally upon the Calaveras group. In 1865 Mr. Sonntag sold two pounds of the seeds of this tree in one of the German States, at the rate of $125 per pound. Other favorites are, the *Pinus flexilis*, a hardy tree, found at the height of 13,000 feet; the *Pinus insignis*, a lovely grass-green Pine; the *Cupressus macrocarpa*, an evergreen; the *Thuja gigantea*, the gigantic Arbor Vitæ, alias *Libocedrus decurrens*, a noble tree, with a straight and very robust stem; in color the foliage is a remarkably bright green, and the branches are long, flat, and frond-like; and many other Firs, Pines, Cedars, Cypresses, etc. The need of a good work on the Botany of the Pacific Coast has long been felt; and in this connection, we are pleased to learn that Professor Brewer, of Yale College, who was associated with Clarence King during the geological survey, is writing a book devoted exclusively to this subject.—*S. F. Bulletin.*

FRUITS—ON WHAT DO THEIR QUALITIES DEPEND?

BY E. J. HOOPER.

I am aware that this is a question which no person can answer, involving as it does so many considerations, and so many debatable points, which await a vast amount of inquiry before they can be determinately answered. Such, however, constitute no solid ground for avoiding an investigation. Our Horticultural and Pomological Societies in this State, conferring as they certainly do great benefits on the public, are not in the habit, at their meetings, of doing as much good in this respect as they undoubtedly might. They do not seem to be in the habit of appointing committees whose duty should be, among other things, to judge of the correct nomenclature, character, qualities, etc., of those fruits which are, or ought to be, brought before them for such purposes. If they would attend to this more than they do, they would be rendering the State valuable service. No man, however experienced, but would have his mind enlarged by attentively perusing the statistical and other in-

formation that such reports would contain. I verily had thought that I knew all about the Winter Nelis Pear, a great favorite of mine for years, as it should also be of the public in general, but I could not but feel that I had acquired interesting information in comparing the various conditions, both above and below ground, which certain exhibitors at the late Horticultural Fair of last fall in this city furnished me. Added to this, there was the verifying of my own opinions as founded upon my own experience. I do hope that those cultivators who continue to exhibit at our agricultural fairs, or attend regular meetings, whether monthly or weekly, will get into the habit of carefully reporting a few of the main conditions, as well as the correct names, under which some of their fruits are produced, and that the horticultural committees will report the same to the people. No man can put such information to better use than really good orchardists, gardeners, and fruitists—men experienced in such things. There is no spoiling such men with crude notions; and after carefully digesting the reports, the above named committees are in a capital position to sum up the evidence, and, as Burns says, "prent it."

On what conditions, then, does the quality of fruits depend? Let me first state what conditions are inimical to quality in the average of fruits. The ripening may be too much hurried; again, ripening in some cases is arrested through low temperatures, as, for instance, in the climate of San Francisco, and other lands near the ocean; also, excess of root moisture; humidity in the air, (generally rather uncommon in California); by gross and succulent growths; or by deficiency of light through neglected pruning, etc.; or stagnant air through the want of a due circulation; and lastly, by the attacks of insects.

Now, these remarks, although applying, in some cases, almost exclusively to the *preservation* of in-door fruits, I intend to offer in such a shape as shall be common to out-of-door productions.

A forced or hurried ripening, whether occasioned in-doors or out, is generally antagonistic to high qualities. This may be particularly observed in Peaches and Melons, and is doubtless the reason why fine-looking fruits at our exhibition tables sometimes do not possess those high qualities which their appearance and kind promise. We also know, that in hot climates and locations, many of our fruits become vapid and worthless; but Nature has provided special kinds and adapted them to the climate and aspect. It is here necessary to observe, that an over-slow or retarded ripening is, in some cases, prejudicial; and this is perhaps most manifest in some of our Pears, which, if kept much beyond their natural ripening period, sometimes assume the character of petrifactions.

Excess of root moisture is to be avoided. Thorough drainage and a cautious use of irrigation are the means within our reach to avert this evil. Fruit-bearing plants are apt, like many of the animal creation, to prove gluttonous, especially when there is a heavy draw on the system; and in the ripening process, where very high flavor is desired, we do not need so much water. It is the high and perfect elaboration and assimilation of the stores of the plants that is to be desired. Nevertheless, it may be laid down as an axiom in fruit-ripening, that the foliage must be in a perfectly healthy condition when the fruit is ripening, or undergoing that change which forms a crisis in its history. Thus we find, that if melons—it matters not of what kind—have decay-

ing foliage when the fruit is turning for ripeness, the flavor is sure to be deficient, and the eye part becomes spongy. It therefore becomes necessary, with all thin-foliaged fruits, (which of course are liable to sudden and profuse perspirations), to keep up as much moisture at the root as will sustain a healthy foliage. Too much air moisture is of course not desirable; but we can seldom complain of this in our climate.

We will now come to succulent growth, which, in most cases, is a foe to intensity of flavor. The Peach is at once a good instance. How is it that we seldom obtain such large and fine Peaches from young and gross trees as we do from those arrived at maturity? Simply because the growth at extreme points being so exuberant, much of the collateral and subordinate wood is robbed for the sake of this great impulse. Pinching these robbers, therefore, by equalizing the sap, causes the inferior portions to receive a more regular supply. In short, these remarks apply to almost every kind of fruit, especially to those of rapid and impulsive growth. Thus, we know that it is a common practice to stop or pinch vines, Melons, Cucumbers, etc., all of which are of rapid growth.

Deficiency of light is the next consideration as concerns flavor and quality. It is well known that both flavor and color in fruits and vegetables can only be obtained through the influence of a liberal amount of solar light. We have very little, however, to complain of in this our sunny clime. But, at any rate, it becomes us to avail ourselves of every cultural means, and not to place the plant or tree in such a position as not to receive with facility whatever light occurs. But not only is flavor in fruits dependent on a liberal amount of light; their size and general character are also particularly concerned. Who has not noticed the inferior character of fruits, such as Apples, Pears, and other ordinary fruits, in the interior of badly pruned or neglected trees?

Freedom from insects is indispensable to flavor in fruits. Happily, we are not greatly troubled in California in this particular. Yet I learn that the apple-worm has been discovered in some parts of the country, and we shall be likely soon to import other noxious insects with trees, grafts, seeds, etc.

Jute in Paper-making. — The use of Jute as a paper material will greatly increase the commercial value of this valuable fibre. The *Dundee Advertiser*, (Scotland), on its appearance printed on Jute paper, after apologizing for its transparency and thinness, says:

"A remarkable fact is, that it is the product of Mr. Watson's second experiment, and if we can attain to such a result on only a second trial there need be no fear with respect to further experiments. The thinness and transparency will easily be remedied, as there is nothing to prevent paper made from Jute being of any degree of thickness and opaqueness. It may be explained that this sample is made almost entirely from old Jute bagging. We propose to have samples made entirely from Jute fibre. To some extent Jute bagging and waste have been used by paper makers for several years, mixed with other materials; and when we mention that nearly 50,000,000 Jute bags were exported last year—the demand for home requirements being also very large—it will be seen how large a quantity of manufactured Jute there is to work upon, especially as bagging is only one class of the goods made from this material."

FORESTRY.

An "International Congress of Land and Forest Culturists," held at Vienna in September, presided over by the Austrian Minister of Agriculture, passed resolutions petitioning the Austrian government to take measures for inaugurating international treaties with other European states, intended to secure birds useful in agriculture; another series declaring the lack of scientific basis for land and forest culture, and the necessity of official publications of exact statistical comparative data illustrating the status and progress of each country in these departments of industry; and a third, relative to the necessity of action toward forest preservation, as follows:

"1. We recognize the fact that, in order to effectually check the continually increasing devastation of the forests which is being carried on, international agreements are needed, especially in relation to the preservation and proper cultivation (for the end in view) of those forests lying at the sources and along the courses of the rivers, since it is known that, through their irrational destruction, the results are great decrease of the volume of water, causing detriment to trade and commerce, the filling up of the river's bed with sand, caving in of the banks, and inundations of agricultural lands along its course.

"2. We further recognize it to be the mutual duty of all civilized lands to preserve and to cultivate all such forests as are of vital importance for the well-being—agricultural and otherwise—of the land, such as those on sandy coasts, on the sides and crowns as well as on the steep declivities of mountains, on sea-coasts and other exposed places, and that international principles should be laid down, to which the owners of such protecting or 'guardian forests' be subject, thus to preserve the land from damage.

3. We recognize further that we have not at present a sufficient knowledge of the evils (disturbances in nature) which are caused by the devastation of the forests, and therefore that the efforts of legislators should be directed to causing exact data to be gathered relating thereto."

It was stated, in the course of the proceedings, that the Rhine, the Oder, the Elbe, and other European rivers, have lower water-marks than formerly; at Altenbruch, in Hanover, ten Hamburg feet lower in 1857 than a half century before; that part of the kingdom of Wurtemburg had been reduced to comparative barrenness by the felling of trees; that droughts were increasing in severity in Hungary, a fact popularly attributed to the deforestation of the country.

The case of the region near Trieste, on the Adriatic, was particularly referred to. It was stated that five hundred years ago a heavy forest covered that region, which was destroyed by the Venetians for the purpose of securing pile-timbers and lumber for commerce, and that after the trees were felled the unprotected soil was washed away by storms, and the whole face of the country became a dreary waste. In August last we passed through that region, and noted it was one of the most desolate views presented by any country. The surface far away from the coast was completely covered with ledges and rough bowlders, was almost destitute of soil, and the heat radiated from the rocks was intolerable. In parts of this broad belt some millions of Olive-trees have been planted by the Austrian government, the soil for the purpose being transported in baskets in some places.

It is stated that the rains, which twenty-five years ago ceased to fall here, are again appearing to refresh the scene.

Similar statements are made relative to local ameliorations by forest planting on the coasts of Germany, in Upper Egypt, and at Ismaila, and in other countries. — *Monthly Report of the Department of Agriculture.*

FICUS ELASTICA—CAOUTCHOUC—GUM-ELASTIC OR INDIA-RUBBER TREE.

BY THE EDITOR.

This tree belongs to class 33, order 2, *Polygamia Dicœcia* of Linnæus, and *Vasculares Dicotyledonæ Urticæ* of Jussieu. It is a handsome evergreen, and is a native of the East Indies. It is by no means difficult to propagate, for which purpose cuttings of the ripe wood are necessary. These should be about two inches in length with a pair of leaves to each; the stem should be split down the centre, and the cuttings laid on the greenhouse shelf for a few hours to wilt. They should then be planted separately in pots filled with light sandy soil, the cutting to be plunged to the depth of an inch and secured by one of the leaves to a small stick to prevent its becoming loose. The pot should be placed in a warm corner of the greenhouse. The *Ficus elastica* is valuable for in-door decoration and for conservatories during the summer season, but requires rather more than the ordinary greenhouse temperature to keep it in health during the winter months, at which time it is essential that the plants be kept rather dry. A very handsome specimen of this interesting tree adorns the conservatories at Woodward's Gardens, San Francisco, which collection is replete with choice typical plants that render it a most valuable field of study for the botanical student.

Caoutchouc is found associated with various essential oils and resinous matters in the milky juice of the plants, and is procured from sundry species of Ficus, as *Ficus elastica*, *F. radula*, *F. elliptica*, and *F. prinoides*, by wounding the plants. A kind of caoutchouc, called gutta percha, imported from Singapore and Borneo, is procured from *Isonandria Gutta*, one of the *Sapotaceæ*. Balata gum is also an elastic gum, obtained from the *Mimusops belata*, which is indigenous to British Guiana, where it attains large dimensions. This gum is of an intermediate character between India-rubber and gutta percha, as it possesses the elasticity without the intractibility of the India-rubber, and the ductility without the brittleness of pure gutta percha. It is employed as an insulating medium for telegraphic purposes. Many of the *Euphorbiaceæ*, *Asclepidaceæ*, *Apocynaceæ*, *Artocarpaceæ*, and *Papayaceæ* contain caoutchouc or gum-elastic. The principal supply, however, of this gum is obtained from *Siphonia Brasiliensis*, which is a common tree in the forests of Para, Brazil.

The genus Siphonia belongs to the *Euphorbiaceae*, and consists of some half dozen species, of which one is the *S. elastica*, a native of French Guiana, and the remainder of the Amazon and Rio Negro districts of Brazil. They are called Seringa-trees by the Brazilians, from the Portugese word *seringa*—a syringe, for the making of which article the caoutchouc was first used. The generic name derived from the Greek, *siphon*, has reference to the same use. The species are trees varying from twenty-five to seventy, or upwards of a hundred feet in height, and all contain a milky juice in more or less abundance, though they do not all yield caoutchouc

of good quality, that from some species being brittle. Their leaves consist of three entire leaflets radiating from the top of a long stalk, and are clustered towards the end of the branches; and their flowers are borne in loosely branched panicles, with numerous little branchlets consisting of a few male flowers and a female at the top; both sexes have a bell-shaped five-toothed or five-parted calyx, and no corolla, the males containing a central stamen-column bearing five or ten anthers in one or two series or whorls some distance below the apex, and the females a three-celled ovary bearing a more or less three-lobed stigma with or without a short style. Their fruit is a rather large capsule, composed of three one-seeded pieces, which split in halves when ripe. The raw seeds are poisonous to man and to quadrupeds, but macaws eat them greedily, and they are excellent bait for fish; long boiling, however, deprives them of their poison, and renders them very palatable.

As we said before, the bulk of the caoutchouc exported from Para, whence the chief supply is derived, is obtained from *S. Brasiliensis*, which is the one common in the forests of the province of Para; but that brought down to Para from the upper Amazon and Rio Negro is divided from *S. lutea* and *S. brevifolia*. These three species are slender smooth-stemmed trees averaging one hundred feet in height. The Para species, however, yields the greatest abundance of caoutchouc. Europeans first became acquainted with caoutchouc in the early part of last century, and its botanical history was made known by M. de la Condamine in 1736; but it is only within the last forty or fifty years that it has become such an important article in our manufactures and commerce. It exists in the tree in the form of a thin white milk, and is obtained by making incisions in the trunk, from which it exudes and is collected in little earthen vessels, and afterward converted into the black homogeneous elastic mass familiar to us as India-rubber, by pouring the milk upon molds and immediately holding them over the dense smoke caused by burning the nuts of the Urucuri Palms (*Attalea excelsa* and *Cocus coronata*) until it is sufficiently hard to bear another coating, when the process is repeated until the requisite thickness is obtained. The mold is then removed. Formerly these molds were always in the form of shoes and bottles, and hence one of the kinds of caoutchouc is known commercially as bottle-rubber; but they are now frequently shaped something like battledores for folding linen, only thinner. In 1863, 65,649 cwts. of caoutchouc were imported into Great Britain.

The belt of land extending around the globe, from 500 miles north to 500 miles south of the equator, abounds in these trees producing caoutchouc. They can be tapped for twenty successive years without injury. In their native forest they stand so close that one man can gather the sap of eighty in a day, each tree yielding on an average three tablespoonfuls daily. Forty-three thousand of these trees have been counted in a tract of country of eight superficial miles in extent. There are more than one hundred and fifty manufactories of this material in Europe and America, employing between seventy and eighty thousand operatives, and using more than ten million pounds per annum; yet such is the extent of the field of produce, that however considerably the demand may increase, there will always be sufficient of caoutchouc to meet it.

Tropical fruit is now free of duty.

THE PLUM AND THE PRUNE.

There is, we believe, no other of our more common fruits that can be made from year to year so certainly profitable as the Plum in its numerous varieties. As an early table and dessert fruit it is always in demand. As we have no curculio to mar the fruit in any stage of growth, it is always perfect. It can be dried upon the stone with perfect assurance that no insect is inclosed; or the fruit can be stoned and then dried.

It is one of the most certain fruits grown, and the most abundant upon the tree. While the Grape requires every year a large amount of labor in the pruning and general culture to obtain a crop, the Plum or Prune scarcely requires the touch of the knife.

The dried product commands nearly as high a price per pound in New York as Raisins, the present quotation being for California Prunes, from twenty to twenty-five cents per pound. They are a fruit very easily managed; from the picking or gathering—for they can be shaken from the tree without injury—to the packing away of the dried fruit, the whole process is simple and easy.

Some of the larger and soft-meated varieties, as table fruit, need a more careful handling, and should be picked from the tree; but the smaller, lighter kinds can be shaken and caught on the canvas laid upon the ground. The rather dry tough-pulped German Prune is of this character, and yet with the finest of these the utmost care is taken in the picking and handling in order to preserve the bloom, which adds so much to their merchantable appearance.

There is not that extreme care or nicety required in the drying process as with Raisins, and they can be dried nearly as well upon a prepared bed of black soil, in our climate, as by any artificial process. Excellent results, however, have been obtained by the Alden process of fruit drying, which turns out a product perfectly unexceptionable.

There would seem to be hardly a limit to the extent to which Prune growing and curing could be carried on in California, with certain and profitable results. Our adobe soils, not entirely congenial to the production of many of our finer fruits, are the very best for large, perfect and sure crops of Plums and Prunes. We believe it would be one of the best investments in fruit growing that can be made, if, having adobe lands, the owner would turn his attention to the planting extensively of the Plum and Prune, and now is just the time to make the purchase of trees. —*S. F. Chronicle.*

Orange Culture in Florida.—As evidence of what has been done in Orange culture in the State, we cite a few instances. Dummitt's grove, on Indian River, is perhaps the finest in the State. It cost its proprietor to take care of it last year, $1,000, and yielded 600,000 Oranges, for which he was paid $11,000. This grove has 3,000 trees, which, with proper care, would average 3,000 Oranges each, and give an annual income of $50,000 to $75,000. H. L. Hart's grove, at Palatka, yields him an income of $15,000 to $20,000 per annum. Arthur Ginn's grove, at Mellonville, of 1,100 trees, pays him $12,000 to $15,000 yearly, and is worth $100,000. Besides these groves there are a great number of splendid promise; but having been planted of late years, the incomes derived from them are as yet of little moment. Mr. DeBarry, of New York, has a grove, near Enterprise, of 20,000 trees. Mr. Charles S. Brown, of New York, has one opposite Palatka of 1,200 trees;

and Mr. James Patterson, of Toronto, has a grove on Banana River of 8,000 trees.—*Palatka (Fa.) Herald.*

GLACIAL ACTION UPON THE PACIFIC COAST.

BY PROF. GEO. DAVIDSON, U. S. COAST SURVEY.

In May last, I read a paper before the California Academy of Science s,upon the terraces that disconnectedly border on our sea-coast from latitude twenty-six or seven to Behring Strait, and with most of which I have been more or less familiar since 1856. These coast-terraces, or plateaus—the *mesas*, or tables of old Spanish navigators and the late Spanish inhabitants—have generally been supposed to mark the ancient sea-levels, and to have been brought to view by an elevation of the continental shores. Some few of the smaller *mesas*, or terraces, composed of sand or gravel, may have been formed under the sea and subsequently elevated; but in nearly all such cases we must suppose the elevation to have been irregular and sudden. But those that exhibit, on an extended scale, level plateaus of rock which have every degree of inclination and contortion of stratification, and an infinite variety of texture, can not have been so wrought by the agency of water alone. Other forces, more powerful and more uniform and constant in action, shaped these flat-topped rocky benches; and the forces, if more than one, abraded the present continental line of our coast and cut through the western part of the Santa Monica range of mountains, so as to form the northern tier of the Santa Barbara islands. Much of the sharp lines of this abrasion has been obliterated by subsequent causes, principally by water from precipitation, alternations of heat and cold, and the action of the waves. * * *

The upheaval of the continental shores by subterranean action can not produce such terraces and plateaus. If the shores of the Pacific were to-day to be raised, say 200 or 600 feet, we know from the contour of the bottom bordering it, that such results would not be one of the consequences. The action of the water will not account for them. Whether by "continual dropping" or by storms, it first wears away the soft and more friable parts, leaving the harder; it destroys shores by undermining, and then grinding it, leaves irregular jagged surfaces. These irregular surfaces, if upheaved above the level of the sea, would not wear away regularly by the weather; the inequalities would in time be filled by disintegrated material, but the surface of the rock would not bear the impress of a planing-machine. We must be guided in a great measure by experience, and judging by our knowledge of present local glacial action, I think we can appeal to the action of ice, moving slowly but surely, as a great planing or molding machine; its lines of movement perhaps controlled by masses and elevations of land not now existing as such, and by forces no longer acting on such a scale. We may suppose a great ice-belt to have existed contiguous to the continent and moving parallel with it, and existing at the same period with the ice-sheet that covered the continent or the lower part thereof. The mechanical effects of this belt may be those we see exhibited upon the islands and the general coast-line; the effects of the latter in the gorges opening upon the shores in the interior valleys, and on the mountain flanks when at right angles to the coast-line.

Iron nails in a flower-vase will aid to keep the water sweet and the flowers fresh.

EPIPHYLLUM.

BY F. A. MILLER.

The *Epiphyllum* is a genus of Cactus frequently met with in greenhouses and conservatories, and by some popularly known as the "Lobster Cactus," and by others as the "Fuchsia Cactus." The former name originated undoubtedly from the shape of the flower, which resembles the lobster, (particularly in the varieties of recent introduction); while the name Fuchsia Cactus is easily traced to the graceful flowers which, like Fuchsias, are pending from the terminal branches. All the Epiphyllums are natives of Brazil, where they are found abundantly growing upon the trunks of trees, like Orchids.

One of the oldest varieties, and cultivated most extensively, is *E. Russellianum*, which is readily distinguished from all the others by its straight and regular flowers, the petals being distributed in a regular manner. The color of the flower is a beautiful, vivid purple-crimson.

Another old variety is the *E. truncatum*, which bears the flowers resembling "lobsters," one side of the expanded flower being much larger than the other. Of this species, some very fine varieties have been produced, and are promising to become extremely popular. The flowers of these new varieties are much richer in color, and present a number of shades, such as orange, crimson, purple, scarlet, pink, salmon, and violet, with white stamens.

Last spring we imported the following varieties, which are now in full bloom, and have been so for the past two months. They are admired by everyone who sees them; and I consider them of the best class of winter flowering plants—showy and pleasing:

E. album violaceum, violet and white.
E. lateritium album, crimson and white.
E. roseum amabile, rosy crimson.
E. Ruckerianum, crimson.
E. salmonianum, salmon color.
E. grandiflorum marginatum, salmon, with white.
E. grandiflorum rubrum, vivid crimson.
E. tricolor, orange, crimson, and white.
E. violaceum grandiflorum, violet and crimson.
F. spectabile, rosy crimson, white edge.

All of these are robust growers, and will flower when very young. With us they have done much better than could have been reasonably expected.

As to their cultivation, I must candidly say that they have not received any attention from us. They seem to thrive well in any soil; they are satisfied with very small pots; and they may be placed in almost any locality in our climate, and will not fail to flower abundantly. Only one thing should be borne in mind, which is, to water them freely while the buds are forming, and until they have done flowering, after which period they may be watered more sparingly. Unlike other Cacti, they require more moisture, and are not easily hurt by the frequent application of water; yet it seems necessary to provide for good drainage in the bottom of the flower-pot, by filling up one-fourth of the pot with broken pieces of crock. The best soil for them seems to be a light and porous mold, although we have them in excellent condition in common loam mixed with a small quantity of coarse sand and well-decomposed stable manure.

The Epiphyllums are propagated without any trouble. Any of the branches taken off the plant when the flowering season is over, and inserted slightly in sand, will readily strike root within two or three weeks, and are likely to flower

within a year. What more could possibly be required of a plant to make it one of the most popular and most desirable?

Among the plants we recently imported were two Epiphyllums grafted upon *Pereskia* stock, the trunks of which are about nine inches in height. Undoubtedly much finer specimens can be obtained in this way, and a stronger growth may be expected; but as there is no Pereskia stock to be obtained on this coast, we can not expect to work upon it; and instead, the stronger-growing Cereus may be used as stock to graft upon. I am convinced that fine specimens may be grown in this manner within a short time, producing a very large quantity of flowers, and I certainly think this *modus operandi* well worthy of a trial.

A PLANT STAND.

The lack of a desirable place to keep plants often prevents the pleasure of raising them. They must have light, and air, and sunshine, and it is not always convenient to devote the brightest windows to their occupancy. If kept on the ledges, they are in danger of being chilled on a frosty night; and it is a tax to be compelled to move the heavy pots every time the thermometer drops. A flower stand of some sort that can be readily moved from window to window is therefore a necessity. The old-fashioned wooden ones are clumsy, heavy, and take up too much room. The modern wire frames are pretty and light; but one of moderate size costs ten or twelve dollars, which is a great deal to put in the stand when we wish to put it in the flowers.

We saw something the other day that seemed to serve both economy and convenience. A box three feet long, a foot and a half wide across the bottom, and eighteen inches deep, is made of common pine. The sides flare outward, so that, at the top, they measure six or eight inches more, from edge to edge, than at the bottom. This box stands on four legs with casters, and under the bottom of the box a piece of wood, fancifully cut on the edge (a sort of pine valance), holds the legs firmly and symmetrically together. The top of the box is nearly even with the window-sill, and, when the whole is constructed, it may either be painted in colors, or stained dark-brown, to match the furniture wood. The inside of the box is better preserved from decay, if lined with zinc or tin; but it will last one, possibly two seasons, without any lining at all. Over the bottom is spread a three-inch layer of bits of broken flower-pots, and on this is set a double row of pots, or as many as will stand evenly on the surface. Then a thick layer of sand is poured over the broken pieces, and the rest of the space filled up with earth till it is even with the top of the flower-pots. In the bed thus formed, bulbs and slips are planted between the pots, and vines are started at the corners. When the latter are well under way, wires, on which the vines twist, are fastened diagonally from corner to corner, forming a beautiful, green arch over what seems to be a bed taken bodily from the garden. Sometimes a tiny hanging basket, or an Ivy growing in water, is hung from where the wires cross in the arch, but, even without it, there is no appearance of bareness. A carpenter will make the box for two dollars and a half, and the rest, painting and all, can readily be done at home.—*"Home and Society;" Scribner's for February.*

In India, Jute is superseding Cotton.

INSURE THE GRAIN CROPS.

Every year our farmers suffer the loss of hundreds of acres of wheat, burned upon the field before harvesting, generally by the carelessness of sportsmen, smokers of cigars, or the spontaneous ignition of phosphorus used for the destruction of squirrels. These fires have sometimes proved destructive to that degree that some have had recourse to insurance to protect them against a total loss.

For the last two years, so imminent has become the danger, that insurance companies refused to take the risk, and farmers were compelled to become their own insurers. It will doubtless be the same this year; sweeping fires will lay waste in a day the labor of months. To guard against such wholesale destruction, there is no better mode of insurance or protection than belts of green trees or green herbage a hundred feet or more in width, interspersed at proper distances the entire breadth of the field.

These belts should be prepared now, by plowing and seeding with something that will be sure to remain green till after the harvesting of the grain. Alfalfa, as one of the clovers, has this property in a remarkable degree, and would be an effectual bar to the progress of fire in a grain-field, and its product really worth more to the farmer than the same breadth of land sown to wheat.

Among shrubs of taller growth, affording food for animals while green, and wood for the kitchen fire when dry, but remarkably juicy and succulent just when it would be wanted as a barrier against fire, there is nothing in the range of our experience equal to the Malva. If we take a still larger tree, and grow a belt as a bar to the progress of fire, as a wind-breaker, and for timber, take the Eucalyptus globulus.

These barriers, if miles in length and costing considerable sums, would be, nevertheless, a good paying investment, enhancing the value of the whole property, and adding security and insurance to broad, almost endless grain-fields; at least, only one section need be lost at one burning. It is a matter worthy and should receive the attention of our large landowners and grain-growers.—*Chronicle.*

ABOUT BEE PASTURAGE.

With experience and fact both going to show the profitableness of bee-culture on the Pacific Coast, the business nevertheless seems to be every year centralizing, getting into fewer hands, or, at least, with our rapidly increasing agricultural population, there is very little increase in the number who keep bees. We can account for this in no other way than that those who have attempted it in previous years and failed, either had really no taste for the pursuit, or were unfortunate in their location for its successful prosecution.

Wherever pasturage can be obtained in tolerable abundance, bee-keeping, if scientifically conducted, is attended with large profit. Our long and severely dry summers cut short the food of bees even more than would have been supposed; and this fact has brought about the nomadic system now practiced by our largest bee-keepers. However necessary this may be to the owner of thousands of hives, there are still great numbers of localities where from fifty to one hundred hives can be kept upon a largely paying basis without removal.

In the vicinity of towns and cities where vegetable gardeners grow their own seeds, and where fruit and orna-

mental trees and flowers abound, our suburban residents should keep bees.

For the benefit of those who would like to know whether they are in the vicinity of good bee pasturage, we annex a few of the more commonly grown plants, shrubs, and trees found in the suburbs of towns, which yield good bee pasturage. In early spring, Crocuses receive lively attention from bees; but more pollen than honey is collected from these flowers. The border Hyacinths of our gardens are honey-yielding, and are eagerly sought when in flower. The Raspberry, Gooseberry and Currant furnish excellent feed. The flowers of nearly all the different kinds of Beans are about as rich in honey as any flower can well be. A singular fact in regard to the flower of the Bean is, that being tubular-shaped and narrow, the bee can not get to the bottom of the flower on the inside, but will pierce the tubes near the bottom from the outside.

Field Mustard not only continues a long time in bloom, but yields a clear and excellent honey. The flowers of Turnips and all the Brassica tribe are exceedingly tempting to bees, and yield them large supplies. The White or Dutch Clover stands the queen of honey plants, but the large Red, though productive of honey, is useless, the bee being unable to reach it.

Plum-trees are among the very best of our fruit-trees for honey-yielding, but the Apple, Pear, Cherry, Peach, and Apricot are all largely honey-producing. The different varieties of Willow—*salix*—are always visited by bees in the spring. Maple, Sycamore—or *Plane*—and Lime-trees are of value to the bee farmer. From the foregoing list of the more common honey-producing plants, one can judge of the probable amount of bee feed for the season, in their respective localities.—*Chronicle.*

THE BANANA.

Mr. F. Curtis, a writer for the *Prairie Farmer*, from Louisiana, thus talks about the Banana:

"The Banana is not properly a tree, but a plant of leafy, succulent growth, of the genus *Musa*. The stalk is form- of the stems of the leaves in concentric layers, reaching with its leaves a height of fifteen or twenty feet, and eight or ten inches in thickness, and contains no woody fibre. From the centre comes the first bearing stem, which turns, and grows downwards. The end of it has the appearance of an ear of Corn, with purple shuck. This unfolds one leaf at a time, displaying two rows—eight to twelve—of tiny little fruit, with delicate blossoms, until it attains a length of two or three feet, covered with fruit. The leaves are a marvel for size and appearance, sometimes reaching a length of six feet, and eighteen inches in width, of a glossy pea-green. The root is perennial. It is large and fleshy—sometimes of the size of a half-bushel measure, from which put forth numerous rootlets, half an inch in diameter. From the main root are constantly springing numerous suckers, which go to form new plants. This being its mode of propagation, they can be taken off to form new plantations, or remain, as may be wanted.

"In a suitable soil, which should be rich and moist, and tropical climate, it requires about one year to mature its fruit, from the first appearance of the plant. When it is gathered, the stalk is cut down. Ten feet apart is a good distance to plant them. This gives over four hundred per acre, and the second year there will be ten or twelve plants to each hill, and soon will occupy most of the ground. After the first year they require but little cultivation, the

old stalks and leaves acting as mulch and manure. Under favorable conditions there is no cessation of growth. New plants and ripe fruit are found at all times, and a plantation once started lasts for years.

"It is probable that no plant ever cultivated will yield more food per acre, or result in greater profit to the owner, where there is a market for it. It is easily and cheaply gathered, requiring no packages, and bears handling and transportation well. Ten bunches a year per hill is a fair estimate for the yield of a good plantation. This would give over 4,000 bunches per acre. Many of these will contain over 100 Bananas. It is a favorite fruit in tropical countries, and always in demand at the seaport towns for shipment. There are some people, no doubt, who live on Bananas alone; but it is not probable that any great amount of work can be got out of a dozen of that fruit a day. Southern Florida and some of the islands on its coast have proved to be suitable and profitable for the culture of the Banana, and instances are mentioned where the receipts have been over $3,000 per year from a single acre, including some plants sold. The southern part of California is also said to be well suited to its growth. These are the only parts of the United States where it can be grown successfully.

"Here it requires two years to perfect itself, and without winter protection, seldom matures its fruit."

Garden Adornments. — Ornamental vases, rustic stands, and hanging baskets filled with choice growing plants, now form a prominent and comely feature in the decoration of our flower gardens and pleasure grounds. They are elaborately bedecked, and add richness and elegance to well-embellished grounds. In the smallest gardens there is room for one or more of them; they are of various sizes, and sold largely by seedsmen.

The successful culture of lovely plants in baskets, vases, etc., lies in the proper selection of plants; for example, all the plants set in one vessel should be such as will flourish under the same treatment.

It is true that some species require more water than others—some thrive best in sunshine, others succeed best in partial shade. Any one at a loss to select suitable plants may ask an honest florist to furnish such plants, and the right number to plant in a vase, stand, or hanging basket. State the size of it, and whether it will be placed in full or in partial shade—and whether creeping or upright plants are desired.

The next point is, to use a rich, light, and friable compost for the plants to grow in, as their roots will be confined in a small space. Frequent waterings should also be attended to. When the weather gets too cold for the plants in fall, all the vessels may be taken into the house, and by special care the plants therein will flourish till the following spring, when they should be thrown out, and the vessels refilled with new plants and fresh compost.

Ferns, Ivies, Lysimachias, Periwinkles, Lycopediums, Tradescantias, Saxifragas, and many other genera, grow well even where they never get a glimpse of sunshine.—*The Evergreen.*

To Preserve Flowers. — Put a pinch of nitrate of soda into the water every day when it is changed. This will preserve flowers for a fortnight. Nitrate of potash in powder has nearly the same effect.

ADORNMENT OF HOME.

Home has a meaning and intention beyond the simple necessities of life. It is made, or ought to be, for something more than a place to eat and drink and sleep. It is for cultivation, pleasure, rational enjoyment and improvement. Cultivated man generally exhibits some taste about home. It is generally the index to his degree of cultivation. The savage leaves his home unadorned. The barbarian deems it unworthy of him to study for rational adornments of his home; or even for ordinary comfort.

Just as civilization advances, taste exhibits itself in the homes of the people. A cultivated mind craves a beautiful home. And what makes a beautiful home? It is not wealth, for we have just been told of a man worth $250,000, who never had a chair in his house or rather hovel. He and his family sat on rude stools. It is not professional honors, nor learning, nor talent, that makes home beautiful; for we have seen all these in homes disgusting to every idea of taste, order, or neatness. It is what is around and within our home that makes it beautiful—the evidence of taste, refinement and culture that encircles it. A home must have some things about it, or it can not be in the highest degree pleasant. The first of these is order. There must be order in the arrangement of the buildings. They must be situated in proper relation to the points of the compass. A house that faces no way in particular; neither north, south, east, or west, is sadly out of order, unless the road, or street, or hill, or valley, or stream, or some other prominent natural object, be so important as to be its regulator. When a house is orderly established with respect to the points of the compass, or the scenery about it —the next thing is to have the land immediately around it so graded as to carry off all water and look pleasantly to the eye. Then the fences about the house should be square with the house and other buildings. They should be neat and trim, the best of their kind, and made both with respect to convenience and good taste. Fences may be cheap and in good taste, or expensive and out of taste. The yards, gardens, &c., about a home, when neatly fenced, add greatly to its appearance. Fine fences beautify a farm, and especially a home. When kept in good repair, painted or whitewashed, free from a hedgeway of weeds, briars, thistles, brushwood, &c., they remind every passer-by of thrift, taste, and happiness within.

The next point of importance is walks to the road, garden, yards, and outbuildings. They are easily made, and when neatly made and well arranged, add greatly to the beauty of home. A puddle of water, a mud-hole, or any such pestiferous obstruction, in a frequented path or walk about a farmer's home is a great annoyance, and reflects seriously on his good taste and good sense. The walks made, and trees and shrubbery are then wanted. Trees along the road, trees about the yards, and shrubbery around the house, are so natural, so graceful to the eye, so musical to the ear, so delicious to the taste, that a home without them scarcely deserves the name. We would not have it all trees about a home. That would create too much dampness. But just enough trees to make a sprightly contrast between sunshine and shade, between heat and cold.

But trees are not enough. There should be vines, an abundance of vines, those beautiful emblems of affection,

about every home. A home without vines, is like a man without a wife, or a bird without a mate. It wears a look of desolation. Vines come creeping about so lovingly, grow so thriftily, bloom so profusely, can be trained into so many beautiful forms, and are withal so fresh and fragrant, that they should be about every home, to remind its inmates of industry, sprightliness and affection.

Then commence the flowers, close along the walks, beside the doors, under the window, in the corners of the fences, sprinkled in profusely and yet orderly, so as to give an idea of finish as well as of beauty and happiness. A home without flowers! No, let it not be. Let every woman, every child with tiny hand and growing taste, plant flower seeds and roots in little nooks, and recesses, and beds, where they can grow as well as not. They love to grow and blossom. Who does not love to see them? Let the buildings all be painted, then let the flowers challenge them to a contrast of colors. When all is in order, let it be kept in order. And when the outside is beautiful, let the inside be, with order, neatness, comfort, taste, virtue, peace, good-will, love and happiness.—*Ex.*

VALUE OF WALNUT LUMBER.—As an illustration of the increasing value of Walnut lumber, the Indianapolis *Journal* notes that the standing Walnut trees on a half section of land on Eel River, in Miami County, Indiana, were recently sold to a lumber dealer for $17,000. There is a large amount of other timber on the tract which is not included, only the Walnut timber being sold. Walnut lumber is coming more and more into use throughout this country and Europe, and at present a very large business is done in preparing and shipping it from Indiana.

Editorial Portfolio.

FERNS (*FILICES*) AND THEIR CULTURE.

We are much gratified to perceive among our amateurs a rapidly increasing appreciation of this wonderfully beautiful class of plants, whose consummate grace and delicacy of fronds, and lovely shades of pure green, afford far more gratification and repose to the eye than all the gorgeous tints of Flora's kingdom.

Ferns belong to the *Cryptogams*, and more especially to the division *Acrogens* of that class, of which they form one of the principal groups. They consist of arborescent and herbaceous perennials, and very rarely of annual plants; some of the tree Ferns having trunks from sixty to eighty feet in height, while others of the herbaceous varieties scarcely exceed an inch in height. All true Ferns may be recognized by the growth of their young fronds, which first make their appearance in the centre of the crown, clothed with a villous coating of light brown hair, and each closely enrolled on itself; and by the development of their spores, which are produced on the under sides of the leaves. The Ferns offer so much variety of structure, that they are necessarily subdivided into many groups. They are found in almost every part of the world. They grow to the greatest perfection in the shade of almost impenetrable forests, and generally delight in a humid atmosphere—this habit must be specially noted in their cultivation. Like all other plants, they must have their season of repose. Many varieties are specially suited for rock cultivation; others are well adapted for hanging baskets. As a general rule, a compost of one-third of white sand, one-third of leaf-mold, and one-third of fibrous peat,

is the best soil that can be used for them. Their propagation is comparatively easy—either by subdivision of the roots, or by raising them from the spores—while some few develop young plants upon their fronds. These latter, when they have put forth two or three fronds, should be carefully removed, potted into small pots, and kept in the shade. Many very beautiful varieties are indigenous to our State, and their collection and cultivation promise a delightful recreation to those of our amateurs who have the opportunity, and will embrace it. Very useful articles on their culture will be found in the California Horticulturist, vol. 1, p. 289; vol. 2, p. 26; vol. 3, pp. 17 and 165.

WOODWARD'S GARDENS.

Although the present season has hitherto been particularly unfavorable, owing to the closely alternating of heavy rain and sharp frosts, yet, by the indefatigable attention of the gardener, the conservatories and hothouses have maintained their flourishing appearance. Many choice plants are coming into bloom; and when a propitious change in the weather takes place, the display of floral beauty will be magnificent. The grounds are in excellent condition; considerable alterations and improvements are in progress; and notwithstanding the inclemency of the weather, all the sections of the zoological department have been kept on the advance. The birds, in particular, are highly interesting, for their variety and the rarity of many specimens.

SOCIETY NOTICES.

Western New York Horticltural Society.—The Nineteenth Annual Meeting of the Western New York Horticultural Society was held in the Common Council Chamber, in the city of Rochester, commencing on Wednesday, January 7th, at 11 o'clock A. M. Reports were received from the Standing Committees, and many of the most important horticultural topics of the day were discussed.

Northern Illinois Horticultural Society.—The Annual Meeting of the Northern Illinois Horticultural Society was held in Farwell Hall, in the city of Sterling, Whiteside County, January 27th, 28th, 29th, and 30th, 1874. The discussions embraced subjects in every department of Horticulture, both in theory and practice, new and old, and a most profitable and enjoyable season was had.

NOTICES OF BOOKS.

Purdy's Small Fruit Instructor. This is a really valuable work on the subject of which it treats, and we can fully recommend it to those of our readers who need such information. The following are some of the subjects of which it treats: "Small Fruit for the Family," "Advice to New Beginners," "Profits of Small Fruits," "Gathering the Fruit," "A Plan for Laying-out a Small Family Garden," "Raising New Sorts," "Preparation of Soil for Strawberries, etc.," "Plan of a Fruit-drying House," etc. The price, post-paid, is twenty-five cents. Address, A. M. Purdy, Palmyra, N. Y.

OUR EXCHANGE TABLE.

The Horticulturist.—In our notice of this valuable monthly magazine, in our December issue, we erred in the amount of annual subscription. It should have been two dollars. Henry T. Williams, 5 Beekman St., New York.

The Ladies' Floral Cabinet is $1 25 per annum. Published by Henry T. Williams, New York. An excellent monthly periodical.

American Farmers' Advocate. We note that the address of this very useful journal is changed from Jackson, Tenn., to Jacksonville, Ill. Subscription, $1 per annum. Chas. W. Green, Editor.

Moore's Rural New-Yorker.—Published by D. D. T. Moore, 5 Beekman St., New York. Subscription, $2 50 per annum. This excellent periodical entered on its twenty-fifth year on the 1st of January, and is evidently in the full vigor of its manhood. We can confidently recommend it to our readers.

Live Stock Journal.—An excellent exponent of its specialty, and well deserving the patronage of every farmer. $1 50 per annum. Buffalo, N. Y.

FAVORS RECEIVED.

The *Overland Monthly.*—This is undoubtedly one of the best numbers yet issued of this first-class magazine, abounding in excellent articles, of which "The Vigilance Committee of 1856," "Salmon-fishing on the Novarro," "Seeking the Golden Fleece, No. 6," "Summering in the Sierra, No. 2," particularly attracted our attention. "Etc.," and "Current Literature," are also quite equal to any preceding.

Schedule of Prizes offered by the Massachusetts Horticultural Society for the year 1874, is to hand, per favor of E. W. Buswell, Esq., Treasurer and Corresponding Secretary. Many thanks for the same.

CATALOGUES RECEIVED.

We have received catalogue of R. J. Trumbull, 427 Sansome street, San Francisco, Cal. A copious and well-illustrated catalogue, well worthy the perusal of such of our readers as need his specialties. His assortment of semi-tropical fruit-trees, from Garey's stock, are well worthy of attention.

We have just had a casual look at the proof-sheets of F. Lüdemann & Co.'s "Descriptive Catalogue of Plants," as they were going through the press of our publishers. These gentlemen are the proprietors of the Pacific Nursery in this city. We shall notice it more at length in our next issue.

Flower Gardens for Children.—It is desirable on many accounts that children should cultivate flowers rather than fruits or vegetables. Most children are fond of flowers, and all can be taught to love them, and the hardier and commoner sorts at least do not tax their energies so heavily as either fruits or vegetables in cultivation. Besides, since flowers appeal solely to the moral sense, they facilitate the inculcation of generous habits. As children acquire strength and skill, they may gradually be intrusted with the care of vegetables or fruits; but they must be taught to use the products of their little gardens as a means of conferring happiness on others; for thus can their own happiness be most effectively attained, since that which is selfishly enjoyed must ultimately result in discontent. But of all the lessons to be learned in a garden, the most valuable is the art of observing; for so varied, so delicate, so minute, and yet so unerring are the operations of Nature, that, though the closest study may fail to fathom her mysteries, the rewards of such study are so rich and so surprising, that even the student of tender years is perpetually stimulated to fresh researches. This interest in natural ob-

jects, once awakened, will prove an inexhaustible source of pleasure while life lasts; for it is an interest that the commonest heath can gratify; and he that has made good use of his powers of observation, he that has trained his senses to bring him accurate information, can not "travel from Dan to Beersheba, and cry 'Tis all barren."—*Home and School.*

FLORAL REVIEW.

BY F. A. MILLER.

The weather has been unusually disagreeable during the last month or two, and has delayed work which necessarily ought to have been completed by us, before this time. Continual rain storms have kept the ground too moist for any outdoor work, and plants in the greenhouse and conservatories have suffered much from dampness. Usually we notice at this time, the approach of Spring, the buds begin to swell, seeds are vegetating, and everything seems to make a start for new life. This year, however, plants show as little life in February as we are accustomed to notice in November and December.

As we may reasonably expect some bright and warm days during the next few weeks, we should not lose sight of the most important work to be done without delay, such as working up the soil, enriching it with good old stable manure, planting trees and shrubs, wherever they are desirable, pruning and trimming of vines and flowering and ornamental shrubs, sowing hardy flower seeds, as Mignonette, Pansies, Stocks, Candytuft, Sweet Alyssum, Gypsophila, Sweet William, Larkspur, Pinks, Sweet Pea, Snapdragon, etc.

During bright and warm days it should not be neglected to ventilate greenhouses, conservatories, or rooms where plants are kept, thoroughly, every day, from nine in the morning until three in the afternoon. The damp and disagreeable weather made drying impossible the past two months; the superabundance of moisture created a foul atmosphere, fungus makes its appearance in all its various forms, the leaves of plants are rotting away, and all this acts again upon the soil in which the plants grow. Thorough ventilation, as I advised above, will, in a great measure, counteract all the evils referred to, and will keep the plants from perishing entirely. If you can keep them in fair condition for another month, they will amply repay you for all the attention and care you have bestowed upon them.

Flowers have been very few and far between during the past month; and our florists have not been able to supply the demand. However, the worst is over undoubtedly, and a few days of fine weather will help materially. The chief bouquet material has been Camellias, Heliotropes, Lily of the Valley, Cineraria, Hyacinths, Primulas, *Abutilon vexillarium*, *Adiantum cuneatum*, and Orange-blossoms, from the greenhouse; and Roses, Pinks, Violets, Stocks, Mignonette, Ageratum, Pansies, Diosma, Erica, Fuchsia, Candytuft, Antholyza, Gladiolus, and Laurustinus, from the open ground.

For button-hole bouquets, the Lily of the Valley, Hyacinths, and Violets, are in greatest demand; while for ladies' hair-dress, the Camellia, with a spray of Smilax, or the Lily of the Valley, is used almost exclusively.

During the coming month, the following plants will be the chief attractions in the house: *Primula Chinensis* (Chinese Primrose), Cinerarias, Lily of the Valley, Camellias, Hyacinths, *Epiphyllum* (Fuchsia, or Lobster Cactus),

Cyclamen, Eupatorium, *Begonia Verschaffelti*, *Streptocarpus Rexii*, *Libonia Penrhosiensis*, *Linum flavum*, Azaleas, Bouvardias, and Narcissus.

The following bulbs may yet be planted for early flowering, both in and out of doors: Hyacinths, Tulips, Anemones, *Dielytra* (Bleeding Heart), Lily of the Valley, Narcissus, Snowdrops, *Erythronium grandiflorum* (a most desirable flowering bulb, and native of California), Ranunculus, and Crocus. All of these are early flowering bulbs, and adapted to house culture as well as for the border.

If Roses are taken up from the ground, planted in pots or boxes, and placed in a sunny place in the house, they will flower in about a month. About two-thirds of the young wood should be taken off before taking them into the house. The same mode of treatment is applicable to Deutzias, Spiræas, Wiegelias, and other flowering shrubs. The result will amply remunerate for the little extra labor and care.

PELARGONIUM MARIE LEMOINE AS A BEDDING PLANT.—I would strongly recommend the above to the notice of flower gardeners for the coming season. I had two large beds of double pink Pelargoniums last season for trial, each containing about sixty plants of Madame and Marie Lemoine: Madame is not worth growing in comparison with Marie—the growth was irregular, and most of the leaves spotted, and the trusses of flowers small, while in Marie the growth was regular, and the foliage handsome, and splendid trusses of bloom, which stood the rain. It is a continuous bloomer (far preferable to Christine as a pink,) and requires liberal treatment. I have been told it is a shy grower, but have not experienced it.—*Gardener's Chronicle.*

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

I continue the description of the different kinds of nuts from the last report.

Bitter-nut, Hog-nut, or Swamp-hickories, are the poorest of all the varieties; in fact the kernel is so harsh and bitter that even the squirrels will not eat them. All the varieties ripen about the middle of September.

Horse-chestnuts, or Buckeyes, grow in fleshy, prickly capsules, and ripen in the fall months. These nuts are not edible without some preparation. The bitter green oil is removed by first grating them to a pulp, then adding one fiftieth (1-50) by weight of carbonate of soda. The mixture is then thoroughly washed and racked by means of a clear fountain, and a white and agreeable paste subsides, which is manufactured into bread and cakes. In Paris they are manufactured into starch.

Madeira or English Walnuts are annually imported here in moderate numbers, and found in the fine groceries, fruit-stores, and markets. The Grenoble nuts are considered the best, and are in season throughout the year. The nuts begin to arrive in January and continue until May, when they are considered best.

Peanuts, Earth-nuts, Pindar-nuts, or Ground-peas, are found for sale in all our principal cities and in most towns and even villages, and in all seasons of the year. They are brought principally from the Southern States, the south of this State, Africa, &c., in large quantities, and may be found not only in fruit and grocery stores, but also at the corners of the streets, and, after having been roasted, everywhere, in the markets, at apple-stands, from peddlers, &c.

The fresh or new nuts arrive here in October. In places where there are frosts, the first frost kills the vines and ripens the nuts. The annual importation to the Northern States and Canada, and the States west of the Rocky Mountains, no doubt considerably exceeds 200,000 bushels. A single planter in one of the Eastern States has obtained from their culture a yearly income of $6,000. He raises from fifty to seventy-five bushels to the acre, and cultivates five acres to the hand, where at one dollar a bushel, the ordinary price—though one dollar and twenty-five cents are frequently realized—yields an income of from $250 to $300 to the hand. No such result, under the old system of labor, could be obtained with the staples on similar soils. Our Cotton planters contented themselves with a crop yielding from twelve to fifteen dollars an acre, and it was the summing up on a large surface that gave a living result. The cultivation of no crop is so easy as that of the Peanut, and only the simplest implements are required; first the plow, to break the land, and then simply the sweep and weeding hoes.

The average crop, as I have stated, is from fifty to seventy-five bushels to the acre, besides which, there will be left upon the ground enough to fatten 100 pounds of pork. The vine, when the Pea is removed, makes an excellent forage for cattle—said to be equal to the best hay or wild Oats. From the nut is expressed a now valuable oil. During the late war in the States this oil was universally used in our machine shops, and its lubricatory properties were pronounced by competent authorities to be superior to those of whale oil, for the reason that it does not gum at all. One of the qualities of the oil is extensively employed in the composition of medicine; another is used for burning purposes, and possesses the virtue of not smoking; while still a third makes a really excellent salad condiment. Such, and so varied and important are the uses to which this simple product can be devoted; uses which the uninformed, who have perhaps regarded it only in the light of an indigestible bulb, would never suspect to proceed from its cultivation.

Pecan nuts are brought from the South and do well in California. They are taken by some for a species of the Hickory nut, known by them as the Illinois Hickory. It is almost an inch long, as large as the end of a common sized finger, with a smooth shell, and oblong shape. They are of an agreeable taste and wholesome. Those that are brought here come principally from the Southern States and Texas, and are in season from November until April or May.

Almonds and English Walnuts, with many others of the nuts just described, are now being grown extensively on this coast, and it will not be many years before we will probably have a large surplus quantity of many kinds of nuts, if not the whole of them, as we have now of Oranges, Grapes, &c. We import now Malaga Raisins, Zante Currants, and Hungarian Prunes. Currants, Prunes, Plums, &c., are now dried here in large quantities; also Apples, Peaches, and many other fruits too numerous to mention. The Alden process of drying fruit will revolutionize this whole traffic. Raisins have also been successfully cured here the past season, and we are every year doing more in the way of drying and curing Figs.

From the statistics furnished us, we condense the following as the operation of the Alden Fruit Preserving Works at

San Lorenzo; of which Littlefield, Webb & Co. are the resident agents. In a working season of 140 days, 790,000 lbs of fruits and vegetables have been preserved, as follows: Apples, 333,700 lbs; Pears, 171,350; Peaches, 68,734; Corn, 49,208; Squash, 48,283; Currants, 42,209; Apricots, 37,091; Potatoes, 14,613; Onions, 8,871; Plums and Prunes, 5,368; Rhubarb, 4,742; Tomatoes, 4,192; Cherries, 3,401; Peas, 1,406; Beef, 671; Beans, 206; Miscellaneous, 2,000; total, 790,045 lbs. This being the first season of its operation here, it is considered quite a success. During the 140 days, an average of only four evaporators were used; if the factory had been worked to its full capacity, 1,000,000 pounds would have been the amount, thus showing an average of nearly four tons per day. Not having a full supply of fruit was the reason the factory was not run to its full capacity. The sales of the Alden product have been much better than was expected, the quality of the fruit far exceeding any ever offered for sale by the Eastern factories. The agents of the company in this city have received orders which they are unable to fill, being sold out of a fall line already. Orders were received for a lot of Onions and Apples for the Navy Department, which would require 3,000 sacks of Onions and over 5,000 boxes of Apples to fill it; but the order coming so late, they were unable to procure them in quantities to warrant accepting the order. From what we have seen of the Alden product, we are convinced of its excellence and superiority over any present method of preserving, and bespeak for it great success on this coast. Following is the price list of the San Lorenzo Fruit Preserving Company: Apricots, 32c to 40c per lb; Peaches, 12½c to 30c; Pears, 12½c to 50c, the latter rate for Bartlett, pared; Currants, 32½c to 40c: Apples, 12½c; Plums, 25c; Rhubarb, 35c; Corn, 30c; Potatoes, 14c; Sweet do, 15c; Onions, 40c; Beef, 40c; Tomatoes, 75c; Squash, 25c. The above are put up in bulk in boxes containing 30 to 50 lbs, and also in 1-lb caddies in cases of two dozen each. Extra choice Apples, in 10-lb boxes, expressly for family use, 18c; do Pears, 22½c per lb.

The first Cucumbers of the season arrived in the first week in January, from Vacaville, Solano County. They were grown under glass. Green Peas were at that time less plentiful, on account of the supply from the Mission Gardens being exhausted. The poor quality of those coming forward at that time, prevented any advance.

The markets on the 10th of last month (January) were abundantly supplied with Los Angeles Oranges, the greater portion of which were of inferior quality, and sold at low prices. The stock of Mexican held out for some time, and had a depressing effect upon California fruit. Apples were abundant up to the middle of January; but Pears of all kinds were very scarce. Bananas were at 75c; Smyrna Figs, 35c per lb; Apples, by the box, were delivered at $1.25 to $2.50; Pears, $2 to $3.

With the exception of a decline in Asparagus and Artichokes, prices in the vegetable markets underwent no change from the beginning to the end of January. The last week in January, Green Peppers, from Mexico, retailed at $2 to 25c; Spinach, 8c; New Potatoes, 5c to 8c; Asparagus, 50c per lb; Lettuce, 20c to 25c per dozen; Salsify, 8c to 10c per bunch; Potatoes by the sack, delivered, $1.25 to $1.50 per 100 lbs.

During the same period, the supply of tropical fruit was increased by the arrival of a cargo of Oranges, Limes, and Cocoanuts, from Tahiti; Bananas from Honolulu, and Bananas, Pineap-

ples, and Limes, by the Panama steamer. Shipments of California Oranges from Los Angeles were liberal, and as the quality improved and the supply of Mexican decreased, the inquiry for them increased. Apples were abundant, and prices took a wide range. In the latter part of January, Bananas were at 75c; Smyrna Figs, 35c per lb; Apples by the box, delivered, $1.25 to $2.50; Pears, $2 to $3.

The last of January the retail markets continued dull under the depressing influence of wet weather. Oranges were the chief among fruits, and they were in abundant supply, especially from Los Angeles. The inferior descriptions of the latter were hawking in the streets at 25c per dozen, while the better description from the San Gabriel valley—from the Sunnyslope and Lake Vineyard orchards—commanded the highest price in the market, $1 per dozen. Mexican Oranges were plentiful at 50c to 75c per dozen, and Tahiti Oranges at 50c. Pears were giving out, and were quoted at 6c to 8c. Pineapples sold at 75c to $1 each.

Potatoes, Asparagus, Cabbage, and Cabbage Sprouts, remained firm at the quotations of a week before. Rhubarb from Petaluma retailed at 20c per lb. Mushrooms advanced to 35c and 50c per lb. Horse Radish was easier at 20c per lb.

Improved Foliage Beets.—The garden Beet would be a beautiful ornament in the flower garden if it were not so common elsewhere. But there have been some variegated kinds produced, which are said to be as handsome as the Coleus. Mr. Bull thus talks about them—one in particular, which he calls "Multicolor": "This useful and handsome decorative Beet has been raised by Mr. Clark, gardener to W. S. Mitchell Innes, of Edinburgh, where it has been carefully grown and selected for some years past. With reference to the origin, Mr. Clark states that a single variegated plant came up in a lot of the ordinary garden Beet. This plant produced seed which gave a numerous progeny of various colors. The seed saved from the second generation produced plants in which the variegation was still further developed, and embracing the following colors: rose, orange, magenta, silver, bronze, crimson, with various shades of purple—and with the different colors blended, from the brightest orange to the richest carmine; and when shown before the Royal Caledonian and Royal Horticultural Societies, twenty distinct varieties were exhibited. From its hardy character, and the variety of color it produces, the use of this Beet as a decorative plant for flower gardens (apart from culinary purposes), can scarcely be over-estimated; plants potted in autumn would be extremely serviceable for cool conservatory decoration, their colors rivaling those of the brightest Dracænas, with the advantage of not requiring a stove like the last-named."

Purple Cone-flower, (*Echinacea purpurea.*)—A specimen of this plant in cultivation from Illinois, presented some features which commend it to attention for the garden. Although somewhat coarse in foliage, its large flower-heads terminating the naked peduncles are quite showy, from the dark-purple, almost black, conical centre and the numerous (ten to fifteen) light-purple pendant rays. These rays are about two inches long by one-fourth of an inch wide. The plant is vigorous and hardy, and is worthy of trial in the flower-garden.

Editorial Gleanings.

A London Experiment with Sewage.—The Phosphate Sewage Company, of London, have patented a process which promises to solve the very troublesome question of the disposition of the liquid filth that flows through the sewers of every city. The process combines the saving of the rich manurial properties of the sewage for fertilizing purposes, with its disinfection, so that, instead of polluting some neighboring brook or river, the liquid portion that escapes is clarified into sparkling water, pure alike to smell and taste. The company is at present experimenting with a portion of the sewage of London, treating it in the following manner: The sewage, a turbulent mass of thick, black, and odorous water, is pumped out of the main into a wooden carrier, along which it runs for a few feet, till, passing a small pumping-engine, it receives the addition of a small quantity of phosphate of alumina, specially prepared. The sewage continues its course along the carrier some distance, the phosphate meanwhile becoming thoroughly mixed with it, and visibly affecting its appearance in the direction of clarification. It next receives a further addition in the shape of milk of lime pumped into the carrier from another small pumping station, and the mixture is permitted to flow into two large tanks, where the process of precipitation takes place, the effluent water running off by carriers to perform its work of irrigation.

New Paper-fibre.—According to the *Agricultural Gazette* of India, a common weed called *Sida retusa*, growing in great abundance in Queensland and New South Wales, has recently been found to afford a very valuable material for paper-making. It is a species of *Malvaceæ*, and the best specimens grow about Windsor, New South Wales, where it is known as American Lucerne. It is alleged to be of such vitality and vigor of growth as to be almost ineradicable, and to grow in such profusion as to be a very troublesome weed; to be very superior to Esparto-grass, clean, easily bleached, and having all the best qualities of flax. "Samples of the *Sida retusa* having been submitted to the chief paper manufacturers in England, one and all have agreed in expressing their most favorable opinion of its perfect adaptability to the purpose of paper-making, and all entertain a very high estimate of its market value." Various species of Sida are represented to be common throughout India. One, *Sida piliafolia*, referred to by Dr. Forbes Boyle, in his work on Indian fibres, is said to be cultivated in China for its fibre, as a substitute for hemp and flax. Dr. Roxburgh describes its fibre as "strong and pliable, very silky in its nature, and the plant of very rapid and luxuriant growth, three crops being obtained in one year."

Packing of Oranges and Lemons.—A full grown Orange-tree yields from 500 to 2,000 fruit annually, and arrives at the bearing state in three or five years, as does the Lemon-tree; and both grow luxuriantly in most soils. The plantations, in the Mediterranean countries, are called gardens, and vary in size, the smallest containing only a small number of trees, and the largest many thousands. The fruit is gathered in baskets similar to peach-baskets, lined with canvas, the basket being held by a strap attached and passed around the neck or shoulders. From the garden the fruit goes to the repacking magazine, where

it is removed from the boxes in which it was picked in the gardens, and repacked for shipment by experienced female packers, after having been assorted by women, and wrapped in separate papers by young girls. As many as 500 (mostly women and children) are employed by some of the fruit-growers in their gardens and magazines, in gathering, sorting, and repacking for shipment, the wages paid them varying from nine to sixteen cents a day. In sorting, every fruit that wants a stem is rejected. The boxes are then securely covered, strapped, and marked with the brand of the grower, when they are ready for shipment. Twenty years ago this trade was nothing in its commercial characteristics, or the inducements it offered to capitalists. Now it is progressing with giant strides into prominence, and is a considerable source of revenue to the Government.

Ditaine, New Substitute for Quinine.—The use of *Eucalyptus globulus* as a substitute for quinine has been quite thoroughly discussed, and now we find another plant which bids fair to make equally as great a stir in the medical world. The plant in question, *Echisera scolaria*, belongs to the family of the Apocynaceæ, and grows quite abundantly near Luzon, in the province of Bataugar, in the Philippine Islands. Its bark has for some time been employed by the inhabitants of the province as a cure for all kinds of fevers. M. Gruppe extracted from the bark the active principle, which he called *ditaine*, and which has been used in the hospitals in the same manner and the same doses as quinine. It is said to be quite as efficacious as quinine, without producing any of its disagreeable effects, and has been found very valuable as a tonic.

"Sanfoin."—The Monterey Gazette has the following: "This is a French name of a grass, a species of Lucerne, which in France has long been cultivated as the most profitable of grasses, whether for hay or for pasture. Victor Bidache has received ten pounds of the seed, and will take measures this season to propagate it. He informs us that 'Sanfoin' will grow on lands having a dry constitution, and that it is remarkably prolific, yielding, without irrigation, two crops of hay the season, and then serving for pasture. It grows two feet high, has a beautiful flower, and is full leaved. Besides its use as hay, it is employed as a fertilizer, like the red clover in the Eastern States. Should Mr. Bidache's experiment succeed, and there is no reason it should not, 'Sanfoin' will be a valuable addition to our grasses."

The Yew Poisonous.—All the evidence on the subject of the Yew being poisonous to cattle, horses and deer, leads to the conclusion that when eaten in its fresh state it is harmless, but when withered or partially so, it is poisonous. The clippings of Yew hedges, for instance, if laid within the reach of these animals and eaten by them, have invariably caused death; but it is known that when they browse upon the fresh shoots in parks no such result occurs.—*Cottage Gardener.*

Germination of Primula Japonica.—English florists find that the Primula Japonica retains its germinating power down to the third season. Seeds which were received direct from Japan by E. G. Henderson & Son, and germinated but small numbers the first year, produced thousands freely the second year, and the same pans still produced the third year from the original sowing.

The London *Times* sharply controverts the assertion made by Dr. Edward Smith to the British Association, that fish is rather a relish than food, and contains little more nutriment than water. As opposed to this statement, the investigations of Mr. Payen are cited, who proves that the flesh of fish on the average does not contain more water than fresh beef, and has as much solid substance as the latter.

For instance, the flesh of salmon contains 75.70 per cent. of water, and 24.296 per cent. solid substances, while beef (muscle) contains 75.88 per cent. of water, and 24.12 per cent. solid substances. The flesh of herring contains still less water than that of salmon, and some fish are as rich in nitrogenous substances as the best wheaten flour, weight for weight.

The Esparto Grass.—At the Society of Arts recently, Mr. Johnson read a paper on Esparto Grass, *Macrochola tenacissima*, now so largely used in the manufacture of paper. The leaf is the portion used, and the imports have risen from fifty tons in 1856 to over one hundred thousand tons in 1870, standing second in this respect to cotton only. The plant grows best on the seacoast of southern Spain and northern Africa, and there seems to be no reason why the culture should not be largely increased both in the native country of the plant and in other regions of similar climates, etc. The plant is reproduced by seed, or transplanting.—*Gardener's Chronicle.*

The Best Plants for Hanging Baskets.—A contributor to the London *Garden* says that plants with slender branches which naturally hang down, are most suitable for hanging baskets. "Mother of Thousands"—the "Wandering Jew" with its prettily marked leaves—the Lobelias, and some of the trailing Campanulas or Bell-flowers—the well-named "Rat-tailed Cactus," and the so-called "Ice-plant," are all more at home when suspended than when grown in any other position, unless it may be when placed on brackets at each side of the window, where they have a very charming appearance. The same writer suggests that the suspended basket or flower-pot should be supported by a piece of cord passed through a small pulley, by which means it will be easily lowered down for the purpose of watering.

Tree Lemon Verbena.—In these days, when *effective* plants are sought after, we should not lose sight of things at hand with which to produce as good results as any new introduction can afford. The London *Gardener's Chronicle* calls attention to the pretty effects which can be had from the common Lemon Verbena when trained as a standard. The wavy spikes of flowers are very graceful, and the odoriferous character of the plant will always make it a favorite in any form.—*Gardener's Monthly.*

Blackberries in California.—The California *Agriculturist* notices an acre and a half Blackberry patch near San José, from which were picked sixteen tons of fruit, and adds:

"This is the second crop that he has gathered, as the vines are but three years old. The soil is a rich, light alluvial, and he cultivates thoroughly and cleanly. The plants are four to eight feet apart. He irrigates from the time of blossoming while the fruiting lasts, as often as once a week, and says that it pays to irrigate copiously. The variety

cultivated is the Lawton. One man will pick from 100 to 112 pounds per day, and it has required seven men constantly at work to pick the fruit from one and a half acres during the ripening season."

HEALTH FROM FLOWERS. — It is reported that an Italian professor has discovered that perfumes from flowers have a chemical effect on the atmosphere, converting its oxygen into ozone, and thus increasing its health-imparting power. As the result of his researches he states that essences of Cherry, Laurel, Lavender, Mint, Juniper, Lemons, Fennel, and Bergamot are among those which develop the largest quantities of ozone, while Anise and Thyme develop it in a less degree. Flowers destitute of perfume have no such effect. He very naturally recommends that dwellers in marshy localities and near places infected with animal emanations should surround their homes with a profusion of the most odoriferous flowers—a recommendation which the Creator, through their beauty and fragrance, addresses to the senses of all sensible people.

ADIANTUM FORMOSUM. — The above named Fern is certainly an exceedingly useful variety. It is very easily cultivated, and can be propagated freely; the mature fronds have also the good quality of keeping longer after being cut than any other of the species; but that it is more beautiful than *A. cuneatum* I can not admit. It is quite as easy to grow. I noticed it in an article on Ferns last year. The method alluded to of inverting a small garden saucer inside a larger one, so that the bottom of the pot just touches the surface of the water, is good when the plants have quite filled their pots with roots. I have some Ferns which are grown for exhibition, and must not be shifted into pots larger than twelve inches in diameter; they require watering twice or thrice a day in summer, and often suffer from neglect when standing on the stage with other plants; but when the pots are placed bodily in saucers of water, they are not a tithe of the trouble, and seem to do well with their treatment.—*Gardener's Record.*

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING JAN. 31ST, 1874.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.17 in.
do 12 M.	30.17
do 3 P. M.	30.15
do 6 P. M.	30.15
Greatest height, on the 29th at 12 M.	30.45
Least height, on the 15th at 6 P. M.	29.68

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	46°
do 12 M	50°
do 3 P. M.	50°
do 6 P. M.	46°
Greatest height, on the 15th at 12 M.	60°
Least height, on the 12th and 22d at 9 A. M., and 12th at 6 P. M.	39°

SELF-REGISTERING THERMOMETER.

Mean height during the night	41°
Greatest height, on night of 16th	54°
Least height, on night of 23d	33°

WINDS.

North and north-east on 17 days; south and south-east on 2 days; south-west on 8 days; east on 1 day; north-west on 3 days.

WEATHER.

Clear on 7 days; variable on 8 days; cloudy on 16 days; rain on 14 days.

RAIN GAUGE.

January 1st	1.54	inches.
" 14th	0 06	"
" 15th	0.35	"
" 16th	0.20	"
" 17th	0.59	"
" 18th	0.07	"
" 19th	0.36	"
" 20th	0.32	"
" 21st	0.08	"
" 25th	0.25	"
" 26th	0.12	"
" 27th	0.13	"
" 28th	0.45	"
" 30th	0.33	"
Total	4.85	"
Total rain of the season up to date	17.14	"

GROUP OF ANNUALS.

1. *Double Petunia.* 2. *Phacelia.* 3. *Single Petunia.* 4. *Candytuft.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. IV. MARCH, 1874. No. 3.

ACHIMENES.

BY F. A. MILLER.

The Achimenes (Nat. ord. *Gesneriaceæ*) is a bulbous rooted plant, exclusively cultivated under glass, and may be recommended as a very desirable house plant. It is found in the West Indies, Central America, and Mexico. The treatment necessary is simple; but the following rules must be observed: The best soil for it is a sandy leaf-mold, to which a small quantity of bone ashes should be added. Plant six to eight bulbs in a six-inch pot, at equal distances; the pot to be filled up to within one to one and a half inches of the rim; as the plants grow up fill in carefully and gradually the same soil, until the pot is nearly full. If treated in this way, side-shoots will be formed from the main stems, and a compact growth will be the result. Set the pot close under glass. The planting may be done in February, or any other time until April. Two or three months after planting, the plants will be covered with rich flowers of various shades, as described below. After the flowering season, and when the stems have decayed, the bulbs should be taken up and buried in sand of moderate dampness, where they may remain until the time for planting comes again. I would advise to plant bulbs of only one color in a pot, the effect being much better when in bloom. This is also preferable, for the reason, that some varieties grow taller than others, and uniformity is required.

The Achimenes is very easily propagated from cuttings. Very desirable varieties are:

A. coccinea, native of Jamaica, fine scarlet.

A. gloxiniæflora, (from Mexico), flowers large white, with yellow throat.

A. grandiflora, lilac.

A. longiflora major, beautiful blue.

A. Ambrose Verschaffeltii, fine white.

A. purpurea elegans, deep claret color.

To MEND CHINA.—Take a very thick solution of gum-arabic in water, and stir into plaster of Paris until the mixture becomes of proper consistency. Apply it with a brush to the fractured edges of the china, and stick them together. In three days the article cannot be broken in the same place. The whiteness of the cement doubles its value.

ORNAMENTAL SHRUBS—HOW TO TAKE CARE OF THEM.

Deciduous shrubs are propagated by cuttings, layers, offsets, or divisions of the root, and seed. Cuttings are made of the ripe wood of the same year's growth, cut in November and heeled in —that is, the lower end of the cutting is planted in sand, in a cellar or some place where there is an even temperature, above freezing, and yet not warm enough to start the buds before it is time to plant in the spring. Most of the new varieties are propagated by cutting off the young shoots. These are taken off when about three inches in length, and planted in boxes or shallow pots, filled with sand, and placed in frames where there is a moderate degree of bottom heat. To be successful in raising cuttings in this way, the temperature should be kept as even as possible. The sudden changes from fifty to sixty, and then down to thirty, causes the cuttings to damp off, as the gardeners term it—that is, turning black and rotting. Other varieties of shrubs are raised from cuttings of the root, which may be cut up in small pieces of an inch in length, and planted in the same way. All varieties like a rich and deep soil. The Laburnum and Japan Quince have long roots, which run deep into the ground, and when grown in poor soil, they have a dwarf and stunted appearance. Most shrubs, as a general rule, send out their roots not far from the surface of the soil; consequently, a slight surface manuring in the fall is all that is necessary to keep them growing and blooming luxuriantly. In pruning, some little judgment is required. Some varieties produce their flowers on the wood of last season's growth; hence, care must be exercised in removing wood, or the supply of flowers will be limited. Others produce their flowers on the young wood made in the spring. These may be pruned more severely. As an illustration of this fact, the *Spiræa prunifolia* bears its beautiful white flowers on leafless shoots of last season's growth, while the *Spiræa opulifolia*, which flowers later, blooms on young shoots of the same season's growth.

The following is a list of twenty-five varieties of the best now in cultivation:

BERRY-BEARING SHRUBS.

Callicarpa Americana.—Flowers very small and insignificant. In October, the branches are covered with beautiful purple berries. Propagated by divisions of the root and cuttings.

Daphne Mezereum—Most fragrant of all the flowering shrubs. Blooms in March, and is succeeded by bright scarlet berries. Propagated by layers and seeds.

Euonymus Americanus, or Burning Bush, sometimes called Strawberry Tree.—A tall growing shrub, covered with bright scarlet berries. *E. fructa alba* bears white berries, and forms a pleasing contrast to the former. It is very easily propagated by seeds, cuttings, layers, and division of the root.

Symphoricarpus racemosus, more commonly known under the names of Waxberry and Snowberry; the flowers are insignificant, but the berries are rather pretty in the fall. *Symphora vulgaris*, commonly called the Coral Plant—the berries are red, and bear a slight resemblance to coral beads, easily propagated by layers and divisions of the root.

Berberis atropurpurea.—A variety of the common barberry, with dark purple leaves. In spring it bears a profusion of flowers, of a yellowish color, quite pretty, succeeded by berries of a dark color, of no great beauty, yet it

should be in a collection, on account of its hardiness, retaining its foliage for a considerable length of time during winter. Propagated by cuttings and divisions of the root.

Amygdalus Persica, or double flowering Peach.—The new crimson one is a splendid addition to our collection of flowering shrubs. It frequently bears double fruit, but they never mature. To perpetuate it, it requires to be budded on the common Peach or Plum stock.

Amygdalus pumila is the old double pink-flowered Almond, too well known to need any description.

Amygdalus pumila alba plena, the new double white flowering Almond, is also a great addition. No choice selection of shrubs is complete without it. It is extremely hardy, and easy to propagate by cuttings of the root.

Andromeda calyculata—Is a dwarf shrub, retaining its leaves all winter, and covered with white flowers in the spring. *Andromeda floribunda* grows taller than the above, flowers larger and more abundant. Propagated by seeds, layers, or cuttings.

Azalea calendulacea, Orange colored Azalea.—Very showy, but not as fragrant as the *Azalea viscosa* or *nudiflora*, which grows wild in most parts of the country.

Cercis, Japan Judas Tree.—This is probably the most showy of all the early flowering shrubs in cultivation. The flowers are of a rosy pink, and produced so profusely as to cover the branches entirely. Propagated by layers.

Cytisus scoparius—Scotch brown, a very graceful growing shrub, of medium size, foliage very small, and bearing a profusion of pea-shaped flowers of a bright yellow; not perfectly hardy, yet does well in sheltered positions. Propagated by seed.

Cydonia Japonica, Japan Quince; a beautiful flower, but the plant, on account of its thorny character, is no favorite with us. *Cydonia Japonica alba* is a white, or, more properly speaking, a pink variety. Both, when planted together, form a pleasing contrast. Propagated by layers and dividing the roots.

Deutzia scabra grows eight or ten feet high, bearing an abundance of pure white flowers. The new double flowered variety is pretty, yet we think it will be some time before it supersedes the preceding one. *Deutzia gracilis*, a dwarf kind, suitable for early flowering in the house. Propagated by cuttings.

Forsythia viridissima, Golden Bell, flowers very early in spring, and retains its foliage until quite late in the season. Easily propagated by layers. *Forsythia suspensa*, a new weeping variety, flowers similar to the above, but much smaller.

Halesia Tetraptera, Silver Bell Tree, bearing thousands of white bell-shaped flowers. Propagated by seed.

Spiraea.—A beautiful class of shrubs, commencing to flower early in the spring, and continuing until autumn. *Spiraea prunifolia* bears its flowers on long, delicate shoots. *Spiraea Reevesii* bears a profusion of white flowers. *S. fl. plena*, a double flowered variety of the former. *Billardii*, bright red. *Callosa*, pink flowered. Propagated by cuttings, layers, and divisions of the root.

Syringa, Lilac.—The new varieties are very fine. *Syringa virginalis*, a delicate white flower. Persian, purple flowers. *S. laciniata*, cut-leaved curious foliage. These varieties are valuable, as they commence to flower when quite small. Propagated by layers, cuttings, and divisions of the root.

Tamariscus Africanus.—A very graceful shrub, growing quite tall, foliage

delicate, flowers in long spikes, of a pale pink; can be raised from layers of the branches.

Weigelia rosea.—This shrub has become very popular. Its beautiful flower, extreme hardiness, and quick growth have rendered it a general favorite. *Weigelia amabilis*, a strong growing kind, of not much beauty, but it blooms occasionally during the summer. *Weigelia variegata*, variegated leaves. Propagated by cuttings, layers, and divisions of the root.

Viburnum opulus, the old-fashioned Snowball. There are several varieties of this shrub. It is propagated by cuttings and layers.

Hypericum, or St. John's Wort.—A dwarf shrub, bearing small yellow flowers, in bloom for quite a length of time during summer. Propagated by seed.

Philadelphus coronarius, or Mock Orange, the most fragrant of all the Syringas. *Philadelphus grandiflorus*, larger flower than the former, but not so fragrant. *Nana*, a dwarfish variety. *Gordonarius*, similar to *grandiflorus*. All the varieties named bear white flowers. Propagated by cuttings, layers, and divisions of the root.

Hydrangea.—The new variegated leaved varieties are very ornamental. *Argentea variegata* has white spots or stripes on its leaves. *Aurea variegata*, foliage, golden stripes. They require to be protected during winter. Easily propagated by cuttings and layers.

Crataegus oxycantha, English Hawthorn. The red and white are quite pretty, and well worth cultivating. Propagated by seeds.

Kalmia latifolia, our native Laurel.—Its extreme hardiness and delicate flower has made it quite a favorite of ours. When removed from its native woods, it should be planted in a similar soil.

Calycanthus floridus—sweet scented shrub. The stems and flowers are both fragrant. The flowers are not remarkable for their beauty. Propagated by suckers, layers, and cuttings.

Rhododendron—There are so many varieties of this beautiful evergreen shrub, that selection is a matter of taste. *R. Catawbiensis*, large purple flower. *Maximum*, pink flower. Propagated by grafting, seeds, and layers. —*Horticulturist.*

THE HOLLY.

BY E. J. HOOPER.

The Holly (*Ilex aquifolium*) is a beautiful evergreen shrub, which I should like to see more cultivated than it is in California. It is essentially a winter ornament in almost every civilized country, where it can flourish in the open air. At Christmas, especially, it is that the Holly-bush attracts the eye, sanctified by the customs of so many nations. Ever green and ever brilliant, now enwreathed with snowy clusters of star-like flowers, now clad with glowing masses of deep scarlet berries, beauteous in every season,

> "It weathers every changing hour,
> And welcomes every sky."

And thus it commends itself not only to the variable climates of other lands, but even to our own happily climated State, rich as it is in numerous plants of both native and foreign growth; and notwithstanding that we possess so beautiful and indigenous a plant as the lovely Madroña-tree, (*Arbutus Menziesii*), it is fully equal to it in the great beauty of its flowers, foliage, and red berries.

The Holly is beauteous and inspiring even in its most commonly diminutive and bushy state; but the effect is, of course, greatly enhanced when it is planted in some open spot, where it may

stand in the perfection of its growth, an evergreen tree, displaying the verdure of summer amidst, as even in our mild region, the sombre and subdued expression of the winter landscape.

"Glossy-leaved and shining in the sun,"

it is indeed always a glad and cheering object, as may be seen in the handsome grounds of R. B. Woodward's country place in Napa Valley, where the brilliant clusters of scarlet berries, which inwreathe its outer branches, contrast and embellish its cone-like mass of enduring greenness.

The circumference of the stem and branches of the Holly is small in proportion to that of many other trees. This may in some degree be accounted for by the peculiar slowness of its growth, (at least in most countries), and the consequent hardness of the timber, the annual deposits of woody layers being remarkably small and compact. The bark is smooth and of a grayish tinge, the lower branches spread horizontally, and when the tree is uninjured by cattle, etc., diverge regularly on each side of the trunk, while the upper and lower shoots assume a more elevated direction, so as to give the tree a cone-like appearance. "The branches," to quote the minute description of Hunter, "are garnished with oblong oval leaves, about three inches long and one and a half broad; of a lucid green on their upper surface, but pale on their under, having a strong midrib; the edges are indented and waved, with sharp thorns terminating each of the points, so that some of the thorns are raised upward; these being very stiff, can not be handled without pain. The leaves are placed alternate on every side of the branches, and from the base of their footstalks the flowers come out in clusters; standing on very short footstalks; each of these contain five, six, or more flowers."

"O reader! hast thou ever stood to see
The Holly-tree?
The eye that contemplates it well perceives
Its glossy leaves,
Ordered by an intelligence so wise,
As might confound the atheist's sophistries.

"Below a circling fence its leaves are seen,
Wrinkled and keen;
No grazing cattle through their prickly round
Can reach to wound;
But as they grow where nothing is to fear,
Smooth and unarm'd the pointless leaves appear."

The meaning of the latter stanza is explained thus: When the tree is allowed to assume its natural form, the leaves on the lower branches alone are furnished with these prickles, while those on the upper boughs are, for the most part, destitute of them.

Yet handsome as the Holly may be as a tree, it is especially valuable as a hedge-row plant. For this purpose it is most generally cultivated in England and many parts of Europe, and is peculiarly adapted, whether we regard its great durability, the impenetrable nature of its foliage, the facility with which it bears clipping, and the evergreen character of its tough and polished leaves, unchanged by seasons or blasts, and almost impervious to the insect tribe.

"A hedge of Holly, thieves that would invade
Repulses like a growing palisade;
Where numerous leaves such orient green invest,
As in deep winter do the spring arrest."

Whether our comparatively dry climate would suit it as a hedge-row plant, experiment could alone decide. They have excellent hedges of it in many parts of Europe, where the climate is far colder than California.

A rich and deep loam is the proper soil, a rather moist and sheltered, though not over-shaded place, the situation, in

which the Holly thrives best; yet it has this further recommendation, that there are but few spots in which it will not grow. Even between the shade and drip of other trees, so uncongenial to almost every other plant, it is uninjured; and in this respect it is unequaled, except by the Dwarf or Tree Box.

The timber of the Holly is hard, white, finely grained, susceptible of a very high polish, and easily stained with different colors: hence it is peculiarly suited for inlaying, veneering, and other ornamental cabinet work. It is, however, rather scarce everywhere, and rarely to be obtained in any quantity, even in the countries where it is most grown, being too much prized by the owners to be cut down for timber. It is considered to rank next after Box and Pear woods, for wood engravings.

Many varieties and sub-varieties have been raised by accident or cultivation from the Holly.

The name Holly is evidently a corruption of the word holy, and applied in consequence of being for many ages, and in most European countries, associated with the sacred festival of Christmas.

Preserving Cut Flowers.—Cut flowers in vases will keep much longer if the vases are filled with white sand, and with water enough barely to cover it, or rather to keep it thoroughly wet. Water by itself rots the stems, so that they lose the power of drawing up moisture; but this does not occur so readily where they are thrust into the wet sand. The sand should be washed by having water poured on it and drained off before use; otherwise, the salt which all sea sand contains will prove injurious. As wet sand is an unhandy thing to put into vases, it is well to have it washed and dry beforehand.

REMARKS ON THE CULTIVATION AND AFTER TREATMENT OF GLOXINIA, GESNERIA, AND ACHIMENES.

BY THOS. L. WEBB.

These are all natives of various parts of South America, and can be brought into bloom at any season by merely regulating their period of rest, so as to prepare them for starting into growth at any time of the year. The remarks that follow may be of some use to amateurs not possessed of a good hothouse, and who wish to grow a few of these fine objects in their greenhouse.

Before remarking, however, upon the subject of treatment, it will, perhaps, be of some benefit to those who have not paid attention to the cultivation of this class of plants, to state that the leaves are the agents of the bulbs' (or tubers') maturity, and by which they collect and lay up a store of matter so essential to perfection in the flowers; so that it will be readily understood, that whatever has a tendency to promote healthy leaves, tends also to induce excellent bloom.

The treatment these tropical herbaceous plants require, so nearly agrees, that they can be classed together for cultivation. The Achimenes are the smallest, with scaly roots, and I find do best grown in shallow pans. The Gesnerias are larger tubers, and named after Conrad Gesner, a botanist of merit, of Zurich. The Gloxinias will form tubers from four to six inches in diameter. They were named after Gloxin, a botanist of Colmar.

At the present time—January—all those that are not already started into growth, should be stowed away in a dry place on a shelf, at the back or darkest part of the house, or they may be put with their sides turned up, under the stage, in a temperature not low-

er than 45° Fahrenheit, for it is not safe to keep the tubers colder, as they are liable to rot; if above 55°, to start into growth. There can, however, be some already started into growth if care has been taken to give the tubers a due proportion of repose. Debility, which is often seen in them, arises from improper management, the vital energies of the plant being nearly exhausted for the want of rest. Therefore, those who would cultivate them with success, must carefully attend to periodical resting. As to growing the plants, it is the system of some cultivators to part them after they have commenced to grow, others, directly after they are removed from their winter quarters.

In starting the roots of Gloxinias, (which may be done every six weeks if you have a hothouse) they should be taken out of the old soil, and repotted into four or six-inch pots, according to the size of the tubers, in a compost of light sandy peat and leaf-mold, and a small portion of well-rotted cow-dung, which will enrich it, taking care to give plenty of drainage.

The tubers of the Gloxinias and Gesnerias will only require to be pressed on the surface of the soil. Achimenes will require to be covered with at least half an inch of soil; then placed in a warm, close frame in the greenhouse, so that they get plenty of light. There is nothing to beat a pit to grow them to perfection, with a good moist bottom-heat from a bed of tan, dung, or leaves—the latter is preferable, being easily procured—also a lasting, nice, sweet temperature of from 60° to 70°, when they will make a free growth; give them plenty of water. It is as easy to grow good Gloxinias, Gesnerias, and Achimenes, as it is a few Cucumbers; and an amateur can have them to do well in his greenhouse or pit. Use the syringe rather freely as they grow; and, as the temperature rises it will, with these, as most other subjects, induce clean and vigorous growth. The thrip, one of the worst pests of our greenhouses, will attack this class of plants with avidity, more particularly the Achimenes. Even the bloom will not be spared if they are allowed to get ahead. They can also be well grown in ordinary frames, such as are used in the truck patch. About the middle of March prepare some good fresh stable manure, in the same manner as for early frame cucumbers, then let the same quantity of leaves be collected and mixed with the dung, sufficient to form a good substantial bed, with a steady heat of about 70°—let the dimensions of this bed be about three feet larger every way than the frame to be used—cover the whole with six inches of soil of any kind, or sifted coal-ashes, for plunging in the pots or pans. The end of March will be time enough to put in the tubers, taking care to use soil warmed to the temperature of your frame or pit; shut up close for a few days, and give no water. Open the sash every fine morning to prevent the heat rising above 75 deg. Aim at a night temperature of from 55 deg. to 60 deg. After a few leaves have shown themselves, water carefully, and sprinkle over the leaves in the after part of the day, just before the sun is off the glass, and shut up immediately. Should we get a spell of cold weather, and the thermometer indicate a lower temperature, renew the heating material by removing the outer portion of your bed by cutting quite to the bottom, then replace with fresh, hot stable dung, or dung and leaves. This will not, however, require so much preparation as the dung for the original bed, as the

excessive heat will not come in immediate contact with your plunged pots, your object being at this time to maintain a steady heat of 75 deg. Water of nearly the same temperature as the frame, or at least tepid, must always be used at this season — and shade from the mid-day sun. As they start into flower, give more air and plenty of water; and as they expand, remove them from the frame to the greenhouse, first to the warmest, then to the coolest part of the house, to prolong their season of bloom. After they have done flowering, put the earliest batch in a warm place out of doors. Water moderately, each week giving less, to encourage them to go to rest. Later batches, after flowering, can be placed on their sides under the partial shade of trees, or a wall, where they will get sufficient sun to thoroughly ripen them. By the end of September, or early part of October, they ought to be all brought into their winter quarters until wanted to perform their routine of work again.

The following are a few good showy Achimenes: — Ambroise Verschaffelt, white, with crimson eye; Carl Woolfurth, fine crimson; *Carminata splendens*, carmine; *Longiflora major*, violet blue; *Longiflora alba*, white; Margarita, pure white; Meteor, scarlet; Sir Trehern Thomas, crimson; and Mauve Queen. A few good Gloxinias:—Lauretta, blue; Brilliant, crimson; Fairy, white and violet; Model, pink; Optima, dark rose; Sanspareil, pure white. Of Gesnerias there are *Zebrina splendens*, Cinnabarina, Donckelaari, Purpurea, Velutina. There is a great variety of the three species, and all that is required is a trifling outlay in getting a collection, and care.

There is a striking Gloxinia that requires especial notice, namely, the old, almost forgotten, *Gloxinia tubiflora*, which is a very distinct variety introduced from south Brazil. The tubers are not unlike potatoes in appearance, and throw out stems, which grow and produce white tube-shaped flowers from two to three inches long. The plant attains nearly two feet in height; flowers from the bottom to the top of the stem. No collection, however small, should be without this variety. It is also delightfully fragrant.—*Gardener's Monthly.*

PROTECTING YOUNG FRUIT-TREES.

Jonathan Shearer, of Wayne County, Michigan, tells us, that in planting orchards he has found it an excellent practice to protect the stems of the trees from the direct rays of the sun (until the tops are sufficiently large to accomplish the same purpose) by winding them with a rope of straw. He cites one instance where Apple-trees thus treated grew fully a third faster than those treated in the usual way. This simple precaution is deemed especially important in cases where persons prefer to keep the surface soil clear, as the intense heat reflected in summer from bare ground is thought to be a prolific source of disease in young trees. Some horticultural writers, with the view of obviating this difficulty, have advised planting much closer than is customary, even if part of the trees have in time to be cut away. One has gone a step farther, and suggested that it might be well to introduce "nurslings," such as Alders, Poplars, or Willows—of course removing them before they become large enough to interfere with the roots of the fruit bearers—and thus secure the cool surface which, in orchards, is almost as important as a dry, warm subsoil.—*N. Y. Tribune.*

ORANGE CULTURE.

BY J. STRENZEL.

[This interesting and valuable article on Orange Culture was corrected by the author from the *Farmer's* print, for insertion in the present issue of the CALIFORNIA HORTICULTURIST.]

An Orange grove in the far off Sunset Land was one of the dreams suggested to my fancy on reading Fremont's narrative of travels in Upper California in 1846; it was the guiding star on that long journey across the untracked plains in 1849—through the salty, waterless Llanos Estacados, in the knee-deep road-dust in our meanderings along the Gila River, and on the much dreaded Colorado Desert. When, after thirteen months of wandering, the wide-spread plain of the San Joaquin, gleaming with fiery brightness of fields of Escholtzia, greeted the gaze from the summit of Pacheco's Pass, we praised the Lord that permitted us to view this "Land of Promise."

In 1853 I planted the first Orange seed; that grew well, and in 1873 I had realized my dream. During these many years the *Farmer* has faithfully and ably advocated the State's advancement in Horticulture especially, being always ready to promulgate the experience of workers. I take the liberty to profit by your further indulgence. It is now demonstrated that Oranges can be grown all over California; in fact, I suggest that every home could and should be graced by more or less of this golden fruit of the Hesperides. To insure this, it is well to guide the new-comers in those processes which, if well attended to, will secure in comparatively a few years that success towards which the efforts of their predecessors have been directed for a quarter of a century.

The Orange-tree under favorable conditions is a rapid grower; but when those are lacking may remain stationary for years. It requires the richest of mellow soil, such as is always well drained, and must have also an abundance of surface moisture. Originally a tropical fruit, it gets acclimatized in a more temperate zone, and, with some shelter and in a favorable location, will sustain without injury a temperature of a few degrees below the freezing point. It is a great feeder; the roots spreading over the surface of the ground absorb fertilizers readily, and require all the solar heat available; so the trees should have plenty of space, not less than fifteen feet apart in the rows. They require careful pruning and shortening in, even of the sharp spiny thorns; when this is done, innumerable bearing shoots take their place; thus not only is fruitfulness promoted, but injury to the fruit during wind storms is avoided. The story of the early history in California fruit culture is repeating itself. Then the product of a Peach-tree was set at hundreds of dollars, and fortunes were made by the single rule of arithmetic. The consequences of this inflation are, fewer trees now and decidedly inferior fruit. Some count on two thousand Oranges to a tree; this multiplied by the ruling price for the best fruit looks very handsome; so we see the market crowded with little sour, half-ripened, perfectly worthless fruit, to the injury of the careful grower. Now, in our latitude, anything like two or three hundred large, rich, perfect Oranges on a tree in its *teens*, should satisfy the cupidity even of a "diamond salter." Orange-trees can be bought now by the thousand, and at a very low price. Thus parties wishing to plant extensively can be easily supplied and without a loss of time.

But my object in writing this sketch

is to encourage the new-comer—the man of little means but sturdy arm and will—and more so, our girls, panting for extended spheres of labor. To those I would say, obtain a few of the best flavored and largest ripe Oranges, select the plumpest seed, and plant it fresh in boxes with perforated bottoms, and sides about eight inches high, filled up with rich mellow soil that will not bake, dropping the seeds five inches apart and covering one inch; keep the box in a warm room and the soil damp. When the young plants appear, give plenty of air and sunshine, and sprinkle them every evening with slightly tepid water; if there is no frost apprehended and the nights are warm, keep your boxes out-of-doors, sheltered from wind and burning sun; a screen made of unbleached muslin will answer for both; fork over the surface between the plants occasionally, and mulch it toward the midsummer with well-decomposed manure. The seedlings should attain the height of twelve to eighteen inches during the season, but be not too ambitious to stimulate an exuberant growth; rather shorten in the rampant shoots and secure a stocky symmetrical growth. During the winter keep them in a dry airy place, with a temperature never under 33° and not over 60°, and in the spring transplant them to larger and deeper boxes. This is the time to graft them over, if you know of a tree bearing superior fruit, or a particular foreign variety from which you could obtain scions—otherwise let them be, as the fruit is reproduced true from seed. Seedlings are the thriftiest and hardiest, make larger and finer trees, and if carefully shortened in, and the forming of fruit buds promoted by nipping the ends of shoots, will bear early enough. All the grafted foreign varieties are more tender, of slender growth, and the few Oranges they bear a year or two earlier do not amount to much generally. Except in very favorable locations, the seedlings should remain in boxes the second year, affording a greater facility for sheltering them during the winter, and be transplanted out in the open ground the third year. The time of the year for transplanting small trees is immaterial, provided it is not done during scorching midsummer days; but like other evergreens they should be always lifted with the earth adhering to and covering the roots in a lump. After transplanting, they should be copiously watered to settle the ground, and the trees shaded from the sun for a week and more. In choosing the site for an Orange-grove, former observation is necessary to indicate the spot exempt from freezing; a few feet of elevation above the surrounding surface, a few feet to the right or left of the prevailing currents, make a vast difference in the climatic peculiarities of a given location. This was well understood by the Digger Indians. Their ancient camps along the banks of creeks, in the innumerable little valleys among the hills, are just the places; they invariably combine mellow soil, enriched by the offal of the camp, with nearness to water, and are always the most cozy and sheltered nooks in all the country. In these nooks vines, Tomatoes, Melons, etc,. will remain green nearly all winter, and young plants are not injured by spring frosts. Next, a free supply of water is essential. The holes for the reception of Orange-trees should be four feet in depth and the same in diameter, with a layer of old bones at the bottom, six or eight inches deep, filled up half way with the richest top soil well pulverized, and all drenched with water till thoroughly settled. The tree with the adherent ball of earth is placed in the

centre a couple of inches higher than it stood before, and the hole filled in. The general rule as to further treatment and pruning must be adhered to.

In most parts of the State, the tree when young will require more or less shelter during the cold spells; anything that will prevent a current of air around a plant, after sunset, and consequent reduction of temperature, or sudden thawing after the freeze, will answer; thus boughs of evergreens or even brush stuck around, or a frame of poles covered over with discarded sacks, the shelter of a wall with an overtopping roof, can all be made use of to answer the purpose. The copious sprinkling of the trees at sunrise, after a cold freezing night, is also most effective; also the planting between in alternate rows of evergreen, for which purpose the different varieties of the Eucalyptus are eminently adapted.

The foliage on the older trees and the ripe fruit is coated over during the summer with a black rust, considered by some to be a parasitic growth. It washes off easily, without leaving any trace whatever. It appears rather to be an accretion of dust mixed with the exuded volatile oil abounding in the leaves and outer rind of the fruit. By copious showering during the summer any injury from that cause can be easily obviated. More serious, as affecting the growth of the tree, is the rapid increase of the scale insects; they don't mind the Chamomile recommended by some, but soapsuds or weak lye-washes subdue them effectually.

The same processes are followed in raising Lemons. The tree is rather more tender than the Orange, but the fruit is often more profitable. I have Lemon seedling trees bearing as perfect and large fruit as the best of Sicily. Oranges and Lemons can be safely transported long distances, and the market for them is unlimited at remunerative prices. There is no possibility of overstocking. Nothing need be wasted from the products of this culture; the surplus leaves dried are used in pharmacy, and make a very palatable tea, and should supersede the nerve-unstringing Bohea; the drooping flowers are the source of the costly oil, neroli; the smallest green fruit finds a demand for the best of bitters, the larger for preserving, and the ripe fruit, a luxury in itself, is the best corrective of the injurious effects of a too nutritious and greasy diet; the wood is very firm, elastic and durable, and even the sharp thorns make the best and most fragrant toothpicks.

The culture of these two varieties of fruit can fill the full scope of available labor in our State. No girl need be idle, but can raise her dowery in Orange and Lemon trees, each bearing tree at the most moderate estimate representing a capital of one hundred dollars invested at the highest per cent.

Grouping Plants.—There is no way in which the deadening formalism of our gardens may be more effectually destroyed than by the system of naturally grouping hardy plants. It may afford most pleasing results, and impress on others the amount of variety and loveliness to be obtained from many families now unused. Trees and shrubs, distinguished for their fine foliage, collected in a quiet glade; and then bright foliage trees should be set in contrast with quieter colors, and varied with bright beds of flowers and leaf plants, or hardy flowering shrubs. These groups should be irregularly, but artistically, planted. Then, on a knoll, plant a large bouquet of the rosaceous family—Hawthorns,

Cherries, Plums, Pears, Peaches, Almonds, etc. There is so much that may be done to add to the bewildering beauty of a landscape by naturally artistic planting, that we are often astonished that people do not "see it."—*Rural New-Yorker.*

APPLES FOR FOOD.

Apples are now considered to contain far more brain food than any other fruit or vegetable, and to be much more nutritious than Potatoes, which enter so largely into the component parts of every meal. At present, Apples are principally used in the form of puddings, pies, tarts, and sauce, and are also eaten raw, in which state they are more wholesome than when mingled with butter, eggs, and flour. But they are served at every meal; and, substituted for pickles and such condiments, they would surely be found beneficial. Sweet baked Apples are a most desirable addition to the breakfast and tea table, and are far more healthful, appropriate, and sustaining, than half of the dishes usually esteemed essential at such times. Served with milk and bread, they make the best diet that young children can partake of, and are very satisfying in their nature.

Baked Apples, without meat, are far more substantial food than Potatoes can possibly be made, and to us the delicious aroma and flavor are always most appetizing. We would rather go without our daily bread than our daily baked sweet Apples. Yet, although there is such an abundant crop of Apples this season, we presume there are many families who will not use a barrel of them for the table this season, but who will devour at least six barrels of Potatoes. Let us beg of them to equalize the two a little more, and purchase at least three barrels of Apples to five of potatoes. They will find that less flour, eggs, sugar, and butter will be consumed in a family when a plentiful supply of Apples is stored in the cellar. One of the most celebrated physicians of Philadelphia eats two raw Apples every evening before he retires to rest, and thinks that they not only supply food to his brain, but keep the whole system in a healthy condition. For years I have followed his advice, and am confident that the fruit has been of great service to me.

There are dozens of recipes for preparing Apples for the table, almost all of them requiring the addition of butter, eggs, etc.; but to us either baking, boiling, or steaming makes the most palatable dishes. Our family favorite is prepared thus: Wipe the Apples clean, dipping them first into boiling water; then with a corer remove all the seeds and stem, by punching it through the Apple. Place the fruit in a deep baking dish, put a tablespoonful of white sugar into the middle of each Apple; turn in a teacupful of boiling water, with three tablespoonfuls of sugar dissolved in it. Bake in a slow oven till quite soft, taking care not to burn the skins. Take out into a dish and serve with cream; milk will do, but it is a poor substitute for the richer article; concentrated milk, however, is as good.

The Apples can also be pared, cored, and sweetened, and placed in a deep dish on the upper part of the stove; a large teacupful of boiling water poured over them, and a plate laid over the dish. Boil them until soft, and there is no trouble about removing the skins when eating them. Sweet Apples can be treated in this way, using molasses instead of sugar, if preferred; and they will be delicious in flavor.

Pickled Apples are almost as appetizing as pickled Peaches, and are easily prepared. Take one pound of coffee-crushed sugar, No. 1, and dissolve it in one quart of cider vinegar; add to it one tablespoonful of whole cloves, two of allspice berries, and two of stick cinnamon, all broken fine. Boil and skim it for twenty minutes. Put into the syrup small sweet Apples; let them cook until a broom straw will run through them, but do not let the skins break badly. Skim out into a jar, and turn over the boiling liquor. Small sour Apples can be used, if desired, and the Siberian Crab Apple makes a delicious relish if thus prepared.

The ingenious housewife can invent ways of cooking Apples; if the skillful French cooks have discovered three hundred and sixty-five ways of cooking an egg, surely our inventive brains can discover two hundred ways of cooking Apples.

Apple short-cake is a "dainty thing to set before one's king," and most husbands appreciate it. Fair friends, let us cultivate the use of Apples for food, and not let them decay in our cellars for want of appreciation.—*Cor. Country Gentleman.*

Compost for Flowers.—In cleaning off the garden and flower borders, there is more or less of leaves, litter, etc., that must be disposed of in some way. Take it and make the basis for a compost heap for the winter; empty all the coal and wood ashes of the house over it, as they accumulate from time to time; save all the bones and refuse of the kitchen, and all the greasy dishwater, and the chamber-lye, and add them daily to the heap. Gather, if you can, from the blacksmith shop or elsewhere, iron-filings or scales from the hammering of heated or rusty iron, the parings of horse-hoofs, and, with a little of sharp sandy soil, add them to the heap. This, well mixed, in the spring, will form one of the cheapest fertilizers for all kinds of flowers in the open border.—*The Horticulturist.*

EPIPHYLLUMS.

These remarkably beautiful flowers are much grown and well understood by all practical men, but there are many young gardeners and amateurs to whom a few words of advice may be of service. Epiphyllums are easily propagated by cuttings taken off at a joint and planted in light sandy soil in well-drained pots, and placed in a warm house, and the soil kept rather dry until they have roots. They should not be exposed at this stage to brilliant sunshine during the middle of the day, but a few hours' exposure to the sun each day is better than keeping them constantly shaded. They may be wintered in a warm greenhouse, if kept moderately dry at the roots, but they make a better and an earlier growth when wintered in a temperature not less than 50 deg. at night, and 55 to 60 deg. by day.

It should be remembered that they are at all times impatient of too much moisture at the root, and that they like a free and open soil. For established plants there is nothing better than turfy loam, leaf-soil, peat, and very coarse sand, in equal parts. They do not require overmuch pot-room: a shift into a pot two inches larger once in two years, if well drained, will suffice to keep them growing and in good health.

Those who have their forcing-houses at work, or the convenience of a stove, should shift their stock if required, and then give them the aid of more heat than they would enjoy in a common

greenhouse. Water sparingly until there are signs of their commencing to make a new growth. After they are fairly started let them have more water and air. By the beginning of June any house will suit them, provided it is airy, and not shaded.

They will well repay the cultivator for a little extra care in the spring, as they make an earlier growth with the assistance of a little extra warmth at that season. This gives them more time to make and mature their growth, and larger and more blooms is the result.

There are different methods of growing them. Some prefer them on their own roots, while others like to have them on stems a foot or more in height. They are easily grafted upon any of the larger-growing Cacti, so that the stem may be had of any height desired. For my own part, I like to have them on their own roots and grafted on tall stocks, as a greater variety of form is obtained. Specimens on stems twelve inches high, in a six-inch pot, are admirable subjects for dinner-table and indoor decorations, as also are dwarf plants on their own roots for filling vases.

I have not named any variety to be grown, for the reason that they are so beautiful that I am not acquainted with any one variety that is not worth growing. If I have a preference, it is for *E. truncatum albescens*, *E. truncatum cruentum*, and *E. truncatum violaceum*.—R. P. B., in *Gardener's Magazine*.

Remove the Flowers.—The *Garden* says: "All lovers of flowers must remember that one blossom allowed to mature or "go to seed" injures the plant more than a dozen buds. Cut your flowers then, all of them, before they begin to fade. Adorn your room with them; put them on your tables; send bouquets to your friends who have no flowers, or exchange favors with those who have. On bushes not a seed should be allowed to mature."

RAISINS IN CALIFORNIA.

The San Francisco *Bulletin* asserts that experiments have been carried far enough now to show that all the raisins needed for consumption in the United States can be made in California, and not inferior articles either, but equal to the very best imported. It says: "It does not even require artificial heat or costly machinery, although Grapes can be converted more rapidly by an artificial process. The manufacture of raisins is about as simple as that of making dried Apples. The process is perfect enough when the Grapes are laid on the dry warm ground. All the vines now in bearing, which do not produce Grapes suitable for raisins, can be changed rapidly by root-grafting. Even the common Mission Grape makes a good raisin, much better than the second quality of those known to commerce. Of course, raisin-making requires considerable manipulation. It is a business requiring attention to many small details. The bunches of Grapes must be cut off at the right time, spread out to dry, carefully watched, turned over, assorted, packed, and finally put up in the most attractive way. But after all there is not more attention to details than is required in the conduct of a successful dairy, There can not be much of a speculation about the business. Only so many Grapes can be raised on an acre, and if they are of the best sorts, the amount of raisins which can be made will be known in advance. It is doubtful if up to this time the

vine-growers of this State have realized their expectations of profit from their vineyards. Grapes have brought low prices. Wine can not be made profitably except by experts. Many vineyards are remote from market. But if there be added this new resource, it will make little difference as to the remoteness of the vineyard. The fruit-growers have already found a way out of their difficulties, by a better process of drying fruit. The Grape-growers will yet find an important outlet in the same direction."

ERRORS IN ORNAMENTAL TREE PLANTING. — A few days since, in passing through the pretty village of Warren, the capital of Warren County, Pennsylvania, I was forcibly, not to say painfully, struck by the utter want of taste and judgment displayed by some of the residents, in the matter of ornamental tree planting. In some of the instances referred to, evergreens were planted in the immediate front of the houses, and so near to them that, although they had obtained only a partial growth, the branches had already intruded themselves into the veranda, thereby not only inconveniencing the residents, but presenting anything else rather than a handsome appearance, and threatening, in the course of a few years, to almost entirely exclude the sunlight from that portion of the premises. Many old residences are open to similar objections. No greater error in taste, or in the important matter of health, can be committed than this. Trees, however beautiful, should never be planted so near the house as to bar out the sunshine. There is no more effectual method of destroying their beauty, nor a better plan for introducing disease. I have known houses, thus crowded upon by trees of dense foliage, that became so unhealthy as to be regarded as almost untenable. They were restored to fitness for human habitation by removing a portion of the trees that obstructed the sunlight and the free circulation of the air. Another error in ornamental tree planting is the setting of trees of large growth in small yards, and especially as is frequently done in cemetery lots. Just as lofty mountains dwarf adjacent hills, so large trees have the effect of lessening to the eye the size of small yards or small buildings. It is sound and seasonable counsel, therefore, to advise all persons who are about to plant ornamental trees adjacent to dwellings, or in small yards or gardens, to have an eye to taste and health. Let them be in keeping, in point of size, with the building or plat they are intended to beautify; and, moreover, let the planting be not so close as to shut out the blessed light of the health-giving sun. —*Journal of the Farm.*

POTATOES AND POTATO CULTURE.

A few weeks hence our farmers must commence planting Potatoes for this year's crop. Perhaps all have their own settled opinions in regard to the best varieties and systems of culture, which no words of ours can change. But it may not be amiss for farmers to consider why changes both in varieties and culture have been made during the past few years; also whether we are really making progress, or merely repeating what has been done many times before. As is well known, the Potato is a native of cool climates, although not what we would term cold ones, being found growing wild in high mountain ranges in tropical countries; hence we find that it succeeds far better in the extreme northern part of the Union than in the Middle or Southern States. Vermont can beat

Virginia any time in growing our common Potato, simply because the climate is more congenial to its growth. Soil certainly has some effect on the quality of the tuber, as well as its size, but Vermont soils are no richer or better adapted to the growth of Potatoes than much which can be found in regions where this plant does not thrive; therefore we must attribute more to the effect of climate in the production of the best Potatoes which come to market, than to soils. There was also a time when a majority of farmers thought it necessary to plant whole tubers for seed in order to obtain a large yield, although there were a few equally successful who always persisted in cutting up the tubers for planting.

The thousands of experiments made in the past ten years to ascertain the truth in regard to all the old notions as to Potato culture, have proved conclusively that a moderate sized section of a large tuber was as good, if not better, for planting than a whole one. The largest yield of Potatoes on record was produced from planting single eyes of a tuber, only one in a hill.

Science, the handmaid of all progressive movements in agriculture, as well as in other departments of labor, has also fully demonstrated that a Potato tuber is not an individual seed any more than an ear of Corn is one, but that each bud is really a seed as much as a kernel of Corn, and as capable of producing as strong and vigorous individual plants when separated from the parent tuber, as Corn is when taken from the cob. If a tuber is planted entire, only a small number of the buds germinate; the others perish or are suppressed through an overgrowth of their fellows.

Now these facts are patent to every man who has given the subject careful consideration, either theoretically or practically; and no matter who or how many may decry them, they will remain facts as firmly established as the Atlantic Cable, the Pacific Railroad, or any of the numerous other great achievements which were for years pronounced impossible. We know that there are a few farmers who still adhere to the old plan of planting whole Potatoes, and claim that cutting the tubers is an unnatural process, which is likely to cause degeneration and disease; but we would remind them that cultivating plants at all is an unnatural process, though by its aid we have been able to surround ourselves with nearly all the comforts of civilized life. We have no more desire to see our cultivated fruits, flowers, and vegetables go back to their wild condition than to see civilized nations relapse into barbarism. We have claimed, and still hold to the opinion, that thousands of bushels are wasted every year by planting whole tubers. This waste will probably continue until all learn, not economy merely, but the utter folly of planting whole tubers for seed.

It is true that instances are not wanting where whole tubers have produced more than pieces, but these are only exceptions to the general rule, just as small, inferior tubers have occasionally produced as much as the large and perfect ones; but no good farmer would at the present day advocate the continued use of small, half-matured Potatoes for seed. We would not, however, use the very large overgrown specimens, for these may not be any better than the very small ones; but the fully developed, thoroughly ripened tubers are always the best, and these are generally of medium size, varying, of course, according to the variety.

Whether it is best to plant early or late in spring depends very much upon

the locality and season; consequently there is little room for argument on this point. But, as a rule, if the Potatoes come forward before hot weather, they will not only yield better, but the tubers will be of better quality. There is, however, little to be gained by putting seed in the earth until it is warm and dry enough to work easily.

Planting is another operation which should be varied according to circumstances. In a light, dry, warm soil, the seed may be placed deeper than in a heavy cold one, but, as a rule, Potatoes are not planted deep enough to insure a healthy growth and large yield. The tubers are not produced upon the true roots of the plants, as many suppose, but on subterranean branches which spring from the principal stem, mainly above the roots. This being the case, we can readily understand how rather deep planting will facilitate the issuing of roots, and also afford a greater length of stem below the surface for the production of bearing branches. The hilling up of the growing plants so long practiced by the cultivators of Potatoes produces similar results to deep planting, and we have no doubt it came into use long before the reason why it increased the yield was known. It is still an open question among our farmers whether deeper planting and level culture is not far preferable to shallow planting, followed by the usual hilling-up process.

The tendency, however, among our most extensive cultivators of Potatoes, is to adopt the former system, and we think it is preferable to the latter, especially in warm climates and in dry seasons. Under what is termed level culture, the soil remains comparatively cool and moist, whereas, if thrown up in ridges or hills, it is likely to become hot and dry. But climate and soil should always be taken into consideration in adopting any particular method of culture.—*N. Y. Sun.*

Winter Clothing of Children. — The outer clothing for children should be warm but not heavy, for it is a false notion to suppose that a quantity of heavy clothing is good for a child; it only tires, without infusing warmth. Air-tight materials and water-proofs are injurious to health. As a rule, loose textures are warmer and healthier than very close ones; and fluffy materials are infinitely better preservatives against the cold than close and smooth materials. Color has also a great influence on the warmth of clothing; thus white, which is coolest in summer, is also warmest in winter, and black the reverse. To preserve health, it is also necessary to go out in all weathers; and in no case should the child be too much wrapped up. A short, loose jacket for cold days is a good outward covering, or a soft woolly polonaise—anything, in fact, which is warm without being too heavy, nor preventing the free use of every limb. Heavy clothing engenders undue perspiration, which should be particularly guarded against in the open air, especially at this time of the year. During the time that children are out of their nursery or school-room, the windows should be left open top and bottom; thus the air of the room will be purified before they return to it. (The windows, of course, must be closed before the children enter the room again.) These may seem very trifling and useless hints to many; to others, however, they may not be without value. Children are delicate plants, and to be reared into stalwart trees they need care and thought during the early years of their tender growth.—*Daily Graphic.*

ANNUALS.—(See Frontispiece.)

BY F. A. MILLER.

Much brightness could be given to our flower-gardens by cultivating a few of the pretty annuals, which form such prominent features in European and Eastern gardens. The expense of obtaining the seeds is but a trifle, and one package of seed will produce a great number of plants, which will flower during the summer if sown in the spring.

The *Double* and *Single Petunias* are generally classed as annuals, but with us in California, they are hardy, and will hold out for several years in the open ground. Double Petunias are rarely produced from seed, yet seed can be procured from our seedsmen which will produce a certain percentage of double flowering plants. In reality, the single varieties are prettier than the double ones, and for bedding out are preferable. Many exceedingly fine colors are now produced—some of them variegated, striped, blotched, shaded, and mottled with pleasing colors and tints. All of the different varieties may be obtained from seed.

The *Rocket Candytuft* is an improved variety of the old-fashioned Candytuft, and produces most perfect spikes of white flowers two or three months after the seed is planted. The leading colors of this flower are white and purple; of the latter, however, various shades have been produced of late. In our mild localities, such as San Francisco, Candytufts may be had in bloom all the year round, if the seed is planted from time to time.

The *Phacelia* is a native of this country, and its delicate blue flowers are produced in spikes, not unlike the Heliotrope. As a border or bedding plant, it is most desirable, as it will thrive well without the assistance of irrigation.

NUTRITIOUS FOOD.

Upon this subject a writer in the *Philadelphia Star* says: "I submit the following article on food, hoping it may do a little good to the poor class in these pinching times: Oatmeal contains 91 per cent. of nutritive matter; Wheat, 85½ per cent.; Potatoes, 28 per cent.; the best flesh meat, 25 per cent. It may be seen by the above that one pound of Oatmeal contains nearly four times as much nutrition as one pound of beef. We pay for the beef per pound 15, 20, 25 cents; for one pound of Oatmeal we pay 5 cents.

"Nearly half the people of Ireland and Scotland live on Oatmeal and Potatoes. They do not taste flesh meat once a month. The writer of this article has not eaten flesh for a year; he finds himself better physically as well as mentally. His dinner for one day consists of one cent's worth of oaten meal or cracked Wheat, made in the form of mush. He does not do this for economy, but for health.

"I would like to say a few words before I close this article on Wheat. Wheat contains of the carbonates, or heat and fat producers, sixty-two per cent.; of the phosphates, the class that supplies the bones, the brain, and the nerves, and gives vital power, both mental and muscular, two and a half per cent.; of the nitrates, the class that supplies the waste of muscle, twenty-one per cent.

"If Wheat were eaten in its natural condition, without bolting, it would supply all the needed elements in the human body; but in the process of bolting nearly the whole of the phosphates and nitrates are removed; so that bread made of superfine flour will sustain life only a few weeks.

The best way to get good Wheat meal

is to buy of any mill of our city, half a bushel of whole Wheat, thirty pounds. Either get the miller to grind it for you, or take it home and grind it in your coffee-mills."

A New Vegetable.—The *Gardener's Chronicle* says: "In the current number of the *Journal of Botany*, Dr. Hance describes a Chinese culinary vegetable, consisting of the shoots of a grass, *Hydropyrum latifolium*, wild in Northern China and Amoor Land, and cultivated in Southern China in standing water. As brought to market, the "cane shoots" occur in cylindrical pieces of a white color, $2\frac{1}{2}$ to $3\frac{1}{2}$ inches long, 1 to $1\frac{1}{2}$ inch in diameter, tapering upward into a conical point, and surmounted by the leaves and culm, from which they are readily detached. In taste, the raw shoot is not unlike a half-ripe nut, but it is never eaten uncooked. By the Chinese it is stewed with meat, and by foreigners cut longitudinally into two or three pieces, well boiled, and served with melted butter. Prepared in this way, it is stated by Dr. Hance to be one of the most agreeable of vegetables. "It is difficult," says the writer from whom we quote, "to describe its exact flavor, but it is, perhaps, nearer to that of unripe maize, as boiled and eaten by Americans under the name of green Corn, though it possesses a richness and delicacy to which I know no parallel in any other vegetable."

The species in question is nearly allied to the American species, *H. esculentum*, formerly grown in this country. There is little doubt that the Chinese plant would also thrive in our climate, on which account we are glad to hear that Dr. Hance intends to send home living plants.

Editorial Portfolio.

THE CULTIVATION OF ANNUALS.

By the term annuals we designate those plants which live but one year, and consequently require to be raised from seed every year; although in our favored climate some varieties may be induced to renew their growth a second and even a third season by careful cultivation, and by not permitting them to mature their seed. It is a singular circumstance that on this coast so little attention is paid by amateurs to this class of plants, which, although they may require a little more attention than perennials, yet amply repay by the additional beauty they bring to the *parterre* in their charming diversity of form and color, in the exquisite delicacy of their tints, and the delicious fragrance of many of them.

The present time is the season for cultivating them, and to prepare for them it is only necessary to provide a liberal amount of well-decayed manure, which should be thoroughly mingled with the soil to the depth of nine inches. In sowing the seed it is necessary to remark that one of the causes of disappointment is the planting them *too deep*. For most of the larger seeds of annuals from $\frac{1}{8}$ to $\frac{1}{2}$ inch is deep enough, while for the more delicate it is a good plan to press the soil with the back of a spade, then sprinkle the seed lightly on the surface and cover it slightly with fine earth, which should also be lightly pressed; it may be necessary from time to time to supply some moisture, but this will require great care, as frequent and heavy watering, particularly with some soils, tends to cake the surface and retard the growth of the young plants. Particular care is also necessary to remove the weeds, which else will choke

the young plants. Many varieties will bear transplanting, but as a general rule it is better to leave them where they have established themselves, merely thinning them out, to permit and encourage vigorous growth.

Annuals may be divided into *hardy*, *half-hardy*, and *tender annuals*. The hardy annuals may be sown in the open garden where they are to finally remain; the half-hardy require to be sown either in plunged pots, or in a prepared bed of earth over a gentle hot-bed, in the early spring, and, when they have made some growth, transplanted into a like situation until the beginning of May, when they should be transplanted into the borders where they are to remain.

Tender annuals should be sown about February or March, in pots of light mold, and plunged in a hot-bed. When the young plants come up they should be transplanted singly into pots of the smallest size, and again plunged into the hot-bed as near the glass as possible, but shaded from the sunshine. In a week or two, if they have made satisfactory growth, they should be again transplanted into the next sized pots. These shiftings should be continued from time to time, according to their growth, until they are in pots of six or eight inches in diameter, according to their nature.

Very good varieties of the hardy are, Candytuft, (several varieties) Lobelia, Sweet Pea, Morning Glory, Marigold, Mignonette, with many others.

Of the half-hardy we may mention Petunias, Asters, Zinnias, Delphinium, Ten-week Stocks, Phlox Drummondii.

Among the tender annuals we may mention the Balsams, Celosia, (or Cockscomb) Portulacca, etc. Some plants though not strictly annual will bloom the first year, as the Tropæolum, (Nasturtium) Pansy, Scabiosa, and Verbena.

We call the attention of our friends to the group of annuals which adorns the present number, and for which our esteemed correspondent Mr. F. A. Miller has written the descriptions. For the plates we are under obligations to James Vick, Esq., Rochester, N. Y.

WOODWARD'S GARDENS.

This Central Park of the Pacific is still increasing daily in interest for the recreation-seeking public. New animals, new birds, and new fishes are constantly being placed in their several departments. These, with the rich and most attractive Museum of Natural History, are in course of classification in accordance with the natural systems of arrangement of Linnæus, Cuvier, and others. The objects will all be labeled with the names in the usual Latin terms, with the English names generally added. The visitors, by this means, will be able to refer to the several objects so designated by the labels, in the several books of natural science or history, so as to obtain a more particular knowledge of the external form, geographical habitation, and distinguishing traits of individual species; and the further interest of the subject mainly resting upon anecdotes of *animal* sagacity or ferocity, their instinctive and almost reasoning habits, and perils of adventure in the wilds of Nature; and *vegetable* forms and beauties in their wonderful diversity and mutual relations.

Every department of science furnishes an abundant quota of materials for delightful observation and instruction, and it is found that every fresh step in discovery has made the conclusion more reasonable, if not more certain,

that the argument of design in the formation of Nature, as commonly presented, is cumulative, and adds new splendor to the illustrations of it. Every being with which we are conversant—every limb and fragment of every being—every atom composing those fragments—is discovered to bear on it the stamp of purpose—the very autograph of mind. It is a means to an end, or both means and end. In this, as we conceive indisputably correct view of the case, how much ought we to appreciate the efforts of those who, like Mr. Woodward, are continually adding to the pleasure and interest of the public, in collecting new objects, both animate and inanimate, for exhibition in these Gardens, and thus illustrating this boundless temple of the creation, very apparently the altar and service of an in-dwelling Deity—irresistibly indicating by innumerable particular instances mind as the agency at work in the universe.

SOCIETY NOTICES.

Georgia Horticultural Society.—A new society with this title has been organized and holds its sessions at Atlanta, Ga. At its meeting this fall, the members filled two tables, each 100 feet long, with fruit of most attractive description—pears, apples, grapes, figs, etc.

FAVORS RECEIVED.

The *Overland Monthly* for March is at hand, containing its usual amount of interesting articles, among which "Orange Culture in California;" "Geological Surveys," and "Head-waters of the Sacramento," particularly interested us.

We have received a pamphlet entitled "Facts and Figures relative to Wool Growing," and "The History of the Angora Goat," by Landrum & Rodgers, of Watsonville, Cal. It contains much useful and interesting information on the subjects treated.

CATALOGUES RECEIVED.

The *Quarterly Catalogue* of Briggs Bros., of Rochester, New York, is at hand; it is a very elegant affair, being handsomely and copiously illustrated on tinted paper. Descriptions are abundant, the catalogue of plants very full, and prices moderate.

We have received the *Spring Catalogue of New, Rare, and Beautiful Plants.* of Peter Henderson, 35 Cortland Street, New York; very copious and well illustrated; describing and offering many new and desirable plants at tempting prices. Also *Seed Catalogue* for 1874 of the same firm, equally copious and elegantly illustrated. The colored plates of both these catalogues are very beautiful.

James Fleming, successor to Henderson & Fleming, address 67 Nassau Street, New York, has obliged us with his *Seed Catalogue*, which is well worthy of careful perusal by intending purchasers.

The *Annual Catalogue* for 1874 of Geo. H. Williamson, Gallatin, Tenn., lies before us; it contains a very good selection of seeds, both of vegetables and flowers.

We noticed the *Catalogue of Plants* of F. Lüdemann & Co., Pacific Nursery, San Francisco, Cal., in our last, but had not time to examine it. It is a source of pleasure to us to perceive that the nurserymen and seedsmen of the Pacific Coast are so far awakening to their interests as to publish and distribute catalogues of their stock. We are convinced that this action must

conduce to the increase of their trade, by not only affording our own people the opportunity of selection at short notice, but also introducing to Eastern customers many of the indigenous trees, shrubs, and plants of this side of the continent. This catalogue, as well as those of Miller & Sievers and R. J. Trumbull, are well worthy of the attentive perusal of each person.

OUR EXCHANGE TABLE.

American Agriculturist, published by the Orange Judd Company, 245 Broadway, New York. Subscription $1.50 per annum. An excellent monthly periodical.

Prairie Farmer, office 118 Monroe Street, Chicago—a weekly journal of much merit, and well worthy of support. Terms $2.50 per year.

Boston Journal of Chemistry, devoted to the science of home life; this is a very useful paper. Terms $1 per annum. Published by Billings, Clapp & Co., 34 Oliver Street, Boston.

PLANTS FOR NORTHERN AND SHADY EXPOSURES.

In reply to a request of a respected correspondent, we subjoin the following list of *plants which will grow in a northern shady situation*, which has been handed to us by our esteemed correspondent, Mr. F. A. Miller:

Climbing Plants.—Ivy, nearly all the different varieties; Clematis, such varieties as *integrifolia* and *tubulosa; Akebia quinata*, excellent for this purpose; *Jasminum revolutum* (Yellow Jasmine); Honeysuckle (Chinese Evergreen), sweet scented.

Flowering Shrubs, etc.—Fuchsias, *Erica Mediterranea* and a few other hardy varieties, Hydrangea, Myrtle, *Sollya heterophylla, Astilbe Japonica, Vinca* of different varieties.

Herbaceous Plants, etc.—Violets, *Amaryllis lutea*, Anemone, Lily of the Valley, hardy Ferns, Iris, Mimulus, Lobelia, *Myosotis* (Forget-me-not), Narcissus, Pæony, Auricula, Ranunculus, Sedum of various sorts.

German Ivy—Soil and Treatment.—The *Rural New-Yorker* answers a correspondent as follows: "The climbing vine known as 'German Ivy' is not, in fact, an Ivy, nor any relation of one, but a climbing species of Groundsel from the Cape of Good Hope. Its right name is *Senecio scandens*, and it resembles Ivy only in its leaves, which are heart-shaped or angled. The flowers are yellow, and produce abundantly on old plants which are exposed to the sun and dry atmosphere; but, under such conditions, the plants lose their beauty, as the leaves become brown and burnt in appearance. The plant grows rapidly in almost any good rich soil; but a light leaf mold, with a little decomposed barn-yard manure added, is probably the best. Shade is indispensable, if a deep rich green color is desirable in the foliage, consequently it is very suitable for room decorations, and may be trained on trellises or around the walls where the direct rays of the sun never reach it. It is readily propagated from cuttings or layers, any small piece of the vine taking root and growing with great rapidity."

Mr. Pynaert has discovered, it is said, that *Lilium auratum* is a grand specific against house-flies—that a small specimen of it in an apartment will keep it clear of these troublesome insects.

NEW AND RARE PLANTS.

La Belle Carnation.—Tree or perpetual-flowering Carnations are so valuable for supplying, during the winter season, cut flowers for the button-hole and hand bouquet, that we gladly welcome any addition to our present list of varieties which possesses either distinctness or superiority to those already in cultivation; hence the pleasure we feel in directing the attention of our readers thus prominently to the new white-flowering variety, *La Belle*, and which has been recently introduced to public notice by the raiser, Mr. James Blackley, Leyton. This variety differs from all other varieties in cultivation in producing very large and double flowers, possessing the most delightful fragrance, combined with a remarkably robust and free-flowering habit. As regards its constitution, it may be considered the forerunner of a new race of varieties of the highest possible value. Hitherto the greatest drawback to the cultivation of these flowers has been their want of vigor; but in this variety there is no lack of vigor. The specimen in question was trained to a trellis, about five feet in height and three feet in diameter in its widest part, which is completely covered. The trellis, notwithstanding its comparatively gigantic dimensions, was covered with a healthy growth, and, although the plant had been in full bloom for the last four or five months previously, it was fairly furnished with fully-expanded flowers, and the buds could be numbered by the hundred. From the manner in which it was trained, it was computed that the main stem had attained a length of not less than sixteen feet, although the age of the plant at the present moment does not exceed three years.

The growth of this variety is slender and wiry, making rapid progress and producing fresh shoots or flower-buds at every joint. On some of the side-shoots buds were produced at every two or three inches, on shoots averaging from eighteen to thirty inches in length, so that the produce of a specimen of the size of the one to which allusion is here made would be simply enormous; and therefore two or three specimens should be grown wherever cut flowers are in request during the winter season. It may also be trained over the interior walls of the greenhouse where space could be spared for one or more plants; or it may be trained just under the glass if more convenient; but for general purposes it will probably be found that training to a balloon-shaped trellis will be the most preferable plan.

The flowers, which are of the purest white, are very large and smooth, and perfectly double, and highly fragrant, and for either hand or button-hole bouquets will be found of the highest value.

With respect to the means adopted for the production of this specimen, Mr. Blackley has been good enough to furnish us with the following particulars: "The compost which has been used, and which would also suit the varieties already in cultivation, is prepared by mixing a moderate proportion of road-drift with mellow turfy loam that has been laid by a sufficient length of time for the fibrous roots of the grass to decay. Before using the soil it is necessary to examine it carefully for wire-worms, which must be destroyed, for they are, as most cultivators are aware, great enemies to Carnations, Picotees, and Pinks. They must not be overpotted; and at each shift sink the ball of soil low enough in the pot to bury two or three joints underneath

the soil. From the joints so buried healthy fibrous roots, which will be of immense value in promoting a healthy and vigorous growth, will be produced. Young shoots will also push from the joints, and from these flowers of the finest quality may be gathered. When planted outside for training over trellises or up walls, the border should be top-dressed with a compost prepared as directed above, in such a manner as to bury several of the lowest joints, for the purpose of encouraging the production of new roots and fresh growth.—*Gardener's Magazine.*

Arundo conspicua.—We are surprised that the beautiful *Arundo conspicua* is not more frequently cultivated as an ornamental plant. To our mind it is far superior to the Pampas Grass, of which so much is thought. It has these advantages over the Pampas. Though nearly as large in stature it has much less foliage compared with the flowers, and therefore is not so lumpish in growth, whilst still it has sufficient to furnish it. Then the flower spikes come up in good time in summer, and are in full beauty for some weeks before the bad weather sets in, while the Pampas barely comes into flower before the autumnal rains and frosts mar its beauty. The Arundo, moreover, seems to be quite as hardy as the Pampas, for in dryish situations on the Bagshot sand formation, it grows and flowers freely year after year, while the Pampas does no more. The lovers of the picturesque should be on the lookout for so fine a garden ornament.—*Gardener's Chronicle.*

New Oleanders.—Great improvement is being made in the Oleander in Europe. White, yellow, and red, and numerous shades of color and forms of flowers. They are being named and distinguished as we distinguish Roses or Dahlias. The Oleander suits our summer climate so well, that a collection of them would be a beautiful sight to see in bloom.

A New Race of Violets.—The *Florist and Pomologist* says, Mr. Lee of Hammersmith has succeeded in raising a new race of violets, in which the petals are flat like a Pansy. It is the result of a cross between Czar and Devoniensis. The flowers are pale blue, sweet, and very large, and Mr. Lee is "not without hope that he will make them in time parti-colored like the Pansy." The best one he has named *Victoria regina.*

"Golden Fleece" Thyme.—Gold-leaved bedding plants are scarce, the golden Feverfew being the best known. This yellow-leaved form of the garden Thyme is highly spoken of in the English journals.

Aquilegia chrysantha is the name finally decided on by Dr. A. Gray, for the long-spurred, golden Columbine, about which so much has recently been said in the horticultural journals.

Cineraria ceratophylla is spoken of as a promising silver-leaved plant for bedding purposes.

The *Moniteur de l'Algerie* states that, in 1871, the coral fishery employed 131 boats. In 1872, there were 80 more boats. Improved methods of fishing have, however, given equally good results, when compared with those of former years; in fact, there has been an increase in quantity of coral put on the market. New beds of coral have been found near Sardinia, which have drawn many of the Algerian fishermen to the northern Mediterranean.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

The public, although there is of course at this season but a limited supply, instead of standing in any fear from a generous consumption of all ripe fruits, as well as of most well cooked vegetables, may with confidence regard them as positively conducive to health. All physicians, of every school—Allopathic, Homeopathic, Hydropathic, or any other branch of the healing art—agree in this respect, however they may differ on other points of medicine, treatment, or diet. The very maladies commonly assumed to have their origin in the free use of Apples, Pears, Peaches, Cherries, melons, and wild berries, are now well known to be quite as prevalent, if not equally destructive, in seasons where there has been a scarcity of one or more of these fruits. There have formerly been so many erroneous ideas entertained regarding the bad effects of fruits, that it is better that now and forever a counteracting impression and a full and decisive settlement of the question should be definitely arrived at, it having its foundation in common sense, in all sanitary laws, and being based on the common observation of the most intelligent and best informed physiologists. No one, we are sure, ever lived longer or freer from the paroxysms of disease by discarding the delicious fruits of every season, and of every land in which he finds a home. On the contrary, they are necessary for the preservation of health, and are therefore caused by a wise and munificent Providence to make their appearance at the very time when the condition of the body, operated upon by debilitating causes not always understood, requires their grateful, renovating influence. That fruits are naturally healthy in their season, if rightly taken, no one who believes that the Creator is a kind and beneficent Being, can for a moment doubt. And yet, it is true, in some instances, of course, that the use of both summer and fall fruits appears sometimes to cause fatal diseases, especially in children. Why is this? Because we do not always conform to natural laws in using this kind of diet. These laws are very simple and easy to understand. Let the fruit be ripe when you eat it, and eat when you require *food*, but not so much just after dinner or any full meals. Let fruit form part of the meal, but not after satiety has ensued. Fruits that have *seeds* are much healthier than the *stone* fruits, though these latter may be partaken of in moderate or small quantities at a time. But all fruits are better for very young children if baked, or cooked in some manner, and eaten with bread. The French nearly always eat bread with raw fruit. Apples and winter Pears are very excellent food for children—indeed, for almost any person in health—but best when eaten for breakfast or *during* dinner. If taken in the evening, just before retiring, fruit often proves injurious. The old saying that Apples are *gold in the morning, silver at noon, and lead at night*, is pretty near the truth. Both Apples and Pears are often good and nutritious, when baked or stewed, for those delicate constitutions which can not bear raw fruit. Much of the fruit which too often appears in our markets, evidently gathered when unripe, might be rendered fit for food by preserving in sugar. Ripe currants are excellent food for children, and an excellent remedy for thread and other worms. Mash the fruit for this purpose, sprinkle it with sugar, and with good bread (and no country affords better than California),

let the children eat of this fruit freely.

Unripe vegetables are as insipid and unwholesome as unripe fruits. As to the quality of vegetables, the middle size are preferable to the largest or the smallest. But allowance must be made in this latitude, with its stimulating climate and rich soil, for vegetables as well as fruits being naturally larger, nay, even gigantic, than in most other countries. It is usually considered that most fruits and vegetables are more tender, juicy, and full of flavor, just before they are quite full grown. Freshness is their chief value and excellence—and one should as soon think of roasting an animal alive, as of boiling a vegetable, or preserving or cooking a fruit, after it is dead. The eye may easily discover if they have been kept too long; they soon lose their beauty in all respects. Roots, greens, salads, etc., and the various productions of the garden, when first gathered, are plump and firm, and have a fragrant freshness no art can give them again, though it will refresh them a little to put them into cold spring water for some time before they are dressed. If vegetables are not thoroughly boiled or cooked tender, they are tremendously indigestible, and much more troublesome during their stay in the stomach than the most under done meats or breads, etc. But, again, if vegetables are too long over the fire, they lose their beauty and flavor.

As to our markets, toward the latter part of last month (February), the return of pleasant weather brought in a more liberal supply of vegetables. Mushrooms and Cucumbers were cheaper, and Rhubarb was more plentiful than before that time. Spinach was 8c. and new Potatoes 6c. per lb.; Lettuce, 20 to 25c. per dozen; Salsify, 8 to 10c. per bunch; Potatoes, by the sack delivered, $1.50 to $2 per 100 lbs.

Prices in the fruit market, toward the end of last month, were without special change. Apples, Oranges, Lemons, and Limes were plentiful. Pears were very scarce, and commanded fancy prices. Bananas were 50c. per dozen; Smyrna figs, 35c. per lb.; Apples, by the box delivered, $1 to $2.50; Italian Chestnuts, 50c. per lb. Mammoth specimens of Shaddock Oranges were offered about the 20th of February at 50c. each; Citrons from Los Angeles County, 15c. each; Oranges, Loreto and Los Angeles varieties, 25c. to $1 per dozen.

Cucumbers were getting more plentiful and cheaper, being quoted at 35c. each; Green Peas were up to 20c. per lb.; Cabbage Sprouts quoted at 10c. per lb.; Artichokes, 75c. per dozen; Jerusalem Artichokes, 6 to 8c. per lb.; Asparagus, 50c.; Mushrooms, 25c; Colrabi, 25c. per dozen. On the 27th of February, vegetables improved slightly in quality, but the descriptions remained the same as they had been about the middle of the month. Some descriptions were getting scarce, and a stiffening in prices was the result.

About the 1st of this month (March) Pears were almost out of market, and the few offered were high in price. The price of Apples was very much restricted, and strictly choice pellow Newtown Pippins retailed, by the box, at $3 to $3.50. Los Angeles Oranges came forward freely and met with an active demand. Bananas were 50c. per dozen; Smyrna Figs, 35c. per lb.; Apples, by the box delivered, $1.50 to $3.50; Italian Chestnuts, 50c. per lb.

The temporary suspension of the collection of the import duties upon foreign semi-tropical fruits through the late construction of the revenue law relating to them, has resulted in a marked depreciation in the prices of some descriptions, more particularly Lemons,

which are selling at 25c. to $1 per dozen. Imported Oranges are also much cheaper than native grown, partly on the same account, and partly owing to their being inferior in quality. Bananas are selling all the way from $1.50 to $5 per bunch, and 50 to 75 cts. per dozen; Preserved Bananas, recent importation, 25 to 37½ cts. per package. Domestic fruit, excepting Oranges and Lemons, is becoming scarce and poor. The last Oregon steamers brought down large consignments of Newtown, Spitzenberg, Red Cheek, and Swaar Apples, which are offered in the stalls for 8 cts. per lb.

The return of pleasant weather has brought a more liberal supply of vegetables. Mushrooms and Cucumbers are cheaper, and Rhubarb is more plentiful at the last two weeks' prices.

Prices in the fruit market are, about the middle of this month (March), without much change. Apples, Oranges, and Lemons are plentiful. Pears are very scarce, and command fancy prices.

Variegated Vincas.—The best known Vinca (*V. minor*) is a common garden plant, and is known as Periwinkle or Running Myrtle. In old gardens, its creeping stems cover large patches with bright green foliage, from amongst which delicate blue flowers appear early in the spring. The large Vinca (*V. major*) is less hardy and not so common. It has larger and more rounded leaves than the other. Both these species have produced varieties with the leaves marked with yellow in such a manner as to make them decidedly ornamental plants. These variegated forms are frequently used for hanging baskets, but they do not hold their leaves perfectly during the winter, and are not well suited for house cultivation. For baskets and vases outside it, they are most useful plants; and when planted in a basket or vase, they hang over the edge with a very fine effect.—*Ex.*

Correspondence.

POMONA AND CERES AT HOME IN THE MOUNTAINS.

BY DR. HENRY DEGROOT.

Weaverville, Trinity Co., Cal., Feb., 1874.

Mr. Editor:—Though the Horticulturist often reaches and never fails to interest at least a few of us in this far north country, we seldom see much in it descriptive of the floral beauties or of the horticultural and pomological resources of Trinity County. Nor is this at all strange, considering that she lies almost up to the forty-first parallel of north latitude, and that nearly the entire area of the county consists of lofty ridges and broken hills cut everywhere by deep and precipitous cañons. To the world abroad, Trinity has been little known, except for its rich gold mines, its numerous streams, magnificent forests, and granite mountains; and while it stands to-day the foremost county in the State as regards its mining opportunities and prospects, it has still capabilities of soil and climate that rank it second to none as a fruit-growing district. Such Apples as are raised here are never produced at points much farther south, however favorable the location. Neither are the Peaches, nor other description of fruit, excelled by any grown elsewhere, either as regards size or flavor.

SOME OF THE ORCHARDS HERE

are marvels to see, even so late as December and January. Of these orchards, the most famous is that of Mr. Joseph McGillivray, on the Trinity River, fifteen miles below this place. Here were to be seen hundreds of bushels of

Apples and Pears hanging on or lying underneath the trees throughout the entire fall and early winter, with no one to pick or care for them. And such Apples! I have never seen anything like them in the San Francisco market, nor even in Oregon—so large, so fair, and so luscious! Not an Apple or Pear but was perfection itself—so immense, solid, juicy, and tender!—every one without spot or blemish! Here, for the first time, I found the Spitzenberg possessing the true old-time flavor, though the Apple of New England growth, in which I so delighted in boyhood, was a pigmy beside these.

The season of the earlier fruits was already over when I visited this spot about the first of December. But there had been gathered an extraordinary crop of Peaches, Apricots, Plums, Cherries, etc.—all splendid fruit, equally as fine as the Apples and Pears—while the Grapes still hung on the vines, and the Almond-trees, thrifty beyond measure and loaded to exhaustion, were covering the ground with their well-perfected nuts. The proprietor of this orchard has resided here, farming and mining, for over twenty years. He began setting out trees at an early day, selecting the very choicest varieties of fruits from the first; and having extended his planting gradually, has now over sixty acres covered with this description of trees, the most of them in full bearing. For some years, at first, his orchard proved a source of profit to him; but latterly, this has not been the case, the market for these products having been limited. As time wore on, the most of the householders here betook themselves to planting trees and vines, so that now nearly all have fruit enough of their own raising, and there are few to buy of the large orchardists and viniculturists. Mr. McGillivray, a big-hearted, liberally educated Scotchman who lives here with his family in a sort of baronial profusion, suffers whoever will to come and help themselves to what fruit they want—a privilege of which his near neighbors, more especially the miners, eagerly avail themselves.

At the time I visited this place, the owner having filled many large bins in his barn with Apples and Pears of the varieties best suited to keep, had turned his entire stock of horses, cattle, and swine into his orchard to feed on the fruit as it dropped off; and yet the ground under many of the trees was covered with it, there being more than the animals could devour.

Only a little inferior to the McGillivray orchard, in extent, scarcely at all in variety and excellence of fruit, is that of Dr. Ware, situated one mile above Weaverville, where also hundreds of well-filled bee-hives are to be seen—this insect thriving amazingly in a country so abounding in wild flowers and honey-bearing shrubs and trees. Over on the Hay Fork, a branch of the Trinity, are many fine orchards; also a large and thrifty one at the old Lowden Homestead, on the main river, with a great number scattered throughout the county — fruit being everywhere so plentiful as to have little or no sale. Here in Weaverville nearly every house is buried in trees, vines, and flowers—the main street being lined with Cottonwoods, which, having been planted in the early days of the town, have now attained large proportions.

While fruits and flowers of nearly every kind grow so luxuriantly here, the cereal crops can be brought to perfection with little labor, and often without irrigation. The most of the cereals sown are, however, cut for hay, as there are but few natural meadows in the county, except such as are located in

mountain basins not easily reached. In the matter of wild flowers and forests, Trinity is not surpassed by any section of country on the coast, there being found here a greater variety of woods and shrubs than in any other part of California; a feature due in part, no doubt, to the fact that the coast and the Sierra Nevada mountains come in together at this point, bringing each its peculiar growth of trees, plants, and flowers, and commingling them here. By this means both the flora and the botany of this region have been greatly diversified and enriched. Thus, we have here among trees, the Madroña, Alder, Chincapin, Laurel, Sycamore, and Redwood proper, with a great variety of berries, rarely found elsewhere than on the Coast Range, intermixed with several species of the Oak, Cedar, and Pine, common only in the Sierra Nevada, while such trees as abound in both these ranges are all met with in the mountains here, frequently growing in the greatest profusion. The same peculiarity distinguishes also, in a considerable degree, the grasses, the flowering plants, and the shrubs.

In passing lately over Bulkey Hill, lying eight miles east of and between this place and the main Trinity, I noticed standing on the very summit of the ridge a low shrub-like tree resembling the Cypress, being thickly branched and of perfectly conical shape, but of a species entirely unlike any I have before seen on this coast. I was afterward informed by Captain George Atkins, who has traveled much over this region, being withal a close observer, that the tree is not only *sui generis*, but that it is the only one of the kind he has ever seen, and he is quite certain that it has not its duplicate anywhere in the neighborhood. Being very beautiful, and most likely an entirely new species, this tree should command the attention of botanists.

Should this *screed* meet with favorable consideration, I may hereafter have something more to say about the Pomology, Horticulture, Flora, and Botany of "Old Trinity."

Editorial Gleanings.

Nourishment of Buds through the Bark.—In *Comptes Rendus* for November is an article of much interest, by M. E. Favres, detailing the results of some experiments made by him to determine the direct source of supply of food to the buds of trees.

The trees selected for the experiments were the Mulberry, Walnut, and Cherry Laurel. Three kinds of experiments were instituted: 1st. The removal of a complete or partial ring of bark. 2d. Separating flaps or strips of bark bearing buds. 3d. A combination of the two preceding methods.

On the Walnut and Laurel a complete ringing of a branch was followed by early death of the buds above it, but a narrow bridge left sufficed to secure continued growth. The exposed wood was in all cases protected from the air. If the ringing is performed around the bud instead of around the branch, the same results followed. In all these cases starch is found in the buds below the ringing, but above it is soon exhausted by the growth of the bud, and when the supply of starch is exhausted the death of the bud follows.

There is no difficulty, M. Favres observes, in proving the ascent of nourishment by the bark, if a strip bearing a bud be detached, except its lower end, from a Mulberry during the season of active vegetation.

A strip of bark with a bud separated the 20th of June, made a branch twenty

inches long by the end of August. The Walnut gave the same results, with abundant cellular exudation on the internal face of the strip, which must be kept from drying, but which did not show quite as great growth as normal branches. A strip of wood may or may not be left on the detached bark. If a branch be ringed at short intervals, the buds in the intervals will die in a time proportionate to their distance from the lower ring, and the starch will be found wanting in such intervals, conclusively proving the passage of starchy matter to the bud by means of the bark.

Strength of Timber.—The strength of a piece of timber depends on the part of the tree from which it was taken. Up to a certain age the heart of the tree is the best; after that period, it begins to fail gradually. The worst part of the tree is the sap-wood, which is next the bark. It is softer than the other parts of the wood, and is liable to premature decay. The deleterious component of the sap-wood is absorbed, if the tree is allowed to grow for a long period, and in time the old sap wood becomes proper timber-fibre, similar to the heart-wood. Hence, the goodness of a tree for timber purposes depends on the age at which the tree was cut down. When young, the heart-wood is the best; at maturity, with the exception of the sap-wood, the trunk is equally good throughout; and, when the tree is allowed to grow too long, the heart-wood is first to show symptoms of weakness, and deteriorates gradually.

The best timber is secured by felling the tree at the age of maturity, which depends on its nature, as well as on the soil and climate. The Ash, Beech, Elm, and Fir are generally considered at their best when at seventy or eighty years' growth, and the Oak is seldom at its best in less than one hundred years, but much depends on surrounding circumstances. As a rule, trees should not be cut before arriving at maturity, because there is then too much sap-wood, and the durability of the timber is much inferior to that of trees after they have arrived at their full development.

The Petunia.—The Petunia is really one of the most valuable summer flowering plants we have. Not much for cutting from, it is true, but still they are so easily grown, and so indifferent to heat and drought, so continuously flowering, and flowering in so many of its shades of color so gaily, what in these valuable particulars can excel them?

There is, besides all this, some novelty in them. We recollect very well when te hPetunia first came into general notice as a cultivated flower. It was then a pale rose color, and not half the size that it is now. A few years after, the big, coarse, white flower kind got into our gardens, and since then there have been numerous forms and shades of color ranging between white and rose. The florist has taken hold of them and produced distinct races, and given them fancy names borrowed from aristocratic people, as if that is the proper course to pursue in making aristocratic caste in Petuniadom. Some of them are very sweet, especially at nightfall, and their odor attracts the night-moths, until a bed of Petunias of a light summer evening is by no means a small attraction in the most pretentious garden. And then they can be had so easily. A ten-cent paper will give plants which will flower where they are sown in six weeks afterwards.—*Germantown Telegraph.*

Feeding Stock with Profit.—In theory a fattening animal can not be overfed; but in practice the limit of excessive feeding is fixed by the animal's power of assimilation. The feeder must consider various circumstances, such as the quality of the food—for if it be rich and lavishly used, a large quantity will be ejected in an undigested state—the state of the animal, his age and condition. Lean animals, for example, are unable to appropriate an enormous amount of highly nutritious food, and they are liable to be very much upset if they are fed too fast until they have begun to move in the right direction. They should be kept on cheap and bulky food till their powers of assimilation have improved with their condition, when they should be pushed on more rapidly. The art of fattening depends on supplying an excess of food judiciously. A mature animal needs a certain amount of food to maintain him in good condition, and the greater amount he can be induced to take over and above this fixed quantity, the faster will the process of fattening proceed, and the smaller will be the waste of that portion of food which goes merely to maintain life, and which must, therefore, be lost in a sense to the feeder.—*N. Y. Herald.*

The Japanese Apple.—A correspondent writes *The Tribune* as follows: "The *Pyrus Malus floribunda* is a very beautiful shrub when in bloom, and is covered with an extraordinary profusion of flowers. It has been flourishing in this country for the past two years, giving entire satisfaction in every way. All such additions to our list of hardy shrubs, combining all the requisites for general cultivation, should receive the notice that their merits deserve. A strong plant in the writer's collection, now just going out of bloom, has been one of the chief points of attraction to all visitors for the past two or three weeks."

An Enormous Grape-Vine.—The "Lord Raleigh Grape-vine," which was growing when Sir Walter landed at Roanoke Island in 1610, and was then but three inches in diameter, is now spoken of as one of the largest vines in the world. It covers one and a half acres, and last year yielded 46 barrels of wine—1,480 gallons in all—which sold for $2 per gallon, yielding $3,680. There is a Scuppernong Grape-vine in Terrell County, North Carolina, which is said to be much larger than the Raleigh vine, and to produce at least a fourth more wine. The wine from the vintage of last year from this vine measured 2,520 gallons, and brought the handsome sum of $5,040.

English Trade in Roses.—A magazine writer says: We could name several nurseries where from 120,000 to 150,000 Briers are budded annually, and several more where the number averages from 30,000 to 60,000. One of our friends in the trade invests annually £2,000 in Briers and labor in making out-door Roses. Having cast up a series of totals of this kind that we can pretty well rely on, we are satisfied the sale of Roses must considerably exceed a million annually. If we reckon these worth one shilling each, the total cost to the public will be £50,000. But we have yet to consider the pot Roses, and the new Roses, and all kinds of odds and ends of a commercial nature of which Roses are the subject, and we shall probably have to add an equal amount for these, which brings up the total to £100,000. That this is far be-

low the actual amount that changes hands in this country on Roses is made evident by the large sums our nurserymen pay to the French raisers every year for their novelties.

Warming Small Greenhouses. — An English journal says that a gentleman who had a small greenhouse of half hardy, not tender plants, employed at first no heat but gas, during cold snaps. The gas was however found ruinous to the plants, and he substituted cheap paraffine lamps, distributed in different parts of the greenhouse, with entire success. In the colder winters of this country, the same means of softening the severity of the temperature might be adopted, provided the half hardy plants selected were sufficient to bear some cold, or in smaller greenhouses or plant cases.

Button-Hole Bouquets.—These elegant little sprays are no longer confined to masculine use. Small gold and silver tubes are constructed for ladies, with a pin at the back, by means of which they fasten a Tea Rose, a Gardenia, a sprig of Heliotrope, a leaf of Geranium, and a scarlet blossom of some kind, at the left of a lace necktie or tulle scarf, instead of a brooch. Of course the colors of flowers are chosen to suit the taste and the dress, but they are always small, choice, and fragrant. Violets are in great demand.

Standard Honeysuckles. — An exchange gives the following directions to trim the Honeysuckle into a bush form, giving it great beauty and effect: Buy a plant of it, train or tie to a stout stake, prune freely but not too severely, give good soil and culture, and "it will grow into a plant that will astonish, by its flowering capacity, thousands who have not seen it so trained."

A Fine Gingko Tree.—In the Botanical Garden, at Pisa, Italy, is a Gingko tree, *Salisburia adiantifolia*, which has attained the height of nearly ninety feet, and at three feet from the ground is nine feet seven inches in circumference. It was received from England, and planted in 1788. It is a splendid tree, and very remarkable for the rich golden color which the leaves assume before falling.

METEOROLOGICAL RECORD,

For the Month Ending Feb. 28th, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.14 in.
do	12 M.	30.13
do	3 P. M.	30.12
do	6 P. M.	30.12
Greatest height, on the 5th at 12 M.		30.37
Least height, on the 17th at 6 P. M.		29.82

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		47°
do	12 M	53°
do	3 P. M.	54°
do	6 P. M.	49°
Greatest height, on the 20th at 3 P.M.		60°
Least height, on the 18th at 9 A.M.		42°

SELF-REGISTERING THERMOMETER.

Mean height during the night	41°
Greatest height, on mornings of 2d and 9th	47°
Least height, on mornings of 26th and 27th	36°

WINDS.

North and north-east on 11 days; south and south-east on 4 days; south-west on 6 days; east on 3 days; west on 2 days; north-west on 2 days.

WEATHER.

Clear on 13 days; cloudy on 10 days; variable on 5 days; rain on 10 days.

RAIN GAUGE.

February 1st	1.54	inches.
" 6th	0 01	"
" 9th	0.05	"
" 10th	0.12	"
" 11th	0.12	"
" 12th	0.19	"
" 13th	0.79	"
" 14th	0.08	"
" 26th	0.06	"
" 17th	0.18	"
Total	1.83	"
Total rain of the season up to date	18.97	"

Group of Annuals.

1. *Verbena.*
2. *Dianthus laciniatus flore-pleno.*
3. *Dianthus diadematus flore-pleno.*
4. *Tropæolum.*

THE

California Horticulturist

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CAMELLIA CULTURE.

BY F. A. MILLER.

While it is generally understood that the Camellia requires little care, as compared with other greenhouse plants, I find that but few persons succeed in retaining their plants in good and healthy condition for any length of time; and florists themselves seem still to adhere to the idea that their stock of Camellia plants has to be renewed every few years, on account of their dying off or becoming worthless. When we ask what the cause of all this is, we can not obtain any satisfactory explanation. One attributes the failure to unsuitable soil, another to the impurity of the water, a third to the peculiar climatic conditions of the locality, etc., etc. As far as I am concerned, I fail to see any objectionable ingredient in our soil, if properly prepared; nor in the water, if judiciously applied; nor in the climate, if the necessary protection is given.

Within the past few years I have had frequent occasion to note the cause of sickness and loss of Camellia plants; and doubtless many other plants would have perished, possibly sooner, had they been exposed to similar ill-treatment. The various causes of failure in the cultivation of Camellias may be summed up as follow:

1st. Over-potting, which is practiced by amateurs as well as by professional gardeners, to a very great extent. This treatment is only desirable when growing certain plants for specimens, or when a continuous development of young growth is desirable.

2d. Insufficient drainage, which has a tendency to sour the soil, and to produce decay in the roots.

3d. Placing pots containing these plants upon dry shelves. This frequently results in the drying-up of the outer earth containing the spongioles, which are formed of very delicate tissue, and which alone enable the plant to absorb the moisture and plant-aliment contained in the soil. To keep these spongioles in active condition, it is necessary to protect them from a dry atmosphere, which can only be properly accomplished by plunging the pots to at least half their depth in sand, tan-bark, or almost any other handy material. Where amateurs cultivate but a few plants, and where nicety and neatness are most desirable, the pot contain-

ing a Camellia plant may be set into one of a larger size, and the space between may be filled up with sand, which will answer every purpose as well as plunging.

4th. Exposure to violent heat, as direct sunshine. The Camellia requires partial shade and a cool temperature. Some of our florists are in the habit of forcing these flowers when they find a large demand for them; for instance, about Christmas and New-Year. I am of opinion that forcing is detrimental to the plants, and frequent forcing is likely to destroy them. Give your plants all the airing and ventilation you can, and protect them from the hot sun, and they will keep in a healthy condition.

5th. A close dry atmosphere, and the burning of coal or gas in the room where the plants are kept; this will kill almost any plant. When it is necessary to burn gas or coal, the plants should certainly be removed for the time being; and during dry and warm weather, a frequent syringing with water will be most beneficial.

6th. Frequent surface watering, in not sufficient quantity to penetrate the soil to the depth of the pot. When you do water your plants, water them thoroughly, so that every particle of the soil may be moistened. If done in this way, not more than two waterings per month will be necessary, unless the weather is very warm and the atmosphere unusually dry.

Remedy all these defects in treatment, keep your plants clean and free from dust, and I am quite certain that Camellia culture will be more successful in the future. Our climate is a most excellent one for Camellias, and they might be planted almost anywhere in the open ground, if proper shelter from strong winds and protection from the direct rays of the hot sun were provided.

"SCIENTIFIC GARDENING."

The transition from grafting to budding is natural enough. Those twenty white stakes stand as so many monuments of another horticultural disaster. On a September day, twenty buds, so rare that the original stock could not be bought at any price, had been deftly slipped into as many "suckers," which had come out from the roots of as many Rose-bushes. The next spring they were set and staked, and each was about as precious as the right eye of any amateur horticulturist. The small buds had developed into branches a foot long; great double peerless Roses had been hanging pendent from the original stocks—Roses with regal names and titles. There would have been twenty glorified specimens of Floriculture today, but for that foreign gardener who had been "educated in the best schools in Europe," who knew everything, and could not be told anything. Roses must be cut in to make new wood. Before night he had clipped those twenty standards each below the bud, and had taken himself off with his diabolical shears, his insufferable conceit, and his rustic innocence. He never came back to look at the work of his hands, nor to hear the wish mildly expressed that a pair of shears might be invented which would shorten the stature of that gardener at least a foot. There was a special aggravation of the case, because we had been nursing a theory for years, that by splitting two Rose-germs of different kinds and putting the odd halves together, if growth could then be induced, there would be a hybrid Rose—either the color of the one would be distinct on one side, and the other

on the opposite side, or the Rose would be mottled, having red and white spots on each leaf. This Siamese bud had started finely. Bad luck to the gardener's shears which abbreviated that experiment, and enveloped the vexed question again in darkness..—*Overland Monthly for April.*

FIG CULTURE.

BY DR. J. STRENTZEL.

The tree of the Garden of Eden, producing one of the most luscious fruits, should be more largely cultivated in California. No fruit-tree is easier propagated, longer lived, or more thrifty under ordinary care; none a more prolific or abundant bearer. The fruit, wholesome and nutritious, is easily preserved for future use by drying, and is thus adapted for a staple article of food in our favored clime.

The Fig-tree thrives best in a rich, mellow soil, and requires a copious supply of water during midsummer, on any of our uplands or dry soils, to produce large and well-ripened fruit. It is propagated from cuttings of the previous year's growth, or by sprouts from stool-plants or around the butt of a tree. These last are partially rooted already, and will make a fine growth during the first season, and begin to bear the year following. This very facility of propagation appears to be a barrier to the further improvement of the Fig by the production of new and choice varieties from seed, which calls for the best efforts of our nurserymen in that line. Considering the great difference in the quality of the fruit and in the growth of the trees of the same variety, when raised under favorable conditions, it is presumed that the seedlings would also vary, probably with great improvement both in size and flavor of the fruit.

The fruit of the Fig-tree forms in the axillæ of the leaves. The so-called first crop is on the previous year's growth; the second crop is developed with the new wood during the season, and is checked only by lack of moisture in the soil, or by the autumnal frosts. This peculiarity of growth induces long and straggling branches, disturbing the symmetrical beauty of a tree, and by which its vitality and power to produce fruit are also impaired; but with a little care in regard to proper pruning, as cutting out crossing branches, and shortening in one-third to one-half those of exuberant growth, the whole tree is filled out and renewed with new fruit-bearing shoots.

The ancient method of oiling the apex or eye of the fruit is not practiced here. It may be serviceable to varieties with an open calyx, as preventing the intrusion of insects.

There are about a dozen varieties of the Fig cultivated in our State, all succeeding equally well. The Violette, Angelique, and White Ischia are of excellent quality, but inferior in size; the large White Genoa is a splendid variety, but rather juicy and thin-skinned, and so more difficult to dry in the sun in the bay counties. Among the dark varieties, the Black Naples is the largest, but none is superior in quality to our Mission Fig, which will shrivel on the tree, and keep in fine condition, a luscious sweetmeat, until the rainy season, if not disturbed by the winged gourmands.

The improved processes of drying open a wide field for the profitable culture of the Fig on the most extensive scale, to supply not only the Pacific Coast and Territories, but the whole Union. Here is another industry, re-

quiring for its inception but little capital, and, with a minimum of labor, secure of quick returns and a continental market.

THE BRIGHTON AQUARIUM.

The Brighton Aquarium, while emulated by several buildings of a similar nature in different parts of England and the continent, still holds its own in being on a scale of magnitude hitherto unsurpassed; more than one of its tanks, in illustration of this, being of sufficient size to accommodate the evolutions of porpoises and other small cetacea. The works were commenced in the autumn of the year 1869, but owing to various interruptions the building was not formally thrown open to the public until August, 1872.

The area occupied by the aquarium, says the eminent naturalist, Mr. W. Saville Kent, in *Nature*, averages 715 feet in length by 100 feet in width, running east and west along the shore-line. The building internally is divided into two corridors separated from one another by a fernery and considerable interspace. The approach to the first or western corridor is gained through a spacious entrance hall, supplied with reading-tables, and containing, between the pillars which support the roof, portable receptacles of sea-water for the display of small marine specimens that would be lost to sight in the larger tanks.

The tanks for ordinary exhibition begin on the left side of the western corridor, and follow in consecutive order round the two corridors, the last immediately facing No. 1. The smallest of these tanks measures eleven feet long by ten feet broad, and is capable of holding some 4,000 gallons of water; while the largest, No. 6, in the western corridor, presents a total frontage, including the two angles, of 130 feet, with a greatest width of thirty feet, and contains no less than 110,000 gallons. Every gradation of size occurs between these two extremes, the depth of the water in all ranging from five to six feet. Supplementary to the foregoing, a series of half-a-dozen shallow octagonal table-tanks occupies a portion of the interspace between the two corridors, these being especially adapted for the exhibition of animals such as star-fish, anemones, and others, seen to best advantage when viewed perpendicularly through the water. Flanking one side of this same interspace are several ponds fenced off for the reception of seals and other amphibious mammalia and larger reptilia, while at its farther or eastern extremity artistic rock-work runs to a height of forty feet, thickly planted with choice ferns and suitable exotic plants, and broken in its course by a picturesque water-fall and stream. Tanks 12 to 17 in the eastern corridor, in addition to the stream and basin beneath the water-fall, are set apart for the exclusive exhibition of fresh-water fish, the remaining tanks being devoted to marine species. The bulk of water thus utilized in the fresh and salt water tanks collectively amounts to 500,000 gallons, and in addition to this several smaller store-tanks in the naturalist's room, adjoining the eastern corridor, afford accommodation for reserve stock, or for new arrivals before their display to public view.

The style of architecture dominant throughout the building is Italian and highly ornate, the arched roof of the corridors being groined and constructed of variegated bricks, supported on columns of Bath stone, polished serpentine marble, and Aberdeen granite; the capital of each column is elaborately carved

in some appropriate marine device, while the floor in correspondence is laid out in encaustic tiles. The divisions constituting the fronts of the tanks are composed each of three sheets of plate glass, each plate having a thickness of one inch, and measuring six feet high by three feet wide, separated from one another and supported centrally by upright massive iron mullions; in the smallest tanks the front is represented by but one of these divisions, while that of the largest, No. 6, consists of as many as eleven. Among other conspicuous structural features of the aquarium demanding notice, are the huge masses of rock entering into the composition of the tanks and fernery.

The system adopted at the Brighton aquarium for continually renewing the supply of oxygen, necessary for the well-being of the animals, is by streams of compressed air, which are constantly forced into the tanks through vulcanite tubes carried to the bottom of the water, each tank being fitted with a greater or less number of these tubes according to its size.

THE WILLOW.

BY E. J. HOOPER.

The Willow (*Salix*, Nat. Ord. *Salicaceæ*), belongs to the Linnæan class *Diœcia*, the distinguishing feature of which is, that the flowers bearing stamens, and those producing pistils and seed, are on two different trees, although the leaves and general appearance of each are the same. All the species are natives of the northern hemisphere, mostly within the temperate zone, though one or two are found within the Arctic circle. The catkins of the different species vary in length and size, as well as in the color of their anthers. The leaves, though greatly varied in size and form, are all more or less oval, and of a pale sea-green tint, and very frequently white, silvery, and downy on the under side.

"Along the brink the path they kept,
Where high aloft o'erarching Willows wept,
Whose silvery foliage glistened in the beam,
And floating shadows fringed the chequered stream."

The many important uses rendered us by the different species of Willows and Osiers serve to rank them almost first in the list of our economical trees and plants. The timber is soft, light, and smooth, though tough. There are computed by some botanists to be about 250 species. There are not many that have much claim to an ornamental character, but most of them are of great utility. Among the several uses to which Willows are applied, perhaps the most important is that of basket-making, and the next in consequence is the application of the bark to tanning purposes. In some countries, too, their leaves are employed as food for stock. A substance called "salicine" is obtained by maceration of the bark of several species, which has been proved to be equally efficacious with Peruvian bark in the cure of agues and other low fevers. The employment of Willow poles as supports in the garden hop-grounds and vineyards in the eastern part of the United States, and in other parts of the world, is well known. The bright yellow twigs of one variety of them at least—*Salix vitellina*—are among the toughest of the genus, and are grown by cultivators of the Grape, and market-gardeners, to bind their vines and other produce. The *Salix Babylonica*, the Weeping Willow, is decidedly worth great consideration; it is most ornamental, intermingled with other differently growing fine trees, in nearly all situations; but, when enjoying the most appriate place for it, the margin of a

stream or piece of water, is certainly one of the handsomest trees we possess. *Salix annularis*, or Ring-leaved Willow, is another pretty pendulous species, more tender than the preceding in a severe climate, but well adapted no doubt for California.

The Napoleon Willow, brought from the island of St. Helena, is a rather weak, pendulous sort, appears to be distinct from either of the above, and is, in all probability, a variety of *S. purpurea*, common as a woven hedge, well kept down, in some parts of England.

With regard to the planting of Willows, nothing can be more easy. They may be increased to almost any extent by cuttings, in the manner of the Osiers, grown for fagoting, underwood, or brush, which have long and tough rods. These are *vimenalis*, *rubra*, *Forbyana*, *Lambertiana*, or *purpurea*. Their after management must of course depend upon the uses they are destined for. The very common mode of pollarding them, as in Europe, is objectionable on several accounts. They are then spoiled either for timber or poles. The crowd of small stuff which rises on the head after each cutting suffocates one the other, and the trunk is rendered of little value by its being foreshortened. It must be decidedly more profitable either to cut them over near the ground, as is practiced with stools of Ash, Chestnut, and other plantations for wood, the subsequent shoots to be thinned according to the strength of the stool and space they are allowed to occupy—or at once let them run up into perfect trees, taking off only such lateral branches as may be required for repairs, etc., before the principal growths have attained a marketable size.

The ground most suited to the formation of Osier-beds, as they are called, is found on the margin of streams. It should be of considerable depth, and partake largely of a loamy character. The land should be sufficiently high to prevent more than occasional submersion, for although all Willows thrive in damp soils, few of them are naturally bog or even marsh plants, and never succeed where frequently saturated.

Useful as I have proved the Willow tribe, and beautiful to the eye, it fills a scarcely less important place as affording nourishment to bees. Its ornamental catkins and delicate leaves, which embellish the earliest days of spring, furnish sustenance to those valuable insects. On those of the *S. Caprea*, especially, the annual produce of the hives greatly depends. It is in flower in California in most years as early as February. During this time, whenever the thermometer is at or about forty-two degrees in the shade, accompanied with sunshine, the bees come abroad. This is a temperature which often occurs here, and if they have an opportunity during February of feeding a few days upon this Willow, or, perhaps, other kinds, the hive will soon become in a flourishing state.

With regard to the estimation in which the Willow has been, and still is, held by poets, to enumerate them all would be impossible. A few, however, may be mentioned:

"A hollow vale where watery torrents gush,
Sinks in the plain; the Osier and the rush,
The marshy sedge, and bending Willow nod,
Their trailing foliage o'er its oozy sod."
OVID.

"Poplars and Willows trembling o'er the flood."
POPE'S HOMER.

"The floating shade
Of Willows gray close crowding o'er the brook."
THOMSON.

"The thirsty Salix bending o'er the stream,
Its boughs as banners waving to the breeze."
MONTGOMERY.

"There is a Willow grows ascaunt the brook,
That shows his hoar leaves in the grassy stream."
SHAKSPEARE.

A CARPET FOR SAND-HILLS.

The report of the Engineer of the Golden Gate Park contains facts of great interest. We have in this city 3,000 acres of shifting sand, with a constant tendency to an increase of the area. The western or ocean side of the city is made nearly desolate by these sands. Every wave which beats on the shore, and every breeze, conspires to raise this sand and drive it inland. If the whole western side of the city were carpeted with verdure, insuring a complete fixation of sand, millions of dollars would be added to the wealth of the town. The engineer shows how this can be done. In fact, the experiments of the last year amount to a very conclusive demonstration. The average cost of reclaiming an acre of land at the Golden Gate Park has been $30.75 an acre for grass, or, with the addition of shrubs, $43.93.

The most difficult part of the work of reclamation will be an embankment of nearly three miles along the beach, where now eight hundred cubic feet of sand are raised for every lineal foot. While this will be the most difficult feature of the work, the engineer does not anticipate any great difficulty in making an effectual barricade by means of shrubs, which will fix the sand and form a natural embankment. The inside work could then be carried on by the lot-owners at comparatively small expense.

The results thus far attained with the Yellow Lupine are very remarkable. It thrusts its roots into the sand, and, when once established, it in a short time covers the desolation with the most beautiful vegetation. A top soil is soon formed, and then grass will grow. There are other plants and grasses which are known to thrive in the sand. Along the beaches in the Atlantic States is a low bush bearing what is known as the Beach Plum. This shrub grows in the sand, and appears to form a complete barricade to drifts. With so many resources, it can hardly be doubted that all the sand-dunes in the city will be reclaimed. Now that successful experiments have already been made, and the approximate cost is known, it may be considered that this great work is fairly inaugurated.—*S. F. Bulletin.*

ABUTILON BOULE DE NEIGE.

BY A NEW CONTRIBUTOR.

The Plant Catalogue of John Saul, Washington, D. C., just received, has the following description of a *new* and *rare* Abutilon at the very head of the list of flowering plants:

"Abutilon Boule de Neige.—The Floral Magazine says of it: 'Abutilon Boule de Neige was exhibited by Mr. Standish, of the Royal Nursery, Ascot, and was received by him from France. He describes it as very free flowering, as indeed could be seen from the small plants exhibited by him being full of flowers; and he also states that it is very valuable as a sub-tropical plant, bearing exposure to the summer well, and interesting by the contrast of its pure white flowers and green foliage. This plant will be invaluable to our florists for cut-blooms, during summer when bedded out, and during winter in the forcing-house—a charming acquisition to this group. Price $1 each."

This plant is figured in a very large and beautiful manner, in colors, as a supplement to the catalogue quoted above. This is the very same plant that our florists and nurserymen have been cultivating very extensively for at least six years past. Messrs. Lüdemann &

Co., nurserymen of this city, place it in their recent catalogue among the evergreen plants as "*Abutilon niveum*, white, price fifty cents;" but by wholesale, it can be had for thirty cents. They have one in their nursery that is twelve feet in height, and is a constant bloomer, having a profusion of white flowers the year round. Our nurserymen also cultivate a crimson Abutilon, called "Santana," which we have failed to find in any Eastern catalogue we have so far examined, and therefore presume it is also a "new and rare" plant there. It is "a beautiful plant either for greenhouse decoration, or for the open air, of rapid growth; leaves palmated, light green, glossy; deep crimson flowers, very distinct, and continually blooming; the price is only fifty cents." It is exceedingly gratifying to us to be thus able to identify what we have cultivated for a number of years, as new and quite rare in the East. The above may seem like bringing the "shop" into notice by giving the prices, but this the reader will at once see is only done to make a comparison.

GARDENING FOR CHILDREN.

Few parents probably ever think what an influence a few lessons on gardening would have on the future life of a child. Everyone knows how the acts of childhood last in the memory, even into old age, and this influence may be either good or bad, like the act itself; therefore, knowing this, we have a good incentive for teaching our children the knowledge which shall be useful to them in future years. Gardening is, however, seldom taught to children, although one of the most useful kinds of knowledge which they could obtain. Perhaps the reason why it is so is because there are few able to teach; but it needs only a beginning to make the next generation much in the advance of this.

The boy is set at work hoeing or digging, but no one explains any motive for the act, consequently his interest in the work does not reach beyond the mere manipulation of the soil, and what might become mental recreation and a pleasure, is the worst kind of drudgery. If he was told why the soil was stirred and its effect, there would be something more than the usual incentive for work, and the lesson would be remembered. A child should never be allowed to do any work without first knowing its object; and the parent that is capable of explaining this clearly will not be very likely to permit an improper act.

But what we here call gardening may well include more or less of farming, because the farmer raises plants as well as the gardener. Neither do we believe in confining a knowledge of gardening to boys, for it will do girls no harm even if they should never have occasion to use it. Let the boy begin by raising plants himself, sowing the seeds and tending the plants as they appear, and progress soon becomes a constant source of delight as well as knowledge. Begin with annuals, for they come into perfection soon, and will not tax the patience of the child too severely at first. A few perennials may also be started at the same time, and a few words of explanation show him the difference and how to distinguish the two classes. Gay flowers usually attract most, but melons, or other annual fruits, may well come in for a share of attention. One step in this direction will lead to others, and a boy or girl who would, under the usual course pursued by farmers, hate gardening, will become thoroughly imbued

with a love for it and all its surroundings. The hoeing, raking, digging, and other operations in the garden, when their use is fully explained, become very interesting even to older persons, but they are remembered better if taught in youth.

If we are ever to be a nation of good gardeners or farmers, we must have the science of the thing taught to children. Our common schools must be made more practical and interesting to children, for the science of every-day life and its surroundings are full of interesting and useful lessons, and these need to be placed foremost, and dry book-lessons second or last. A knowledge of how that weed by the school-house door-step grows is of more consequence to the child than the age of the Egyptian Pyramids or the height of Pompey's Pillar. We were taught when a child to repeat many a falsehood by the yard, because they were in school-books, but never had a teacher who could tell which way a Lima beanstalk turned around a pole, or why it turned at all. Now, while farmers are making war upon those who oppress them, had they not better look into the school-houses and see that their children are being taught that which shall be most useful to them as farmers and farmers' wives?

A Destructive Worm.—We hear complaint that a small worm has made its appearance in this vicinity, and is making disastrous inroads upon some of the grain. It resembles the army-worm somewhat. It eats in a circle, and takes the grain as it shoots above the ground, leaving not a spear in its course. Several farmers in this neighborhood will be compelled to sow their land over again, owing to the devastations made by these worms.—*Gilroy Advocate.*

GROUP OF ANNUALS.—See Frontispiece.

BY F. A. MILLER.

We take pleasure in calling the attention of the reader to another group of annuals, represented in our frontispiece, for which the Magazine is again indebted to James Vick, of Rochester, N. Y.

The *Verbena* is not considered an annual with us here in California, as it is sufficiently hardy to withstand our winters. The production of new varieties is continually increasing, and the Verbena is now a most popular bedding plant, and indispensable for the flower garden. It is very important that the old plants should be well cut back in the spring of the year, so as to produce young wood and better flowers.

The *Dianthus* has also been wonderfully improved, and many most exquisite and distinct varieties are under cultivation. The seed is sown early in the spring, and the young plants will produce an abundance of flowers during summer and the following winter. The Dianthus also withstands our winters, holds out for several years, and ceases to be an annual in California.

The *Tropæolum* has no less claim to our special attention. Hardly any except the oldest varieties are cultivated here, although the colors of the latest acquisitions are most superb. It is a pretty climber for trellis-work, and continually in bloom. It develops its flowers the first season from the seed, but, like the other plants we have named above, continues to live and thrive for a number of years. We know of some plants in this city which have never stopped blooming for four years. Certainly this fact must encourage the planting of these so-called annuals.

Thorough cultivation is indispensable to success in gardening.

EUCALYPTUS GROVES.

A Hayward correspondent of the Oakland *Transcript* gives the following:—"Two miles north of Hayward are two remarkable groves of the Eucalyptus or Australian Gum-tree. They belong to J. T. Stratton, the present Surveyor-General, who resides in Oakland. One grove contains about sixty acres, the other ninety; the whole comprising about 130,000 trees, big and little. The trees are only four years old, yet many of them are from forty to fifty feet high and a foot in diameter, and are planted in regular rows like an orchard, though closer together; in fact, the rows are too close for the general thrift, and the proprietor is about to cut away every other tree, which will afford firewood enough to pay for all expenditure heretofore. When Gen. Stratton was setting out the trees, the neighboring farmers laughed at him, and advised him to desist and attend to his surveying, as he would be dead long before the timber would amount to anything; but the laugh is now on the other side. Five years hence the available timber will be immensely valuable for manufacturing and for firewood. There are many species of the Eucalyptus, most of which are adapted to this climate. The tree grows to great size and height, and when seasoned is extremely hard, solid, and resembles hickory. It is well suited for wagon and carriage making, and as firewood it creates a heat almost equal to coal, and deposits a cinder which will keep hot for a long time. No doubt General Stratton's foresight in planting these extensive and beautiful groves will produce not only cords of wood but cords of money; for, if cut down and sold now, at the age of only four years, the young forests would bring many thousands of dollars. Moreover, the successful experiment will be of vast importance to the people living in poorly timbered districts, as it has demonstrated that an abundance of valuable wood can be produced from the seed within five years from the time of planting, while a period of nine or ten years will produce timber logs more than two feet in diameter.

A FLOURISHING EXPORT TRADE IN SEEDS AND PLANTS.

A considerable trade, and one constantly increasing, has sprung up with Europe in plants indigenous to the Pacific Coast. Sonntag & Co. have the principal part of the business in their hands, and they have collecting agents at work from Washington Territory to Southern California, in Nevada, and also in Arizona.

The Pacific Coast is constantly yielding up botanical treasures, and attracting the attention of the scientific world. The *parterres* of lovely flowers upon our hills and mountains are not appreciated until one has been abroad, and visited the gardens of Europe. In England, and in several countries on the continent, wild flowers from this State, where they are found in boundless profusion, are cultivated under glass, and nurtured as botanical novelties. There are seventeen species of the Lupine in California, indigenous to the soil, and other wild flowers in like proportion. Among the California plants held in high esteem by the Europeans is the Ceanothus, or the Beauty of the Sierra, a charming flower, found in the mountains, as its name would imply, and also on the hills to the west of the city. The California Pitcher Plant, differing materially from the Pitcher Plant of the Eastern States, is also prized abroad as a novelty. Its leaves are in the form of tubes, and will

hold water. Another popular plant is the *Scoliopus Bigelowi*, a plant discovered by the Mexican Boundary Commission, and named in honor of one of its members. This is a great botanical curiosity. It grows to the height of eighteen inches, has large green leaves, spotted with maroon, and bears purple flowers.

Among the tree seeds in demand among the Europeans are those of the *Sequoia gigantea*, or *Wellingtonia gigantea*, named in compliment to the late Duke of Wellington, which is best known as the Big Tree of California. The English naturalist Lobb is supposed by many to have first met with the tree near the source of the Stanislaus River, in Calaveras County, though other writers attribute its discovery to Douglas, in 1831 ; but perhaps the most probable statement is the one generally believed in California, and is that a company of miners on a prospecting tour came accidentally upon the Calaveras group. In 1865 were sold two pounds of the seeds of this tree, in one of the German States, at the rate of $125 per pound. Other favorites are the *Pinus flexilis*, a hardy tree, found at the height of 13,000 feet; the *Pinus insignis*, a lovely grass-green pine ; the *Cupressus macrocarpus*, an evergreen; the *Thuja gigantea;* the gigantic Arborvitæ, alias *Libocedrus decurrens*, a noble tree, with a straight and very robust stem—in color the foliage is a remarkably bright green, and the branches are long, flat, and frond-like ; and many other Firs, Pines, Cedars, Cypresses, etc. The need of a good work on the botany of the Pacific Coast has long been felt; and in this connection we are pleased to learn that Professor Brewer, of Yale College, who was associated with Clarence King during the geological survey, is writing a book devoted exclusively to this subject.—*Morning Call.*

MOUNT SHASTA FROM STRAWBERRY VALLEY.

Isolated by the valleys around its base from the ridges of the Sierra Nevada and the Coast Range, which in this region are conterminous, if not quite intermixed, and showing so much of its real elevation, Mount Shasta has the finest exposure of all the lofty summits in California. Indeed, there are few mountains anywhere in the world which stand so apart, and are seen to such great advantage. Mount Whitney, in southern California—its superior in height by 500 or 600 feet, and its only proved superior in the United States, outside of Alaska—is but one of a number of companion peaks, of little inferior height, rising a few thousand feet above the general elevation of a long crest-line, accessible by a quite gradual approach on horseback. The peaks about the railroad summit, having an elevation of 9,000 to 10,000 feet, are reached by an ascent, on the railroad or wagon-road grades (which go within 3,000 or 4,000 feet of their tops), not less than 100 miles long. But arrived at the base of Shasta, you are only 3,567 feet above the sea, and make the remaining elevation of nearly 11,000 feet to the top, on horseback and afoot, in the short distance of fourteen or fifteen miles. Standing out so boldly, Shasta is a conspicuous landmark over an area several hundred miles in extent, and the view of it from any of the valleys at its foot is alone ample reward for the long journey necessary to obtain it. The study of it from Strawberry Valley is a constant source of pleasure, for many days in succession, from the early morning, when it is cold and austere, until the

evening, when it is warm and ruddy with a delicious Alpine glow, lasting forty minutes after the valley is in cool shadow. In the clearest atmosphere, and close as it is, the twin cones of its summit look soft and smooth, as if clad with soil, where they are not covered or streaked with snow. Innocent and inviting as are those slopes, except for the steep angle of their inclination, we know they are rough piles of broken rocks, of toppling slabs, and sharp volcanic clinkers. But how lovely they look! How delicious in their prevalent tint of pinkish drab, streaked with the red of lava edges and the white of frozen snow, and relieved so high up against the blue sky; while low down is the abruptly terminating line of dark-green firs and pines, sloping to the bright grassy meadow at the foot of all. In some lights, and especially when the atmosphere is hazy, the peak above the timber-line is a delicate *mauve* color; and then it is as airy and wonderful as the dome of Aladdin's genii-built palace, insubstantial almost as the fabric of a vision.—B. P. Avery, *in Overland for March.*

PROFITS OF ORANGE CULTURE IN CALIFORNIA.

Seedling Orange-trees rarely bear fruit until seven years old, and frequently not until eight years old. As a rule, the first crop is sufficient to pay all current expenses. The second crop will give a fair profit, while the third crop—worth at, say, $15 to $25 per 1,000, $10 per tree—is enough to pay back all the principal invested, allowing that nothing has been realized in the meantime from the space between the rows. Orange-trees fifteen years old will bear from 1,000 to 2,000 Oranges, netting the fortunate owner from $20 to $25 per tree, or $1,000 to $2,000 per acre. This is no fancy picture—the dream of an imaginative mind. The Los Angeles and San Gabriel valleys, in Los Angeles County, afford ample proof of the truthfulness of these assertions. From his orange-grove of seven acres, Mr. Wilson nets the handsome sum of $2,000 per acre per annum. The fair owner of the Wolfskill orchard, covering an area of about thirty acres, is reputed to net from the Orange-crop from $45,000 to $50,000 per annum. Mr. L. J. Rose, of Sunnyslope, who has an avenue half a mile in length, leading from the county road to the door of his residence, lined on each side by a double row of Orange-trees, five hundred of which are now bearing, sold the crop of 1872--3 for $30 per 1,000, which aggregated about $15,000. The trees in the San Gabriel Mission orchard yield from 2,000 to 3,000 Oranges per tree per annum, which sell readily for the highest price in the market.—Taliesin Evans, *in Overland for March.*

Rheumatism.—A correspondent in the *English Mechanic* gives the following remedy for curing rheumatic gout, from which he had long been a sufferer. He insulated his bedstead from the floor, by placing underneath each post a broken-off bottom of a glass bottle. He says the effect was magical, that he had not been free from rheumatic gout for fifteen years, and that he began to improve immediately after the application of the insulators. We are reminded, by this paragraph from our English contemporary, of a patent obtained through this office for a physician some twelve or more years ago, which created considerable interest at the time. The patent consisted in placing glass cups under the bed-posts in similar manner to the above. The patentee claimed to have

effected some remarkable cures by the use of his glass insulators, but we have not heard from him for some time. We can not vouch for any merit in the idea, but it is one easily tried; and as no harm can arise from the experiment, we hope some one will test it and give us the result of his experience.

KEEP AMMONIA IN THE HOUSE.

We find the following sensible article credited to "Exchange," and we transfer it to our columns because our own experience teaches us that the advice is good:

"No housekeeper should be without a bottle of spirits of ammonia, for besides its medical value, it is invaluable for household purposes. It is nearly as useful as soap, and its cheapness brings it within the reach of all. Put a teaspoonful of ammonia to a quart of warm soap-suds, dip in a flannel cloth and wipe off the dust and fly-specks, and see for yourself how much labor it will save. No scrubbing will be needful. It will cleanse and brighten silver wonderfully: to a pint of suds mix a teaspoonful of the spirits, dip in your silver spoons, forks, etc., rub with a brush, and polish with chamois-skin. For washing mirrors and windows it is very desirable: put a few drops of ammonia on a piece of paper, and it will readily take off every spot or finger-mark on the glass. It will take out grease spots from every fabric: put on the ammonia nearly clear, lay blotting-paper over the place, and press a hot flat-iron on it for a few moments. A few drops in water will clean laces and whiten them as well; also muslins. It is a most refreshing agent at the toilet table; a few drops in a basin of water will make a better bath than pure water, and if the skin is oily it will remove all glossiness and disagreeable odors. Added to a foot-bath, it entirely absorbs all noxious smell so often arising from the feet in warm weather, and nothing is better for cleaning the hair from dandruff and dust. For cleaning hair-brushes and nail-brushes it is equally good. Put a teaspoonful of ammonia into one pint of water, and shake the brushes through the water. When they appear white, rinse them in pure water, and put them in the sunshine or other warm place to dry. The dirtiest brushes will come out of this bath white and clean. For medicinal purposes ammonia is always unrivaled. For headache it is a desirable stimulant, and frequent inhaling of its pungent odors will often entirely remove catarrhal cold. There is no better remedy for heart-burn and dyspepsia, and the aromatic spirits of ammonia is especially prepared for these troubles. Ten drops of it in a wine-glassful of water are often a great relief. The spirits of ammonia can be taken in the same way, but it is not as palatable. In addition to all these uses, the effect of ammonia on vegetation is beneficial. If you desire Roses, Geraniums, Fuchsias, etc., to become more flourishing, you can try it upon them by adding five or six drops to every pint of warm water that you give them; but don't repeat the dose oftener than once in five or six days, lest you stimulate them too highly. So be sure and keep a large bottle of it in the house, and have a glass stopper for it, as it is very evanescent, and also injurious to corks,

Success of an American Vegetable.—The Early Rose Potato has won a triumph even in Australia. In one place a single pound of seed produced 105 pounds in yield; another lot of two pounds of seed produced 300 pounds within seven months.

GROWTH OF THE FRUIT TRADE.

The domestic fruit trade of this State is increasing in a healthy way year by year. We hear now and then that the fruit business don't pay. In some instances it does not; but this results, we suspect, from poor management. We hear the old story of fruit decaying on the ground, or not paying for boxes, freight, and commissions. This class of facts can be gathered up in any fruit-growing region, East or West. Probably, those who have made fruit-growing a specialty have realized the most satisfactory returns. They watch the markets, and they know what varieties sell best. As evidence that the fruit trade is in a prosperous condition, we have the facts that new orchards are set out every year, and at this time preparations are making for the setting out of fruit-trees on an extensive scale, not only in the bay counties, but in other parts of the State. Besides Pears, Apples, Peaches, Cherries, and Plums, orchards of small fruits, as Blackberries, Currants, and Gooseberries, will be set out.

The Sacramento *Union* makes the following showing of the fruit business which centres in that city: "It is impossible to get correct data of the total sales and exportation from this city. It will, however, be but little, if any, short of $750,000. A large proportion of this has been disposed of and forwarded from here by W. R. Strong, A. H. Cummings & Co., R. Levy, and Lyons & Barnes, fruit and commission merchants, Sacramento, and by C. W. Reed, an extensive grower in Yolo County. One firm, A. H. Cummings & Co., Sacramento, shipped for their share, during the fruit and vegetable season, 2,028 tons of fruit, 300 tons of vegetables, 45 tons of seed, 30 tons of dried fruit, and 400 dozen (2½ lb. cans) canned fruit. Of the above, 400 tons of fruit were sent to Chicago and New York, and the balance to Nevada, Utah, Montana, Idaho, Wyoming, Colorado, and Nebraska. Another, the house of R. Levy, shipped 6,000 boxes of Apples, 6,500 boxes of Pears, 2,500 boxes of Peaches, 1,500 boxes of Plums, 1,250 boxes of Nectarines, 2,000 boxes of Apricots, 16,000 boxes of Grapes, 5,000 boxes of Cherries, 2,000 boxes of Currants, 6,000 boxes of Strawberries, 3,000 boxes of Tomatoes, and fifteen carloads of assorted fruits and vegetables. Wolf & Adams, during the year 1873, shipped of Cherries and Plums 5 tons; of Blackberries and Strawberries, 10 tons; Peaches and Apricots, 25 tons; Pears and Apples, 60 tons."

The business of drying fruits and canning, both for home consumption and the Eastern markets, is carried on more extensively in San Francisco and in this vicinity. It is yet in its infancy, but is growing rapidly every year. A good fruit-orchard—that is, one which is stocked with the best varieties of fruit—yields a very certain income. The owner can sell the crop on the trees if he does not care to box and ship it to market. Many large sales are made in this way; the purchaser in the early part of the season buying the crop in bulk on the trees, and taking the chances of a good turnout and a good market. Those who maintain that the fruit business is overdone in this State will see that interest more than doubled during the next ten years. —*Bulletin.*

The British Museum has cost the British Government nearly $20,000,000, and it now costs nearly $600,000 a year to maintain it, or more than a dollar for every person who visits it.

HOW TO PLANT PECANS AND CHESTNUTS.

There are very few species of our native nuts that will grow after they have once become thoroughly dried, consequently fall is the time to plant. But in case it is not convenient to plant at that time, the nuts may be preserved in moist sand or soil until spring, and then sown in drills or wherever it is desirable to have them grow.

The Chestnut is probably one of the most delicate of all, requiring careful handling in order to succeed in making the nuts grow; but if taken fresh from the trees or before they get dry and shriveled, and placed in pure sand and then buried in the open ground where they will be kept cool and moist until spring, there is little danger of failure, provided they are not planted too deep and in heavy soils. We have found it a good plan to scatter the nuts in shallow drills and merely cover them with sand or sandy soil, and then spread a little hay, straw, or some such light material over the bed. Not more than a half inch in depth of soil should be put over the nuts.

Pecan and other species of Hickory nuts may be treated in the same manner, although they will withstand considerable hard usage and still grow. Pecans which have been kept in stores since last autumn may be made to germinate next spring if taken now and put in moist soil and placed where they will freeze during this month or next. The freezing and thawing open the pores of the shell, admitting moisture to the germ within.

Collection of Oranges.—Says the *Journal of the Farm:* "It is not generally known that the Superintendent of the Government Gardens at Washington has for some time past been making a collection of all accessible varieties of Oranges, and that he now has over fifty varieties, of which but three kinds have yet been distributed, viz: Tangerine, Maltese, and St. Michaels. It is proposed to have the different varieties tested, and when their qualities are ascertained, to distribute the best kinds for cultivation in the South and on our Pacific Coast. This branch of Horticulture is one which has made rapid progress within the last few years, and we are glad to note that Mr. Saunders is thus assisting it."

MOUNTAIN FARMING.

The Amador *Ledger* has been giving some interesting items of actual results of farming in the foot-hills of that county. This week it gives the actual product of the ranch of Mr. C. J. Ruffner, situated at the north-western foot of the Butte Mountain, three miles east of Jackson. Mr. Ruffner owns 160 acres, with Government title; 20 acres of the tract is cultivated to grass, producing one ton per acre without irrigation. Hay is never worth less than $25 per ton; income from hay produced, $500. Eight acres are planted in fruit-trees and Grape-vines, and two acres in vegetables. The fruit-trees embrace Apple, Pear, Peach, Plum, Apricots, Quince, and Nectarine. From the orchard last year were taken and sold the following products: Eight tons of Apples, at 2 cents per pound, $320; 2 tons Peaches, Pears, Plums, and other fruits, 3 cents, $120; 18 tons Grapes from 7,000 vines, 2 cents, $720; 1,000 pounds raisins cured and sold, 20 cents, $200; from eight acres fruits and vines, $1,360. From the two acres cultivated in vegetables, the

following sums were realized: 4 tons of Tomatoes at 2 cents, $160; from the sale of Cucumbers, Beans, Peas, Cabbages, Beets, and other vegetables, $300. Product from 2 acres, $460. Whole amount realized from 30 acres, as follows: From 20 acres to hay, $500; 8 acres of fruits, Grapes, and raisins, $1,360; 2 acres to vegetables, $400. Total sum realized, $2,320; being $25 per acre for land cultivated to hay, $270 per acre for land cultivated to fruit and Grapes, and $230 per acre in vegetables.

THE EUCALYPTUS.—Dr. William H. Gibbons, of Alameda, says of this tree: "*Don't trim them.* The Eucalyptus, in its natural localities, attains a height of from 300 to 400 feet, with a diameter of 40 feet. The first two years of its growth from the seed is largely employed in making root. Cut off its side branches and you cut off the organs which supply the root with food. Dwarf the root and you produce an ill-shaped, ungraceful tree, which, having no firm hold in the ground, is liable to be blown over by every high wind. Our gardeners ball up the roots of the Eucalyptus like a mass of worms, and sell them in this condition; the purchasers dig a small hole and cover them up. They grow awhile, blow over, are trimmed, reset, and replanted, to look as much like a Eucalyptus-tree as a jackass does like a philosopher. The hole for a tree should be always from eighteen inches to two feet square, and of like depth; it should be filled to within eight inches of the top with good vegetable mold or compost; the roots should be trimmed and spread out so as to have no accumulation of twisted roots, and the tree when planted should be about an inch below the earth line. So planted, it will rarely blow over."

THE OREODOXA REGIA PALM.

The splendid and luxurious flora of Brazil produces nothing more graceful than the lofty palm known as the *Oreodoxa regia*. Straight and slightly tapering for over sixty feet in height (when fully grown), the tree then separates into a frond of remarkable beauty, as complete in form as the capital of a Corinthian column. A grove of these trees is to be seen in the public Botanic Garden at Rio de Janeiro, and it is difficult to imagine an object more beautiful to the eye of a lover of nature. The trees are said to be between forty and fifty years of age. The trunk of each of them is about four feet in diameter at four feet from the ground, and it goes on tapering gradually to a length of more than fifty feet, when it becomes united with another smooth thinner trunk, from ten to twelve feet in height, formed of the bright green foot-stalks of the leaves, which again measure some twenty feet or more.

In young vigorous trees the leaves are considerably longer. The great beauty of this Palm is its elegance and cleanliness of aspect; no ragged leaf beats about in the wind, even at that great height; the over-ripe yellow leaves unsheathe themselves of their own accord, and the trees look as clean as if they had been trimmed by hand. The color of the stem is of a whitish gray, like that of light stone in dazzling sunshine; and although from top to bottom it is covered with lichens of all the colors of the rainbow, yet so small are they that you only perceive them by approaching the tree closely.

In the same grounds, says *The Garden*, exists the parent of these Palms, which was planted during the last year of the last century, and is now about 120 feet in height. It is a noble tree,

and, as it stands singly and at a considerable distance from other plants, its beauty and height can be seen to the best advantage.

Strangers from northern countries are invariably struck with the appearance of this avenue, which is unrivaled for its regularity, extent, and beauty. It forms a colonnade of natural columns, whose graceful bright-green capitals seem to support an overhanging dome of bright blue sky.

FRUIT-GROWING AND FRUIT-CURING.

The following view on this new industry is from the Marysville *Appeal*, of February 14th:

"California has already gained a national reputation as a fruit-growing country, though fruit culture in our State may be said to be in its infancy. We have no accurate data as to the aggregate crop of our various fruits, but one fact seems to be demonstrated by experience, that our crops of green fruit are already in excess of home consumption, and that fruit-growers who are increasing and extending their orchards yearly, must resort to drying and canning, and that the coming year will find our fruit-growers making preparations for disposing of their surplus in this way. Our attention has been called to this matter at this time by observing that extensive orders have been recently received from the East for dried Apples, at nine cents per pound; and also, that during the month of December last, about 35,000 pounds of dried fruit were shipped by rail from San Francisco to the East. California is wonderfully adapted by its climate and soil to fruit-growing, and is already the greatest pomological State in the Union. But our people are yet to learn much about fruit-raising and fruit-curing—learn how to utilize by economy, industry, and foresight, and adopt various modes of preserving and getting to market their fruits. Every novice in California can plant a tree, gather its fruit, and sell it for what it will bring in the nearest local market. But necessity compels us to learn how to do better than we have been doing the past few years. Early and late fruits are the only varieties on which our orchardists now realize good profits, and this demand lasts but a few weeks at the beginning and close of each season. The great bulk of our fruits ripen in midsummer, and are necessarily rushed upon the market, and bring but small prices, and frequently barely enough money to pay the expenses of picking, boxing, and freight. At this particular period of the season the general interests invite some other way for the disposal of the surplus fruit, and it is plain to see that there is but one course left, and that is to preserve or dry our Peaches, Pears, Plums, Apricots, etc. Every extensive fruit-grower must therefore provide ways and means for drying or preserving—and it is generally conceded that there will be most profit in drying. Then follows a secondary necessity, which may be termed economy in labor. The work of picking, paring, and drying must be done with cheap labor—and what better employment for our boys and girls who are dependent upon some kind of occupation for their support? Fruit-drying can be made profitable when the people settle down to the conviction that they must labor in California as in other States, and rigid economy is adopted in every department of the business. There will be a market for every pound of dried fruit we can put up in good shipping order. By drying our best fruits—for

the best is that which ripens in the middle of the season—the home market will be relieved of the surplus of green fruits, and millions of pounds will be saved which would otherwise rot or be fed to animals. We therefore believe, considering the increasing demand for dried fruits in the East, that our orchardists may safely anticipate that a better time is coming."

PLANTING SHADE-TREES IN SAN JOSE —AN EXAMPLE.

San José is, says the Sacramento *Record*, we believe already the best shaded city in the State. The streets leading out of the city for miles, in almost every direction, are lined with shade-trees to a greater extent than are the streets leading out of any other city in the State. The shade-trees in the streets of San José and along the roads leading into the country are the remark and admiration of every visitor to that section, and have done more to attract permanent settlers and capital to that county than any other one thing. The land is no better in that county than in many others in the State, and produces no more to the acre. Nor is the county any better situated as to market facilities than many other counties, and yet the farms are held at a much higher price and are in demand at higher rates than in most other counties. One of the principal reasons for this fact is found in the better taste and more enterprise displayed by the citizens in the ornamentation of their city lots and farms in the country. Suppose, for instance, that all the citizens in the several towns of Yolo and Solano counties, and all the farmers, were this season to plant out shade-trees along the line of all the public streets leading through or past their property, and should give them the necessary care to secure their thrifty growth, can anyone tell the appreciation of real estate that would take place in the county in the next four years? The trees themselves, for the wood alone, would be a good investment, but the value they would add to the land could scarcely be estimated in dollars and cents, though we feel confident that this additional value would scarcely be less than from 25 to 50 per cent. over and above the amount of increase that would accrue to the land without such improvement. How long will it take for the farmers of all the counties to learn the value of shade-trees in a country like this? If good judgment were used in selecting the trees, in ten years from the time of setting them out trees thus set along the highways of a county would, from the prunings alone, furnish their owners with a good supply of fire-wood. One hundred Cottonwood-trees would, after they should have attained the age of ten years, furnish from the limbs alone ten cords of wood per annum. The pruning could be so managed as not to interfere with, but rather preserve the beauty and symmetry of the tree. This is the season to plant trees, and we would urge all our readers to plant them wherever they have appropriate places, whether along the line of the streets or division fences, or in cultivated fields.

Ammonia for Verbenas.—The sulphate of ammonia is an excellent manurial liquid to apply to Verbenas or other plants, giving the foliage a dark green, luxuriant, and healthy appearance. It is economical, clean, and easily applied. Prepare it in the evening before using, by dissolving one ounce of ammonia in two gallons of water. It may be applied once a week.

THE PROTECTION OF PLANTS BY ARTIFICIAL CLOUDS.

The practice among gardeners of protecting vegetables from the effects of frost, by lighting fires at such points that the wind will carry the heated air and smoke over the plants, is not new, and in some countries is one of the commonest agricultural operations. In Chile, where large vineyards exist upon the slopes of the Cordilleras, the plan has been found of the greatest value in saving the vines from the cold wind which sweeps down from the mountains; and it is stated that even the tenderest shoots are defended from the frost, at temperatures as low as 21° Fahrenheit.

The most recent experiments in this direction, and perhaps also the most extensive of late date, have been carried on by M. Fiabre de Rieunègre, one of the largest vine-growers in France. It may be remembered that about a year ago we briefly adverted to this subject, and said that it had elicited commendation from a congress of vintners in the above mentioned country. Since then, however, M. de Rieunègre's experiments have been made, and with such remarkably good results, that the matter is invested with a new and at this season of the year timely importance to all engaged in the cultivation of the vine in our Northern States. The investigator in the record of his researches considers that fires of tar or heavy oils are not suitable, notably from the fact that cheaper and more efficacious material can be obtained, and also that, in order to keep the former burning over a considerable period of time, an amount of attention is required which eventually becomes very onerous. The chaff of Wheat, he says, answers the purpose better than any substance he has used, as it burns slowly, produces large quantities of smoke, and costs but very little. Moss, saw-dust, or worthless hay may be employed when chaff is not conveniently to be obtained. The material is piled in heaps of about eight feet in diameter and forty feet apart. Three fires thus disposed are sufficient to protect two and a half acres of vines.

In describing his mode of experimenting, M. de Rieunègre says that, having selected a night when the thermometer appeared to be rapidly falling, he collected all his laborers, together with a large concourse of neighbors from the surrounding country. As soon as the mercury fell to 32° Fahrenheit, a signal was given, and the match was applied to 300 heaps of chaff and straw. The flames were carefully kept under, and in a very few minutes a dense cloud of smoke had settled over a plain of 360 acres. The fires were continued until the thermometer had risen above the freezing point of water, but were renewed within twenty-four hours, when one of the coldest nights of winter set in, with a strong breeze blowing from the north-east. New heaps were kindled in the direction of the wind, the great cloud was again formed, and, although it is stated the vineyards of the surrounding country presented after the frost a scene of desolation, those protected by the smoke were unharmed. Thirty thousand dollars worth of plants were saved by the operation, at the sole expense of a quantity of worthless chaff and straw.—*Scientific American.*

Here is the latest prescription for the destruction of squirrels: Boil one-third of a pint of vinegar; add to this one ounce of fine pulverized strychnine, stir it well, put it into six quarts of water in an old tin pan. Half of this dose was sufficient to kill sixty-two squirrels in three days in Alameda County.

Editorial Portfolio.

Bay District Horticultural Society.—At the regular monthly meeting of this Society, held at their rooms on the 28th ult., notice, in conformity with the fundamental laws, was duly given, that at the regular meeting of Saturday, 30th of May next ensuing, the Constitution of the Society would be taken under consideration, with the view to the alteration and amendment of each and every clause thereof.

This is a very necessary measure, as, owing to the somewhat precipitate manner in which the original document was framed, many crudities and incongruities were embodied. Several wise and healthy amendments have been suggested, and it is hoped that each and every member will carefully read his copy of the Constitution and By-laws, and make it a point of conscience to attend and assist at the deliberations. As some few of the members are slightly in arrears, it will be expedient for them to communicate with Mr. F. A. Miller, the Secretary, in the meantime, so that a full vote may be obtained on this important measure.

WOODWARD'S GARDENS.

Many important alterations are now in progress in these Gardens, and many excellent improvements are contemplated. The unpropitious weather has held much in check, but the genial influence of spring is visible everywhere in the grounds; trees and shrubs are putting forth their new leaves and blossoms, and the Acacias make the air redolent of fragrance. Animals and birds are benefited by the advance of the season; and the aquarium has received accessions of new fish. In the conservatories and tropical houses there is much improvement, and many choice plants are profusely in flower, filling the air with rich perfume, and delighting the eye with their elegant forms and brilliant coloring.

CATALOGUES RECEIVED.

We have received from William Bull, of King's Road, Chelsea, London, his exceedingly copious and well-illustrated *Retail List of New, Beautiful, and Rare Plants* for 1874. The descriptions are full and interesting, and much valuable information is supplied, making the catalogue a very desirable addition to the book-shelf of every amateur and nurseryman, while the prices are temptingly low. We have also from the same establishment a retail list of *Select Flower, Agricultural, and Vegetable Seeds, and New Plants*, for 1874; this is equally worthy for the same reasons as the above mentioned list.

Messrs. Miller & Sievers, of 27 Post Street, San Francisco, have handed us their *Catalogue of California and Foreign Seeds, Bulbs, and Plants.* We recommend this list to the attention of nurserymen and amateurs, as containing much valuable material for the flower garden, at reasonable prices.

The Southern Fine Stock Company, of Gallatin, Tennessee, have forwarded us their *Catalogue of Blooded Stock, etc.*, well worthy the attention of our agricultural and stock-raising friends.

FAVORS RECEIVED.

Report of the State Board of Agriculture to the Legislature of Kansas. We are indebted to Alfred Gray, Esq., Secretary to the State Board of Agriculture, for this report for 1873. Much valua-

ble and interesting information is contained in this volume.

The April number of the *Overland Monthly* has particularly interested us with several of its articles, among which "Wild Sheep of California," "Rambles of an Ornithologist," "Nature and Art," "Industrial Education in Country Schools," deserve special mention. "Etc." and "Current Literature" are as usual good and telling.

A writer in a French horticultural journal relates this suggestive experience: "After sunset I place in the centre of my orchard an old barrel, the inside of which I have previously well tarred. At the bottom of the barrel I place a lighted lamp. Insects of many kinds, attracted by the light, make for the lamp, and while circling around it strike against the sides of the barrel, where, meeting with the tar, their feet and legs become so clogged that they fall helpless to the bottom. In the morning I examine the barrel, and frequently take out of it ten or twelve gallons of cockchafers, which I at once destroy. A few pence worth of tar employed in this way will, without any further trouble, be the means of destroying innumerable numbers of these insects, whose larvæ are amongst the most destructive pests the gardener or farmer has to contend against."

To Kill Osage Orange Hedge.—Cut off the hedge close to the ground, and then turn a furrow away from each side, after which take an axe and cut off the roots at the bottom of the furrow. In this way the hedge can be cheaply and entirely killed, and no other way that I ever saw tried will succeed. There will be almost wood enough to pay for the work.—*Exchange.*

NEW AND RARE PLANTS.

Another New Bouvardia.—Of late years the Bouvardias have taken a high rank among the class of plants generally cultivated for cut-flowers in winter. These small, delicate, tubular-shaped flowers being produced in compact clusters, are exceedingly convenient for arranging either in large or small bouquets. Besides, they are quite firm, retaining their form and colors well after separation from the parent plant. Most of the species and varieties bloom profusely and continuously through the winter months, and need only to be planted out in the open ground through the summer, to be in fine condition for blooming again the succeeding season. Until within the past half-dozen years, we had no free-blooming white sort, and this may have had something to do in lessening the popularity of these plants. The old *Bouvardia jasminifolia* would sometimes yield a few very good clusters of white flowers, but they were neither sufficiently abundant nor certain to warrant extensive cultivation. We had plants of scarlet and crimson sorts, and the great desideratum appeared to be a white variety, with flowers equal in size, substance, and abundance to Hogarth or Leiantha; this was happily supplied in the *B. Davidsonii*, introduced a few years since, and several times referred to in our columns at the time and since. The flowers of this splendid variety are pure white, of large size, and produced in great abundance. Another new white variety, known as the *B. Vreelandi*, soon followed the former, our florists thereby being furnished the most excellent white Bouvardias. The introduction of these varieties increased the popularity of the entire genus wonderfully, and set all of our florists on the

lookout for other variations from original types. Now we have the Bride, flowers slightly tinged with flesh color, and Bridesmaid, a delicate pink color, and Rosalinda with a salmon-pink tinge; and now we have another new variety to add to the list, raised by Henry E. Chitly, of the Bellview Nurseries, Paterson, N. J. It has been named *Bouvardia elegans incarnata*, and is a sprout from the well known *B. elegans*. The flowers are of a delicate flesh color, or what is usually termed among florists, *incarnata*. They are large, and produced in the greatest profusion. The plant is a strong and vigorous grower. We bespeak for this new sort a cordial welcome and high appreciation by all lovers of beautiful winter-blooming plants.

New Double Poinsettia.—A new variety has been introduced in New York, and is now in the possession of Isaac Buchanan. The flower cluster is stated to be often fourteen to eighteen inches in diameter, and about six inches high. In the opinion of *The Agriculturist*, "It will certainly take high rank for conservatory decoration, especially as it holds its color so long, and for florists and bouquet-makers the clusters of small and brilliant bracts will be invaluable. It was discovered by Louis Roezl, who found it in a small Indian village in the State of Guerrero, Mexico, in May, 1873.—*Horticulturist.*

Blue King is the name of a new and really good blue-colored bedding Pansy, just introduced in English gardens. The flowers are described as fine in form, of a deep vivid blue color, with a bright and conspicuous yellow eye. It is not liable to sport, nor to be scorched by the summer's sun.

A Rare Plant.—The *London Garden* describes the *Godwinia gigas*, lately in full flower for the first time in that country. It is an Arold, with a large leaf and flower. The flower, or more properly, spathe, was nearly two feet long and a foot and a half in circumference, on a stem only eighteen inches high. It came from Nicaragua, where it is stated the petiole is often ten feet long.

A Good Outlook for Raisin-growers. —The value of the raisins imported into the United States in 1873, valued at the port from which they were shipped, was $2,498,457. Spain produced, in 1873, 2,000,000 boxes. Of these there were purchased for the United States up to January 1st, last, 1,032,605 boxes, against 1,009,270 boxes in 1872. Estimated stock on hand in Spain, January 1st, 1874, 265,000 boxes, against 565,000 boxes on hand same time in 1873. There have been lately sold for the United States 80,000 boxes at 25 reals or $3.12\frac{1}{2}$ per box of 25 lbs. for common layers, and 25 to 27 reals or $3.25 to $3.37\frac{1}{2}$ per box for loose Muscatels. The duty on raisins is five cents per pound, which adds to the purchase price $1.25 per box; add to this the freight and commission, insurance, etc., and these imported raisins must come very high—not less than $5 per box—to the consumer. We have, also, the information from Malaga that the price of raisins has gone up since the last transaction above referred to, to 31 and 33 reals per box. This is certainly a most encouraging exhibit for our California producers of raisins, and should give an impetus to the planting of vines of the approved raisin varieties. Those who have large vineyards of common varieties should feel encouraged to graft them to the White Muscat of Alexandria, White Muscatel, and other good kinds.

FLORAL REVIEW.

BY F. A. MILLER.

After three months of almost constant rain, the latter part of March has become more kindly and genial, and the effect of the last few clear and pleasant days upon the vegetation of plants and trees is plainly visible everywhere, both within and out of doors. The spring-time is upon us, and if the change is not so remarkable here as in the colder climates of the East and North, we are nevertheless quite willing to bid farewell to a long and dreary "rainy season."

There have undoubtedly been planted not less than 250,000 evergreen trees, for shade and ornament, during the winter just past. Three-quarters of these consisted of *Eucalyptus globulus* (Blue Gum), *Pinus insignis* (Monterey Pine), *Cupressus macrocarpa* (Monterey Cypress), *Cupressus Lawsoniana* (Lawson Cypress), and Acacias. It is pleasing and significant of prosperity to see this growing disposition to plant trees, and I hope to see at no distant day our barren valleys and hills covered with these monuments of industry and civilization. When our farmers begin to plant trees, they will ere long ornament their homes with flowers and vines, and their dwellings, once barren and desolate in appearance, will soon show signs of happiness and comfort.

So far, the trade in flowering plants has been very dull, but this must be attributed to the lateness of the spring season, and I hope to see many thousands of them planted out during April and May.

This is a good time to plant Roses and other flowering shrubs; bedding plants, also, such as Verbenas, Petunias, Pansies, Pinks, Geraniums, Fuchsias, etc. Gladioluses, Dahlias, Tuberoses, and other summer flowering bulbs, should be planted at once.

I am often asked, "What shall I do with my Hyacinths after they have done flowering?" I advise to plant them in the ground, where they will thrive and flower for years to come. The Hyacinths which have flowered with us during the winter of 1872–3 were planted in the open ground, and received no attention whatever. They flowered finely during these last winter months.

All kinds of annuals may be now sown. Some of the most desirable kinds are: Asters, Balsam, Phlox Drummondii, Delphinium (Larkspur), Zinnia, Stock Gilly, Sweet Pea, Portulacca, Mignonette, Candytuft, Gypsophila, etc.

Cut-flowers have continued to be scarce during the month of March, and our florists had hard work to supply the demand, particularly for fine flowers. The supply from the greenhouses consisted chiefly of Camellias, Azaleas, Epiphyllums, Hyacinths, Heliotropes, Cinerarias, Eupatoriums, Chinese Primroses, Abutilon (*vexillarium*), Lilies of the Valley, Orange-blossoms, and Cyclamens. From the open air, the bulk of flowers was made up of Violets, Roses, Pinks, Pansies, Forget-me-nots, Hyacinths, Narcissuses, Antholyza (*bicolor*), Tulips, Candytuft, Stock Gillies, Fuchsias, Gypsophilas, Habrothamnus (*elegans*), Laurustinus, Polygalas, Diosma (*alba*), Ericas, Sweet Alyssum, and Abutilons.

The prospect for an abundance of flowers during the month of April is good. Under glass we may expect, in addition to those already enumerated, the following: Agapanthus (*umbellatus*), Begonias, Cactuses, Cape Jasmines, Eucharises, Torenias, double Geraniums, Streptocarpuses, Dentas (*carnea*), Aphelandras, Astilbe (*Japonica*), Chorezemas, Allamandas, and Rhyncospermums; and

in the open air, Roses, Pinks, Deutzias, and other hardy flowering shrubs and plants, will furnish their full quota.

Of rare plants, I noticed in bloom during last month, *Strelitzia reginæ* (Bird of Paradise), which is always admired for its most peculiar and effective flower, which remains in perfect condition for a long time; also, *Phajus grandiflorus*, a very showy Orchid, which has remained in constant bloom with us for about two months. This Orchid is of easy culture, and should be in every collection.

Application of Liquid Manure in Holland.—The Hollanders are noted for their application of liquid manure directly to growing crops. It is applied particularly to transplanting crops, especially to Cabbage, and it is the secret of their great success in raising Cauliflowers. The application in these cases is made but once, and that at the time of setting, immediately when the plants are to start, but allowing it to settle away before setting the plants.

To fruit-trees it is applied in the following manner: An iron-shod stake of about three inches in diameter, with a spur on one side, to place the foot on, is used to make a circle of holes just under the ends of the branches, about eighteen inches or two feet apart, and from twelve to fifteen inches deep, and the liquid manure poured into them. After the liquid has settled away, the holes are filled up again, so that the liquid can not be evaporated, or the earth baked by the heat of the sun. In wet weather the liquid manure is applied alone, but in dry weather it is diluted with an equal quantity of water. The application is made from time to time, commencing when the fruit is well set, and ending when the fruit begins to mature.—*Alta.*

REMARKS ON FRUIT CULTURE, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

As the season for planting out small fruits is not yet passed, I would urge on every family having a small garden-plat in the country, or even in the towns where the climate is favorable, to raise at least a portion of their own fruit. There is no greater enjoyment than to get berries fully ripe (oftentimes a failure in the markets), and freshly picked, on the table, instead of the much handled and often stale market fruit. Every farmer at least ought to have his home patch of Strawberries, Raspberries, Grape-vines, etc., enough to supply the table, and can or preserve for winter use. Three or four hundred Strawberry plants, set out one by one and a half feet apart, kept free from runners, and well attended to, will fully supply any family. I would advise to plant either of the following kinds, for early as well as late use: Longworth's Prolific, Triomphe de Gand, or Victoria, Jucunda, Agriculturist, Kentucky Seedling, and Wilson's Albany. The Strawberry is one of the healthiest and most luscious fruits, and no family under favorable circumstances for it, would be without a small patch, after once properly trying it.

Raspberries ought to follow, and a hundred plants, three by four or two by four feet apart, planted in hedge form, would give a fair supply. Let only three to four shoots grow to the stock; stop the growth of the principal shoots at about four feet, and of side shoots at six to eight inches. Manure yearly in the hill if the soil be rather poor or clayey, and, of course, keep the plants free from weeds. The Red Raspberry is generally, and especially in California

and Europe, considered better flavored than the Black. Here I would recommend the Falstaff, Red Antwerp, Orange, and Blackcap. These are superior varieties, but all kinds are hardy enough for this country.

Farmers gather their Blackberries in the fields and woods generally, but they would get better fruit with as little trouble, by planting from fifty to seventy-five shoots, six by six feet apart, in their gardens, and cultivating them the same as Raspberries. Though the Kittatinny, Dorchester, and Wilson are perhaps preferable for marketing, as they are ripe when they color, yet, when fully ripe, no Blackberry is as good as the old and well-tried Lawton—none surpasses it in flavor, sweetness, or appearance.

If a farmer, or a horticulturist in any way, has no vineyard, he ought to have an arbor, or at least a few vines raised near his house, or on some of his buildings, where they take away no space, and give fair returns for little labor; but the kinds suited for arbors and buildings are the Catawba and Isabella, and a very few of the foreign descriptions.

I would urge once more, upon every farmer and those who have even small yards in cities, to make a beginning at once, and start a small patch of Strawberries and Raspberries immediately, before the rainy season is entirely over.

Success in fruit culture, as in everything else, depends upon certain conditions. If these conditions are met, we are sure to succeed. Our climate is certainly right, and our soil generally is right, so as to make success attainable in every part of our State.

Blackberry as well as Raspberry bushes should be well cut back as soon as convenient after bearing, to about four or five feet in height, and all side shoots pinched off at the tips every two or three weeks, down to August; all suckers should be kept down, and all old wood removed. This will make them hardy, and the fruit will be earlier, larger, and more abundant. The Blackberry is a most valuable and neglected fruit, and far more worthy of attention for wine-making than it receives.

If we consider the large amount of fruit that might be annually shipped by express and railroad companies, it seems strange that those corporations are not more ready to meet the wants of the public, or more awake to their own interest, in inducing still larger shipments than have hitherto been made, by allowing better living rates. By reducing the charges from the present extravagant tariffs to more reasonable figures, shipments would be more than double, and profits likewise. Our large fruit-raisers should, by united action, take steps to induce such modifications in freight rates as are necessary.

Regarding the markets, the spring season is exceedingly backward. Last year, Strawberries and various kinds of early vegetables were in the market about the middle of March. New Potatoes were in from the Presidio weeks earlier than they are this year, but this season's crop of early new Potatoes has been destroyed by frost. The infamous practice of palming off on credulous housekeepers volunteer Potatoes for new, at prices the latter would presumedly command were they in the market, has been extensively carried on by the retailers. A little care in the examination of the eyes and skin of the Potatoes offered for sale as new, will enable the purchaser to detect the fraud in time to prevent being victimized. Lots of genuine new Potatoes were offered for sale at 8 to 10c. per lb., but were very small and watery. They were readily recognized from the false tubers,

through the pale color and tenderness of their skins. Puget Sound Kidneys, old crop, sell at 4c., and Mendocino and Humboldt at 2½c. to 3c., per lb. String Beans and the new crop of Green Peas ought to have commenced making their appearance in the market by this time, but the prospects are not good for any for at least two weeks to come, and not even as early as that, unless we have warm weather in the meantime. Old crop Green Peas are offered at 20c. to 25c. per lb. Cabbages are scarce and dear. Mission Cabbages are very inferior. The best lots are now received from the San Pedro rancho, in San Mateo County, whence some very large heads have been lately received, weighing as much as forty pounds, and selling readily for 50c. each. The range is 10c. to 50c. each. Spring Cabbages will soon be in the market. Asparagus is now plentiful; white from Sacramento is quoted at 20c. to 25c. per lb., and green from Centerville, Alameda County, at 25c. to 40c. Cabbage Sprouts have advanced to 15c. per lb. Horseradish is 20c. per lb; Red Pepper, 50c. per lb.; Green Artichokes, 75c. per dozen; Jerusalem Artichokes, 8c. per lb.; Rhubarb, the first of the season, 25c. per lb.

The fruit market remains about the same. Oranges continue at the head of the list. Recent extensive importations of the new crop of Oranges from Tahiti have had no perceptible effect upon the market. The prices of Loreto and Los Angeles Oranges have undergone no change, while they continue to command public favor. Following are the present retail prices of this kind of fruit: Los Angeles, 15c. to 75c. per doz.; Loreto, 50c. to 75c.; Tahiti, 50c. Bananas are still selling at from 50c. to 75c. per doz.; Preserved Bananas, 25c. to 37½c. per packet; Lemons, 25c. to $1 00 per doz.; Citrons, 15c. each; Cocoanuts, 12½c. each; Dates, 25c. per lb.; California Raisins, 25c.; California Dried Figs, 25c. to 30c.; California Walnuts, 25c.; Eastern do., 25c.; Almonds, soft-shell, 40c.; do., hard-shell, 25c.; Butternuts, 25c.; Hazelnuts, 30c.; Peanuts, 25c. There have been some large receipts of choice Apples from Oregon during the week, which are now retailing at 6c. to 10c. per lb. Shipments from the mountain districts in the interior are daily expected.

Apples and Pears are very scarce, and a really good article commands a fancy price. It is unusual for the supply of Pears to give out at this season of the year. The reason is said to be the liberal shipments to the East last fall. Large consignments of Oregon Apples are received by each steamer, but they are inferior to the California fruit in consequence of being impregnated with the flavor of the pine boxes containing them. Oranges and Lemons are the only varieties of domestic fruit that are abundant. Los Angeles Oranges are now coming forward in liberal quantities, but the weather is rather cool for a large consumption, and they are selling slowly. We quote Bananas at 50c.; Smyrna Figs, 35c. per lb.; Apples, by the box, delivered, $2 to $3 50; Italian Chestnuts, 50c. per lb.

The weather during the last week of March was more favorable than it had been, yet Spring vegetables made their appearance but slowly. New Potatoes, however, came up plentifully, but the price held firm at 8c. to 10c. per lb. Volunteer or bogus new Potatoes were sold to the uninformed for 4c. per lb., but the experienced would not touch them at any price. Old crop Potatoes were all the way from 2½c. to 4c. per lb. Asparagus became plentiful and cheap, and sold at 15c. to 25c. per lb. The

abundance and cheapness of this vegetable were the means of reducing the price of old crop Peas (which ruled the latter part of the month [March] at 20c. to 25c. per lb.), to 15c.@20c. Probably we shall not have any Strawberries in market until about the middle of this month (April). The tardiness of the arrival of this delicious and healthy fruit is one of the strongest evidences of the backwardness of this season. Last year we had the first Strawberries in pretty good supply about the 12th of March. During the last of March there were several lots of Apples received from the Sacramento Valley foot-hills which sold at $1.50 to $2 per box. Other fruits remained (27th March) the same as in the middle of that month.

At the beginning of this month (April) vegetables were more abundant and cheaper. Asparagus dropped to 15c. @25c., and is still declining. Rhubarb is very plentiful, and 10c. lower than ten days since. Potatoes were firm the beginning of April, with no prospect of a decline for a week or two. Spinach is retailing at 6c.; New Potatoes, 8c. to 10c.; Lettuce, 20c. to 25c. per doz.; Salsify, 8c. to 10c. per bunch; Potatoes, by the sack, delivered, $2.25 to $2.50 per 100 lbs.

About the first week in March the frost ruined the then nearly ripe Strawberries. The market is plentifully supplied with Los Angeles and Tahiti Oranges and Oregon Apples at former rates. We quote Bananas at 50c., and Smyrna Figs 35c., per lb. Apples by the box, delivered, at $2 to $3.50; Italian Chestnuts, 50c. per lb.

Sir Samuel Baker says that fire can not advance through grass, even when it is blowing a gale, faster than six miles an hour.

Correspondence.

VIGOROUS CONDITION OF STOCKTON PLANTS.

Mr. Editor: Some time ago we were exceedingly pleased to notice the fresh, healthy, and vigorous condition of a large climbing Rose, which a friend, who is an amateur cultivator, invited us to inspect on that account. It came from Stockton, and is undoubtedly identical with some one of those prolific growers which flourish around the Asylum located in that city. It is almost incredible, but we are assured that the plants and fruit-trees in the rich loamy soil of Stockton and vicinity—and this may also be said of San José—make a growth of four and five feet in a single season, and that many bear fruit the very first year they are transplanted. It is rather strange, though, to notice that all kinds of shrubbery do not thrive so well in this region, the growth being slow—not more than an inch or so a year—while in this city (San Francisco) the contrary rule prevails, the humidity of the air and the evenness of climate no doubt combining to produce so good a result.

While on this subject of shrubbery, and being a novice, we would ask information about a shrub which years ago was very common in the gardens of the interior of Pennsylvania, and in all the Middle States. It was in every garden of any pretensions, where all the vegetables of the farm home were cultivated, with the flower-bed in the centre. In the midst of this flower-bed flourished the favorite "Shrub-tree," whose fragrant little compact buds, of a deep purple color, could be carried in one's vest pocket for a week or more without losing their pleasant odor. We have never seen this shrub in California,

and would be pleased to gain some information about it. Perhaps it will not thrive here. KEYSTONE.

CALIFORNIA LILIES.

Editor California Horticulturist:

Within the last few weeks my attention has been called to repeated statements, appearing in print, in regard to the number of distinct species of California Lilies, all which statements seem to originate from one source. I have no fault to find with the veracity and good intention of the author, but think he would have come much nearer the mark if he had stated that *he* only knew four species. There are many good and desirable plants in California, not yet described by botanists; and, notwithstanding the statements referred to, I insist upon the fact that six or seven varieties of Lilies have been found on this coast. There may not be sufficient distinction, so far as the structure of the flower is concerned, between *Lilium Humboldtii* and *Lilium Bloomerianum ocellatum* of Santa Rosa Island, to induce a botanist to establish two species; but, as a florist, I certainly can perceive a very remarkable difference in the roots, foliage, and flowers of the two species above named. If the author referred to did not meet with more than four species of Lilies in his limited travels, some one else may have done so, and ought to be pardoned for bringing to notice a fifth or even a sixth species, if he happened to discover them. FLORIST.

A FINE CORAL TREE.—In a nursery at Dorking, England, there flowered this summer a fine specimen of the *Erythrina cristagalli*. It is supposed to be over fifty years old, and its stump was eighteen inches in diameter. The plant bore thirty spikes of bloom.—*Horticulturist.*

Editorial Gleanings.

PRESERVING ZOÖLOGICAL SPECIMENS FROM INSECTS.—The difficulty of preserving zoölogical specimens from the depredations of insects is a matter of regret and anxiety to every collector, and various methods have been proposed for accomplishing this desirable object. The compositions into which arsenic and corrosive sublimate enter are well known to be very effectual when properly applied; but unless used with caution, they are apt to injure the natural pliancy of the skins, and are hardly effectual in protecting collections of insects. I have known these substances, even in the hands of the most expert, to produce such tenderness of the skins as to form a considerable obstacle in setting up specimens. To render them effectual they must be carefully applied to each specimen, by which the labor of collecting and preserving is considerably increased.

Every substance which I have tried seems inferior in efficacy and ease of application to the rectified oil of turpentine, and my method of using it is as follows: I put the turpentine in a bladder, the mouth of which is firmly tied with a waxed string; and nothing more is necessary than to place the bladder thus prepared in the box with the birds, or to tie it to the pedestal on which the birds are perched in a case. If there are any maggots on the birds, I have invariably found that they will soon be dislodged from the feathers, fall to the bottom of the case, and die in the course of two days. I have also made the experiment of introducing the common house-fly, the large blue-bottle fly, and moths, into a case of birds so defended, through a small hole in the bottom of the case. The moment the flies enter the box they be-

gin to vomit a whitish, glutinous matter, they are much agitated, and the largest of them dies in a few minutes. I have repeatedly introduced, in like manner, active cockroaches; and these strong insects soon became uneasy, often rubbed their sides with their hind feet, and usually died in about an hour and a half. I next got a bird-skin full of living maggots and placed it in my defended case; in about three hours, they were seen coming out in all directions, and fell to the bottom of the case, where they died. For large cases of birds, a pig's or sheep's bladder is sufficient. The turpentine evidently penetrates through the bladder, as it fills the case with its strong smell.—*Scientific American.*

The Weeping Sophora of Japan.—As yet we do not know the full value of weeping trees. It is a peculiarity of most weeping trees not to show their full beauty of character till they have attained a considerable age. Who knows anything of a Weeping Beech who has seen only a young specimen recently planted? Why, it is passed by as a mere curiosity. But give it a generation, and it becomes as picturesque as a gale-tossed ship. So it is with the weeping Mountain Elm. Some species, it is true, show their beauty from an early age; but the above named marked examples point to the probability that we can not judge of the effect that will finally be produced by kinds obtained in recent years.

One of the most beautiful of all weeping trees is the weeping form of that fine tree, the Japanese Sophora, (*Sophora japonica pendula.*) When well developed, it is attractive in winter or summer. It is more picturesque in outline than the Weeping Willow, while the shoots hang most gracefully. It is rather a slow grower, its only fault; like the normal form, it would thrive well on dry soils.

As to the position suited for this tree, says *The Garden*, there is no fairer object for isolation in some quiet green bay of the pleasure-ground or lawn. It should never be crowded up in a plantation or a shrubbery with a number of ordinary trees, which, if they do not rob it at the root, or shade it at the top, will prevent its beauty from being seen.

Trees as Historians of the Past.—It may have taken a French *savant* years to ascertain what is a matter of common knowledge with wood-cutters. I have understood for more than thirty years that a thin ring indicated a cold season, and a thicker one a correspondingly warm season. Another point which I have observed (and which is not mentioned in the Gros article) is this: In trees that are in an open field, or even in the forest where there is no particular protection from the north wind, the rings will be thinner on the north side than on the south side of the same tree. The heart is seldom found in the centre of the body. I have no doubt that you would find a tree cut four or five feet from the ground will give a true record of the general meteorological condition of each year of its life. I have often sat down by a newly cut stump of a tree, to count the rings, to note the difference of thickness, and to point out the thin rings to those with me, as indicating a cold year.

While speaking of trees, I will mention another fact, which I have not seen in print, but which I got from an old gardener. It is that all trees that are not trained out of natural shape will exhibit a profile in exact correspondence with the fruit. For extremes, take the Greening Apple and a long slim

Pear. The leaves, even, have a general resemblance to the fruit.—*Scientific American.*

Lagerstrœmia Indica.—Though not so often found in collections as it ought to be, this is one of the finest and most profuse flowering of greenhouse or half-hardy shrubs. It blooms freely in the Palm-house at Kew, where the ends of even its smallest branches terminate in a mass of rosy-purple flowers. Individually, the blossoms are about the size of a shilling, and have six long-clawed, curled, or crumpled petals, not unlike those of the scandent yellow-flowered *Stigmaphyllum ciliatum*. When well grown this plant is one of the greatest ornaments one could desire, either for a plant-stove or cool conservatory. It will grow and flower freely, even when planted under a sunny wall in the south of England, and during the past summer we have seen it flowering very freely out of doors in several of the gardens around Paris. When grown in a pot or tub indoors it makes a shrub eight or ten feet high, and flowers freely every summer or autumn if cut back after blooming. It should have a moderately fresh sandy soil, and should be thoroughly drained. It requires a liberal supply of water when growing. In America it does well out of doors, and a plant of it stood fifteen degrees of frost in the Botanic Garden at Brest. It is a native of China. One species, *L. reginæ*, grows to a large size, and is much used in India for boat-building and similar purposes, as it lasts well when submerged.—*London Garden.*

Evaporation by Leaves.—The following by an Austrian scientist is old, but it may aid our friends who are investigating the influence of trees on climate: "Experiments made by Von Pettenkofer on the amount of water evaporated from an Oak-tree, show that atmospheric humidity, in so far as it depends upon the presence of forests, is promoted rather by the roots of trees drawing moisture from the earth, than by attraction exercised on rain-clouds by the leaves. The latter serve rather as outlets through which the moisture drawn from the soil passes into the air. The Oak-tree observed by Pettenkofer was estimated to have between 700,000 and 800,000 leaves, and the total amount of evaporation in a year was computed to be 8⅓ times more than that of the rain-fall on an area equal to that covered by the tree; the moisture exhaled by the leaves being equal to 211 inches, while that from the rain-fall was but twenty-five inches.

The Honeysuckle as a Standard.—A writer in the *Villa Gardener* thinks that the Honeysuckle is one of the most regularly flowered climbers in cultivation, taking rank for effect, and surpassing in many points—odor, for instance—even the gorgeous colored Clematises which are in every modern garden. As a standard, the Honeysuckle merits the very foremost place in our villa gardens. "We have seen it with thousands of flower umbels in pale yellow and pale pink, decorating villa grounds in a way that no single plant in the month of July can do." It is scarcely possible in words to portray its extreme beauty and effectiveness. Buy a plant of it, train or tie it to a stout stake, as one would do a standard Rose; prune it, not too severely, but in the way a hybrid China Rose ought to be pruned; give it a good soil to grow in, and it needs no further attention. It will grow into a plant that will astonish, by its flowering capacity, thousands who have not seen it so trained.

Jute.—Jute is a fibrous plant that grows to a high stalk varying from six to twelve feet high. It is raised in the lowlands of the East Indies. The Jute plantations are operated somewhat on the system of the Rice plantations. The water used for flooding purposes is taken from rudely constructed reservoirs filled by the melting snow of the Himalaya Mountains. The plant is kept growing in about eighteen inches of water, which prevents the parching rays of a tropical sun from destroying it. When the stalk has attained its full growth, it is pulled up by, or cut off near, the roots. It is then laid out in bales like Wheat or Rye, and prepared for market.

The bark is removed, the root is cut off where it is pulled up with the stalk, and where the root is not originally kept, the hard lower end is cut off and thrown into a class commercially known as Jute butts. The remainder is then assorted with regard to length, strength, fineness, and lustre of fibre. The first quality is a beautiful, clear, long fibre, much of it resembling in appearance blonde hair. This is especially used for chignons, but it is also used in Scotland in the manufacture of fine Jute cloths.

Charcoal for Poultry.—Fowls of all kinds are very fond of charcoal, and will eat it with great relish if properly prepared. Pounded charcoal is not the shape in which fowls usually find their food, and consequently is not very enticing to them. To please their palate the charcoal should be in pieces of about the size of grains of corn, and if these are strewed around their quarters, they will readily eat thereof. Corn burnt on the cob, and the refuse (which consists almost entirely of the grains reduced to charcoal, and still retaining their perfect shape) placed before them, makes a marked improvement in their health, as is shown by the brighter color of their combs, and their soon producing a greater average of eggs to the flock than before.

A Growing Demand for the Eucalyptus-tree.—At a recent meeting of the Board of Trade of Albany, Ga., the Eucalyptus-tree was taken up for special consideration, and letters concerning the utility of the tree and its value as an absorber of moisture in malarial districts, received from residents of New York and San Francisco, were read and discussed. Four trees, the gift of Sonntag & Co., of this city, were exhibited for inspection during the discussion, and, after the adjournment of the meeting, an order for trees was telegraphed to this firm at the expense of the Board. We have frequently called attention to the adaptability of this tree to California, and its increasing popularity in this State.

Retaining the Natural Colors of Dried Flowers.—Puscher recommends sticking the stems in the neck of a glass funnel, leaving the flowers in the wide portion, but leaving about an inch from the top unfilled. The funnel is then to be inverted over a few drops of *aqua ammonia* on a plate. In a few minutes most blue, violet, and crimson flowers change to beautiful green, dark crimson to black or dark violet, and white to yellowish. If they are then immediately placed in fresh water, they will retain their new color from two to six hours, according to the amount of ammonia taken up, but will gradually regain their original tints. The customary way of treating blue, violet, and red Asters for winter bouquets with nitric acid gives irregular results, on account

of the wax on the leaves, and it is preferable to expose them to the fumes of hydrochloric acid, by hanging them, tied in pairs by their stems, heads downward on strings drawn across the interior of a close wooden box, upon the bottom of which are several plates with hydrochloric acid, and with two glass windows, on opposite sides, through which the progress of the coloration may be noticed, so that the flowers may be removed as they acquire the desired tints, and hung in the same manner in airy, shaded rooms to dry. They should be preserved in a dry, dark place.

Potatoes for Planting.—Professor Nobbe has published the following experiment: He has placed the potatoes intended for his experiment in a well-lighted and heated room until they become wrinkled and greenish in color. At the same time they were planted he also planted Potatoes taken direct from a heap that had been protected by straw and dirt. At the harvest the dried plant Potatoes produced thirty per cent. more in quantity, twenty-two per cent. more in number of Potatoes, and twelve per cent. more eyes. Similar results have been obtained at the Agricultural College of Worms. The reason for this result may be ascribed to evaporation of moisture, by which the sap of the cells is concentrated, enabling it to develop itself with a greater sprouting power. Similar observations have been made with seeds. The *Landman's Blad* publishes a trial that has been made with Flaxseed, which gave most positive results in the same direction.—*Danish Paper.*

An interesting question in plant-geography is that as to the transport of seeds by ocean currents, and in other ways independent of human agency. M. Thuret has been experimenting on this in Antibes. Having tried two hundred and fifty-one different species, he knows of only two kinds of bare seed which are capable of floating, Maurandia, and Phormium. A long immersion in sea-water does not always destroy the vitality of seeds. Out of twenty-four species immersed more than a year, at least three germinated afterward, as vigorously as seeds kept quite dry.

The noted Wolfskill vineyard, in Los Angeles County, is being uprooted to make room for an Orange orchard.

METEOROLOGICAL RECORD,

For the Month Ending March 31st, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.11 in.
do	12 M.	30.11
do	3 P. M.	30.10
do	6 P. M.	30.10
Greatest height, on the 31st at 9 A.M. and 12 M.		30.26
Least height, on the 16th at 6 P. M.		29.86

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		50°
do	12 M	55°
do	3 P. M.	55°
do	6 P. M.	50°
Greatest height, on the 27th at 3 P.M.		64°
Least height, on the 9th at 9 A.M.		40°

SELF-REGISTERING THERMOMETER.

Mean height at sunrise	42°
Highest point at sunrise on the 1st and 31st	47°
Lowest point at sunrise on the 6th and 18th	35°

WINDS.

North and north-east on 4 days; south and south-east on 4 days; south-west on 11 days; north-west on 5 days; west on 7 days.

WEATHER.

Clear on 8 days; cloudy on 11 days; variable on 12 days; rain on 15 days.

RAIN GAUGE.

March	1st	0.58	inches.
..	3d	0.24	"
..	4th	0.04	"
..	5th	0 13	"
..	7th	0.31	"
..	10th	0.04	"
..	11th	0.40	"
..	12th	0.57	"
..	13th	0.65	"
..	14th	0.51	"
..	15th	0.07	"
..	25th	0.14	"
..	26th	0.13	"
..	27th	0.20	"
..	28th	0.14	"
Total		3.55	"
Previously reported		18.97	"
Total rain of the season up to date		22.52	"

A short sharp earthquake shock occurred on the 5th at 4h. 53m. A.M.; direction from south-east to north-west.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. IV. MAY, 1874. No. 5.

STEMLESS LADY'S SLIPPER.

(*Cypripedium acaule*, Ait.)—SEE FRONTISPIECE.

BY DR. A. KELLOGG.

There are several species of Lady's Slipper found in California; for example, the white (*C. pubescens var.*), the yellow (*C. Californicum* n. sp., Pro. A. A. of A. and Scs. 1867), and the red or purple rose-colored one here figured. We have devoted much time and labor in order to furnish some adequate outline, by sketching, engraving, and electrotyping with our own hands, and coloring this plant, in aid of those who might have misgivings from a mere description, which, however plain to the describer, often proves to another exceedingly vague, apart from the form and color.

The plant, as its name implies, has no branching or leafy proper stem, but only a flower-stem, with two oblong root-leaves. The pink or purple lower lip has a somewhat closed fissure down its whole length in front. The scape is one-flowered, bract greenish, and sepals more or less colored. Flowers in May and June.

The roots of these plants are used as a nervine, being a good substitute for Valerian, which also abounds in California. The exhilarant effects are very similar to those of Vanilla, one of the most delightful aromatics known, and which also belongs to the same family. Where venous congestion exists from irritation and loss of nervous energy rather than from repletion, it is of great service. Yet, after all, it is its charming *beauty* that burns while it chariots the soul up in the blue—buoying the laggard body too aloft, balloon-like—prophetic of the good time coming, when all regions may be more safely navigated. Beauty forever, like the beloved bird of the ark, native of the skies, flies heavenward when rapine and dangers impend. So also the thoughts of æsthetic uses we most admire: these on willing wing oft seek serener realms to circumspect this petty, pestered, sin-worn world below; therefore, every natural object that lures and aids one feeble, faltering step from the sordid mire is an angel sent to Lot, that he may, at least, reach the little city.

The ruddy beauty, nymph-like, hides beneath sheltered and shady evergreen groves of freshening forest, far northward along the colder wind and fog line of the coast, and similar isothermal

regions of the interior. The species must be rare, for, although it is said by an English collector to be found here, we, at least, have never been fortunate enough to meet with it. Should any one of our readers know of its locality, they would confer a favor on the writer by addressing to him a note (Post-office box 2350), and also much oblige many horticultural friends.

Many rare Orchids are found near San Francisco: two *Cypripediums*, *Calypso*, *Epipactis*, *Habenarias*, *Platantheras*, *Spiranthes*, and others.

LAC AND ITS PRODUCTS.

Lac is a resinous substance formed on several different kinds of trees in the East Indies, and produced by the punctures of an insect (*Coccus lacca*), and by its formation of the exuding juices into cells for its eggs.

These adhere to the branches in grains, completely incrusting them, and are either imported in that form, and called *stick-lac*, or the grains are gathered from the branches, their coloring matter extracted, and formed into flat cakes, still preserving the granular appearance, and called *seed-lac*, or the seed-lac is melted up into masses, and called *lump-lac*. Finally there is *shell-lac*, which is seed-lac further purified by being put in bags of fine linen, and melted over a charcoal fire until it passes through them. The bags are squeezed and passed over a smooth surface of wood, on which the lac is deposited in thin layers. If pure, this kind of lac will take fire on a hot iron, and burn with a powerful smell.

By pouring warm water on stick-lac a crimson coloring matter is obtained, which is made into square cakes for sale, and is called *lac-dye*, *lac-lake*, or *cake-lake*. These cakes when broken are dark-colored, shining, and compact, but when scraped they yield a bright red powder approaching carmine. The cakes of lac-dye from India are stamped with certain marks, the best being D. T., the second best J. McR., the third C. E., which are the initials of different manufacturers. The cakes do not in general contain more than 50 per cent. of coloring matter, the rest being resin 25, and alumina, plaster, chalk, and sand 25.

The dye above referred to, and which constitutes much of the value of lac, is due to the insect which makes the cells, and which is of the same family as the cochineal insect. The parent lac insect, after laying her eggs, becomes a mere lifeless bag, of an oval shape, containing a small quantity of a beautiful red liquid. The young insects feed on this liquid, and their bodies assume the same hue, so that the branch which bears them appears to be covered with red powder. The cells of gum-lac which shelter them are more or less deeply tinged with the same color, and the best time for gathering stick-lac, so as to secure the coloring matter, is before the insects have made their escape. Previous to the discovery of the true cochineal, the coloring matter of the lac insect was universally employed for dyeing red. The crimsons of Greece and Rome, and the imperishable reds of the Brussels and Flemish schools, were obtained from this source. The best quality of stick-lac is obtained from Siam; that from Assam ranking next. Of late years lac-dye has been again substituted for cochineal on account of its greater cheapness, and also on account of its being less affected by perspiration than cochineal.

So abundant is the supply of lac among the uncultivated mountains of India, that it is asserted a consumption

ten times greater than the present might be readily met.—*Cabinet Maker.*

THE ALDER.

BY E. J. HOOPER.

The Alder *(Alnus glutinosa*, natural order *Betulaceæ)* is one of the largest and most picturesque of the aquatic trees. Its very name points out the situation most congenial to its growth. Some writers have considered it to be derived from the Celtic *al*, near, and *lan*, edge of water. There are several species of this tree. They are found in most parts of the north temperate zone, and are principally distinguished from one another by variety in the form or color of the leaves. They all prefer a moist soil, and generally are found by the side of water. Its average height is forty or fifty feet, though in a rich and damp soil it has been known to exceed sixty feet. The bark is of a blackish color, and as the tree advances in age this becomes rough and seems full of clefts. The leaves are of a deep bright green, from three to four inches long. The natural color of the wood is white; it is soft, easily worked, and extremely perishable if exposed to the weather. It can be applied to many domestic purposes, being soft, and easily worked into spinning-wheels (in old times), trenchers, bowls, dairy utensils, kneading-troughs, etc. The timber of the old trees is full of knots, and hardly inferior in beauty to the Maple. The bark possesses astringent qualities, and almost any part of the tree can be used in dyeing.

The Alder is the most aquatic tree of the Sylva, even more so than the Willow or Poplar. A damp marshy spot is most congenial to its growth; but though moisture is necessary, a rich soil is equally indispensable. If planted in a dry and elevated situation, it dwindles to a dwarf stunted shrub. It is then by the standing pool, and the dank, cool marsh, the limpid brook, the full deep-flowing stream, and in the "cool, green, shadowy river nook," that we must seek if we would find the Alder. With such scenes and spots it has become as it were identified, and its dense shade and bright green foliage well harmonize with the surrounding scene, and invite beneath their welcome shelter the wanderer or angler oppressed with heat and blinded by the rays of the summer sun. The poet Wordsworth has thus depicted it:

——"I looked around, and there,
Where two tall hedge-rows of thick Alder boughs
Joined in a cold damp nook, espied a well
Shrouded with Willow flowers and plumy Ferns."

It is rare to meet in any country an old Alder, as they are generally cut down before they have attained perfection. General Fremont, in his narrative of his journey across the western plains, notices a species of green Alder *(Alnus viridis)* on the banks of some of the rivers he crossed. In England there is one seventy feet high, the diameter of the trunk four feet, and that of the space shaded by the branches sixty-five feet.

The Alder is propagated by cuttings of the root, layers, or seeds; this latter method appears to succeed better than any other. It is well calculated for planting in parks, and for ornamental aquatic scenery, not only from its picturesque form, and the vivid color and density of its foliage, but the length of time it retains its leaves. It is useful in such situations, for the shelter it affords is beneficial to the grass beneath it, and grateful to cattle, while they

will not touch its leaves if other food is within their reach.

Some authors have characterized the Alder as "an ugly, melancholy tree," and too many pass it by ignorant of its value and utility. But "in nature there is nothing melancholy," and with equal truth, I think, I may add, nothing without utility. The Alder does not hang over the limpid stream, or the reed-grown pond, merely to derive from them the sustenance it requires, cumbering without benefiting the spot. Its numerous fibrous and creeping roots serve to strengthen and support the bank on which it grows, and some writers have considered that, like the *Eucalyptus globulus*, now so much grown in California, it exhales properties which correct the unhealthy miasma generally prevailing in low and marshy grounds. On these accounts, the Alder is often planted, when not naturally found in such spots, to serve as a remedy for the injuries which floods often produce. Like a true and attached friend, it repays, according to its power, the benefits received; and hence poets, both ancient and modern, have adopted it as the emblem of gratitude and devoted affection:

——"There the Alder, darkly green,
In such fixed attitude doth fondly lean
O'er the clear brook, as t'would not lose one tone
Of its sweet parley as it journeyed on.
And then, what time the soft winds gently stirred
Its darkling leaves, it too would breathe some word
Of answering kindness. Ah! in by-gone hours,
When fancy, proud to try her new-born powers,
From all she saw or heard stole some sweet thought,
Oft has that tree some theme for musing brought.
If harsh of mood, too hardly would she deem
'Twas in self-homage bending o'er the stream,
Like beauty o'er her mirror, pleased to find
Its image in the glassy stream enshrined.
Anon, repenting of a thought so rude,
'Twould seem to her the type of gratitude,
Shading the brook that fed it, lest the sun
In mid career should gaze too fierce thereon;
And then a softer image it supplied,
Forever bending o'er that crystal tide,
Forever listening to its liquid chime.
Though all the sights and sounds of summer time—
A sky all glory, and an earth all bloom,
Gales breathing only music and perfume,
Seemed all intent to win its love—but no!
It marked alone that streamlet's gentle flow."

INFLUENCE OF THE STOCK ON THE CION, AND VICE VERSA.

BY JOSIAH HOOPES.

Both theory and practice teach us that the relationship existing between the root and the top of a tree can not be impaired to any great extent by any artificial intervention of man. The very moment that an inserted bud or graft commences to granulate and then unite, that moment the two parts of the embryo tree struggle, as it were, for the mastery. That is, certain idiosyncrasies, inherent either in the branches of the one or the roots of the other, will form a leading feature in the mature plant. Abundant proof of this is afforded by examining the roots of nursery-grown Apple-trees, whether budded or grafted. Take, for instance, some well-known variety, as the Bellefleur, and the roots will be found uniformly long, slender, and very fibrous; other kinds will prove exactly the opposite. If we place a graft of some well-marked variety upon any ordinary stock, say five or six feet high, in a few years certain peculiarities of the bark will be found extending down from the branches to the body of the tree; as is instanced in the Newtown Pippin Apple, and Van Mons Leon le Clerc Pear. Another

curious feature respecting the influence of the cion upon the stock is noticeable in some of the so-called "sports," or variegated-leaved plants.

During the past season a Mountain Ash, upon which was budded a variety with variegated leaves, commenced to push forth young shoots from the main body of the tree, below the point where the bud was inserted. In every case these have variegated leaves. Now in view of the fact that these *adventitious* buds were there in advance of the original variegated bud, the presumption is that they were created green, and their normal condition yielding to the controlling influence of the new branches, caused the change to occur by the flow of sap from above.

A case still more remarkable than the one above cited, was related some time since by a correspondent of the London *Garden*. He states that he procured cions of a diseased Horse Chestnut with yellow leaves, and worked them upon strong, healthy young trees. Some time thereafter, upon examining the stocks where the cions had failed, young shoots were found down the body bearing the identical yellow-hued foliage; and yet, where the buds originally inserted had "taken," they produced perfectly healthy green leaves.

The disease, for I hold that all variegation is in some manner unhealthy, had evidently been communicated from the bud or cion to the stock before the death of the former, and for a short time, during its vain struggle for existence, contaminated the parts below.

The Scientific Committee of the Royal Horticultural Society of England also records a like case with a yellow-leaved Laburnum. After the inserted bud had died, variegated shoots were noticed issuing from the stock, both below and above the inserted point. And Dr. Masters, the English botanist, has stated that an Abutilon had thrown out variegated shoots after grafting with a variegated variety, but ceased to do so after the inserted graft died.

But, in some instances, the stock exerts a marked influence upon the cion, thus showing the co-operative system in use between them. The *Gardener's Chronicle* mentions the instance of a couple of Muscat vines worked on the Black Hamburg, in the same house with a Muscat on its own roots. Those worked on the Hamburg start fully five or six days in advance of the one on its own roots, although they are nearly a fortnight behind the Hamburgs they are worked on. It is a curious fact that there has never been seen any difference in the ripening season, nor any effect on the fruit.

As we stated in the commencement, certain marked peculiarities will, sooner or later, always make themselves known; sometimes it will be one thing, and again another and totally different feature assumes the superiority. The governing cause, involved in mystery as it is to a certain extent, affords us a clue by means of which we may study a very useful lesson in plant life.

We know that all vegetable growth arises from a cell, and what is termed young shoots, leaves, blossoms, etc., are, in fact, but an accumulation of cells, which, in time, develop woody fibre and other organs. The propagator of new varieties knows that a single bud, or a section of a young branch, may be inserted in a different tree, and these will unite and produce fruits and flowers similar to the kind from which the bud or graft was taken. Now, let us inquire into the changes that occur during this growing process, or, as horticulturists term it, "taking." Between the wood and bark is where active

growth takes place, and the layer of young cells found here is known as the *Cambium layer*. All growth, of whatever nature, is by cells, the origin of which is, however, at present unknown. But this cell-growth is accomplished by small protuberances making their appearance on the walls of the older cells, and these rapidly increase, and again, in turn, assist in the formation of others, and this is carried on so long as growth takes place. Without going into a long dissertation upon the subject of cell-growth, which would form a long essay in itself, I will merely state that the question has been asked in relation to a budded tree, Can the cells, at the point of union, be partly of one variety, and a part belong to another? My theory is, that a cell, singly, is entirely a component part of the variety from which it originates, either from the cion or stock, and is invested with all the powers and principles inherent in that part. A single cell can not be of two varieties; but a collection of cells, as, for instance, the *cellular tissue*, may be formed partly of both. The *vascular* or *fibrous tissue* is governed by the same laws; each separate, but the little bundles of woody tissue, uniting by their outside covering or walls, thus form a compact mass of wood, and the bud or graft has taken, which ultimately forms the future tree.

A bud is, in fact, an embryo tree. It contains within its protective covering all the elements of tree growth, with all the organs of vegetation and reproduction intact. Therefore, when a bud is inserted beneath the bark of another plant, the cellular growth at once takes place on both sides; these unite by their outside walls, and the so-called sap commences to circulate in the intercellular passages from one to the other. It is, therefore, no wonder that certain peculiarities embraced in the root may be found developing in the cion or top, and *vice versa*. That the cion is enabled to reproduce its kind is due to the fact that its young growth is merely an increase of cells already formed, and the variations alluded to at the commencement of this paper are the result of constant currents of sap flowing between the two remote portions of the tree, and at the same time imbuing the one with certain marked characters which were contained previously in the other.

Thus, in a somewhat hurried, and I fear very imperfect manner, I have alluded to the influence of the stock upon the cion, and *vice versa*.

This interesting subject is by no means all theory, as many suppose, but is the result, for the most part, of close examination by means of the powerful lens. Future investigation will, undoubtedly, reveal many novel features which we now know not of, and to accomplish this fully the patient student of Horticulture is asked to join the botanist in the pleasant task.

But there is another and more popular aspect to this subject—the relative advantages of certain stock for particular species of plants. Under this heading we may take for example the Plum worked on the Peach. Prejudice and distrust, on the part of many cultivators, have done this operation great injustice. To the owner of a heavy soil, where the Plum root thrives luxuriantly, Peaches should be planted with caution; but on the other hand, in the great Peach districts, with a light mellow soil, the Peach root will succeed far better than the Plum. Peaches always make a large number of strong fibrous roots, and return to the top a vast amount of nutrition. The junction in certain varieties of Plum on

Peach roots is perfect, and the tree is long-lived and healthy.

The testimony of some of our most noted pomologists go to show that the practice is correct, and a careful examination plainly indicates that the theory is faultless as well.

The subject of dwarfing fruit-trees is not properly understood. The Pear worked on Quince roots certainly dwarfs the tree to a certain extent and for a few years, but is the process caused by some inherent property contained in the Quince? We think not. Once allow the Pear to throw out a few roots above the point of junction, and the tree becomes a standard. The abundance of sap or nourishment gathered up by the roots and forwarded to the top, causes in most cases a larger and finer growth of fruit, thus showing that the Quince is adapted to these kinds; but take an uncongenial variety, and mark the result. The fruit is often in such cases worthless. Years ago we were told that budding Cherries on the Mahaleb stock would cause the trees to become dwarf. Little did these propagators know that when they annually pruned their trees, this was what dwarfed them, and not the root. The junction in this case is always perfect, and it is a well-known scientific fact that excessive pruning causes debility in a plant, and that, when vitality is checked, the tree becomes dwarfed, as a matter of course. Excessive growth and productiveness seem to be generally antagonistic. A dwarf tree, after the first vigorous growth is over, will, if healthy, produce good crops and mature a reasonable amount of new wood. Some certain varieties of Pears, as for instance, the Bartlett, never unite properly on the Quince stock—the cellular tissue of each never seems to make a perfect union. Very many trees that we have examined under a strong lens reveal a marked line between the cell-growth of the two, and not, as is the case with other kinds, a lengthening of both cell-growths, one up and the other down, so that it is very difficult to determine where the exact point of insertion really is. There are causes, over which we have no control, that debar us from dwarfing some varieties, but science has not yet solved the mystery.

Golden Gate Park.—The Legislature has granted permission for the issue of thirty-year city bonds to the extent of $250,000 in aid of the next two years' work on the Golden Gate Park. This is but half the amount which was desired; but, upon the old principle that "half a loaf is better than no bread," we should be thankful that we will have even that much. Few of our citizens who have not visited this Park during the winter have any idea of the improvements which have been made. A fine road has been run down through the sand-dunes, almost to the ocean beach. The hitherto barren hills of white sand have been covered with a rich green mantle of hardy Lupines which will effectually check the drifting of this unstable surface, and in time reclaim it for other and still more ornamental growths of vegetation. The drives have been extended, new flower-beds laid out, a great number of trees and shrubs planted, and now exertions are being made to improve the approaches to the Park. Already, at an outlay which seems almost insignificant when compared with the expenditures of some Eastern cities for their public grounds, and in view of the gigantic obstacles which had here to be overcome, we have a really beautiful Park, which is a credit to the city, and gives

good promise of being, at no very distant day, one of the finest in the land. Its benefits will be more fully appreciated by the masses when street-car lines are so extended as to render it easy of access, and this will be done at least by the time that the new race-track is completed, which will be within a few months.

CISTUS LADANIFERUS.

BY F. A. MILLER.

It is with much satisfaction that I call the attention of the reader to this remarkable evergreen flowering shrub—one which, I am certain, will soon become a favorite in our gardens, judging from the success we have had with it during the last winter.

The *Cistus ladaniferus* (known popularly as the "Rock Rose") is a native of Portugal and Spain, where it covers large tracts of land, and has been cultivated very extensively in European gardens, but to my knowledge is rarely met with in the Eastern United States, while it is entirely new to the Pacific Coast. A pink-flowering species of *Cistus* was introduced here some time since; but in every respect it is inferior to the one now referred to, the flower of which is about three inches in diameter, of a pure white color, with deep purple blotches at the base of the petals. The flower is very showy and effective, and of an entirely different character from any of the flowering shrubs cultivated in our gardens. The blooms are produced in great abundance, and there seems to be no limit to its flowering season in our climate.

It is a free-growing shrub, and will do well anywhere, without any attention whatever. It probably will not require any watering at all, which would be a great point in its favor. It is readily propagated from cuttings, and strong plants can be produced in one year. However, they will not flower until the second or third year from cuttings.

While in other varieties the flowers will not last more than four to five hours, I have noticed that the petals of this species remain in perfect condition for two days.

The *Cistus ladaniferus* is also of commercial value as a medicinal plant. A gum is collected from the leaves and branches, well known as "Ladanum."

The shrub is perfectly hardy, and as an ornament to our gardens it has few superiors, if any.

PLANT OLIVE-TREES.—We have often wondered, when we consider how completely the Olive is adapted to the soil and climate of this country, that more orchards are not being put out. The reason is, perhaps, that it requires years' patient waiting to realize from them. Suppose it takes ten or fifteen years to get a crop, even then the investment of a little time, money, and labor in a few hundred trees would pay largely, for it must be remembered that young orchards, though not in bearing, will in a few years add very materially to the ranch upon which they are planted. It will pay to plant Olives, Oranges, etc., even if one does not expect to eat the fruit off the trees himself; if he does not, his children may, or some one else who will be willing to pay a good price, too, for his young trees. The importance of planting orchards is not appreciated by our citizens. No investment will pay a greater interest than young orchards. Eastern men will come along this season, and next, who will be willing to pay well for trees set and in good growing condition.—*Ventura Signal.*

FRUIT CULTURE.

We extract the following remarks on "Fruit Culture," from the pen of Wm. H. Nash, Esq., from the *Napa Register and Reporter:*

"Having devoted much attention for many years to this particular branch of culture, and feeling deeply interested in its success, we have prepared the following essay to supply it at least in part. The subject of this treatise is one in which almost all classes of the community are more or less engaged and interested. It is the desire of every man, whatever may be his pursuit or condition in life, whether he live in town or country, to enjoy fine fruits, to provide them for his family, and if possible to cultivate them in his own garden with his own hands.

Fortunately, the climate and soil of California being so favorable to the production of fruit, farmers, if they are not already, must become truly a community of fruit-growers. People are but beginning to learn the uses of fruit and to appreciate its value. The rapid increase of population alone creates a demand to an extent that few people are aware of. The city of San Francisco has added one hundred thousand (100,000) to her numbers in ten years; and see what an aggregate annual amount of new consumers it presents.

After twenty years of experience in fruit-growing in California, we think it will be excusable in us if we presume to offer to the farmer a few suggestions relative to the soil and climate best adapted to the growing of fruit; as well as some suggestions as to the proper season and manner of planting the trees. In our Californian climate, our winters being so mild, it will do to plant any time from the commencement of the first rains till the first of March.

It has now become a well-known fact that many varieties of fruit, when planted near enough to the coast to be exposed to the winds from the ocean, are almost total failures; but when this cause of defect is removed by planting these same varieties in the orchard lands of the interior, they become not only thrifty and productive, but the fruit is unsurpassed in its size and flavor. All trees should be selected with reference to the climate and soil where they are to be planted.

The Pear-tree in California is much more hardy than the Apple-tree, and will grow and produce good fruit in almost any locality, but succeeds best in a deep, rich, and moderately dry soil.

The Peach-tree succeeds best where the climate during the summer months is warm, ranging from 60 to 90 degrees, and the soil rich, moist, and loose. In a cool place this fruit is often of an inferior quality, juicy, but insipid.

The Plum-tree should have a rich, moist soil, and when planted in poor land, manure should be used unsparingly.

The Cherry-tree may be grown to the highest state of perfection, when the soil is a deep, rich, sandy loam, the water at no time standing nearer than eight feet of the ground, where the temperature during the summer months ranges from 40 to 80 degrees. On Mahaleb stock the Cherry can be grown quite successfully where the soil is much more wet and heavy.

The Quince.—Valuable for preserves and jelly; can be grown on moderately low and wet land, and will yield enormous crops.

The Almond.—We have been experimenting with two varieties of this tree, for a few years, and have fruited to some extent. Like the Apple, it succeeds best when out of reach of the coast

winds, but can not stand the heat nor the late frosts of some of the interior valleys. We know of no better recommendation than to say that, as a general rule, where table Grapes can be grown the Almond will flourish.

The Grape may be said to do well in almost any location in California; that is, out of the damp winds and fogs that prevail along the coast; even in some sheltered locations very near the coast they may be grown quite successfully, but not of the best quality for wine.

The Currant is one of the most valuable of all the small fruits, and is being used extensively for jelly as well as for table fruit and pies. Like the Cherry, it should have a good summer climate, and a loose rich soil.

The Gooseberry should have a warm and moderately dry soil, with plenty of manure and good cultivation. If grown in cold damp places, the fruit will be subject to blight and mildew. The Hawton's Seedling, however, may be grown in almost any location.

The Blackberry should have a warm, moist soil to succeed well. Plow the ground at least twice, and as deep as possible; the subsoil plow may be used to a great advantage, and when the ground is hard, its use should not be omitted.

Pruning the Trees at the Time of Transplanting.—This important part of tree planting should be carefully attended to. The ends of the roots, that are always more or less bruised in digging, should be cut off with a sharp knife, and the branches should all be cut back to a bud within two to four inches of the main stem, leaving them in a proper shape for the formation of the top.

Planting.—Will give our method of planting, and think it will do to work by, as a general rule. Dig the holes circling, three feet in diameter and two feet in depth; the rich soil of the surface should be thrown out on one side, and the balance on the other side of the hole. In refilling the hole, throw in the surface dirt first, which will leave the richest part of the soil where the tree will receive the most benefit from it; fill up the hole to a proper depth to receive the tree without binding the roots, keeping it about the same depth that it stood in the nursery. Fill in about the roots with loose dirt until the ground above the tree is level, then the planting is done. From the time of planting, the ground should be kept well tilled and free from grass and weeds. A crop of Carrots, Beets, or Beans may be grown between the trees, but should not be nearer than four feet to the trees, until after they have grown at least one year, or Currants or Gooseberries may be planted between the trees in the same manner; and may be allowed to grow until the trees are ten or twelve years old.

The distance the trees should be planted apart:

	Feet each way.
Standard Apple	24
" Pear	18
" Heart Cherries	24
" Duke "	16
Almonds, Peaches, Plums, and Nectarines,	20
Apricots	24
Gooseberry, (Eng)	3x5
Hawton's Seedling	6x8
Currants	2x5
Blackberries	8x8
English Walnut	40
Grape-vines	7x7

Manuring.—The very common practice in regard to manure, is to apply a very large quantity immediately around the trunk of the tree, which is decidedly wrong, as it creates an excess of heat and enfeebles the growth of the tree. The proper way is to apply a sufficient top-dressing broadcast between the

rows; this should be well plowed in where it can reach the extremities of the roots. There are many rich soils where manure is unnecessary.

Mulching.—This should be practiced in very dry soils, and only with newly planted trees. Would recommend sand to be thrown around the tree to the depth of three or four inches, and about six feet in diameter; it should be applied early in May.

Protecting the Trees from the Heat of the Sun in Summer.—It is only necessary to protect the trunk; this may be done by means of two boards set together, forming an angle; then place them on the south-west side of the tree.

Orange Culture in Santa Clara Valley.—The culture of the Orange is attracting great attention from the fruit-growers in this valley, many of whom have been planting extensive orchards this season. Mr. Babb has set out between seven and eight hundred trees, General Smith a hundred, J. A. Buck two hundred, and various other parties a greater or less number. Mr. Buck, whose ranch adjoins the tobacco fields in the southern portion of the county, has just returned from an extended inspection of the orchards, climate, and soil of Los Angeles, and says he is so confident that Oranges can be grown here in greater perfection than there that he proposes to spend a good many thousand dollars in their culture. The hearty growth of the few isolated trees set out for ornament around our city demonstrates their successful cultivation in this valley. The average net profit to an acre of bearing trees in Los Angeles is about $4,500 in a favorable season; here it would be much greater, on account of our superior facilities for irrigation. Mr. Buck says that there is no better soil or climate for the Orange than that of our foot-hills and mountain sides.—*San José Mercury.*

ON MANGROVES.

BY DR. H. BEHR.

While in the temperate zone all arborescent growth seems to get crippled by the immediate neighborhood of the sea, it never fails to strike the mind of the traveler, who for the first time enters the realms of the tropics, to see the luxuriant forests extending far beyond the shore out into the salt water itself.

The trees that compose these littoral forests are usually comprised by the name "Mangrove," which name by no means infers that said trees are botanically related among themselves.

The word "Mangrove" means nothing but a certain character or form of vegetation, in the same way as, for instance, the word "Heath," as it is in common use, does not exactly confine itself to *Erica*, but expresses a certain effect of landscape produced by a form of vegetation imitating or resembling in external structure an Erica.

The word Mangrove comprises, first, the *Rhizophoreæ.* This is a group intermediate between *Onagrasiæ* and the myrtaceous plants. It contains but few genera, viz: *Rhizophora, Kandelia, Ceriops*, and the genera themselves are exceedingly poor in species. All are strictly littoral. Second, the genus *Aegiceras*, belonging to the primulaceous plants; subdivision, *Sapotaceæ.* It is a near relation to *Diospyros* (the Persimmon-tree). Third, genus *Avicennia*, belonging to the labiate plants; subdivision, *Verbenaceæ.*

These trees, either mixed together, or one species excluding all others, form the vegetation of the Mangrove districts.

There is no herbaceous vegetation whatever found beneath these trees; but clams, oysters, barnacles, and other marine animals, fixed on roots and branches, are substituted in the strangest way for the turf, the creepers, and parasites of common forests. It is no exaggeration that the traveler, standing in his boat, may pick oysters from the overhanging boughs.

There is little difference in the general appearance of the Mangrove, *Rhizophora*, *Aegiceras*, or *Avicennia*. They are all evergreens, with round, dark-green, shining leaves, resembling in growth our Alder (*Alnus*). All of them partake of two striking peculiarities; the one is the peculiar growth of their roots, by which the trunk of the tree is lifted to high water mark, and is supported by a system of roots that spread like a gigantic broom, and produce at low tide the strange aspect of a forest on stilts. At high tide, of course, when these roots are not visible, the Mangrove forest looks like any other inundated forest. The cause of this peculiar organization is easily to be understood, as the elevated trunk is intended to adapt the tree to the changing tides, whose currents would exercise a considerable pressure on solid trunks, which certainly would be injured by them, while the many channels between the divergent roots allow the currents to pass without any harm to the tree.

The second peculiarity of the Mangrove is the circumstance that their seeds are never in a dormant state. As soon as they are ripe they begin to grow. In the *Rhizophora* and its relations, *Ceriops* and *Kandelia*, the seeds germinate even before they are separated from the tree. The name *Rhizophora* (bearing roots) evidently is derived from the strange aspect of a tree from whose branches and twigs thread-like roots hang down and elongate themselves until they reach the marsh, where they fix themselves and form new trees. The seeds of the *Aegiceras* and *Avicennia* do not, at least as far as my experience goes, germinate before they are separated from the tree, but they separate the moment in which their development is complete. They then either fasten immediately in the mud, and grow like other plants, or they are carried about by currents in a state of preliminary development; that is, in the shape of a pair of fleshy cotyledons, resembling the shells of bivalves, and a *radicala* imitating in appearance the *sipho* of a *Pholas* or a teredo.

There is scarcely any kind of Mangrove endemic; they are more or less cosmopolitan between the tropics. Frequently the same species are found equally spread over the Old and the New World. The *Rhizophora* group scarcely ever transgresses the tropics. The *Aegiceras* does, but not as much as the *Avicennia*, which, of all Mangroves, extends to highest latitudes.

Prof. Davidson states that he has seen *Avicennia tomentosa* in Magdalena Bay. I have seen the gerontogeic species *Avicennia officinalis* at Port Adelaide, South Australia, latitude 35°; at the coast of New Zealand luxuriant forests of the same species extend as far as latitude 40°. Now this Australian, or rather gerontogeic species, certainly would grow well on overflowed marsh-ground in our bay. It would yield considerable fuel, would protect the ditches of reclaimed lands, and could be used for the manufacture of sod.

The only difficulty in introducing this tree is the peculiarity of all Mangroves, the circumstance of their seeds never being in a dormant state. It is next to impossible to obtain them in growing

order, and it is only the last invoice of seeds that inspires me with the hope to introduce this valuable tree.

VINEYARD INTERESTS.

We noted the other day the fact that some large vineyards in Los Angeles County had been uprooted because they did not yield a profit to the owners. The room was wanted for Orange-trees. There are many vineyards in the State which have not met the expectation of proprietors. They have not failed in production. But they have not, on the other hand, yielded a satisfactory revenue. Either they are too remote from markets or the Grapes are not of the most desirable sorts. Probably the most satisfactory returns have been realized by owners of small vineyards, stocked with the choicest varieties of table Grapes, and in such proximity to the city that the Grapes could be placed in market within four or five hours after shipping. But there is a limit even to this trade. Prices come down as choice Grapes become abundant. The market can be easily overstocked.

C. D. Brooks, of El Dorado County, writes to the *Rural Press* as follows: "I have seen several inquiries in the *Rural* for information in regard to raisins. I send you a sample of those I raise and cure. The raisins are made from the "Malaga Muscat," or Muscat of Alexandria; and, after a long and close investigation, I am satisfied in my own mind that this is the raisin of commerce, and no other Grape will make a raisin at all, but will simply be dried Grapes when cured, except the "Royal Muscadine," which makes a fair raisin, though smaller and the seed larger. I have had several hundred boxes of these raisins in market the last two years, and have had many letters of commendation and inquiry in regard to them. I find it to be a profitable business. They have brought in the San Francisco market, this winter, fifteen cents per pound, wholesale. I am extending my vineyard of them every year; grow them on hill-slopes. What cuttings I don't use I have been giving away for several years. I paid $12 per hundred for the first I set, and then cultivated for raisins. The habit of the Grape will have to be closely observed by the cultivator. I have been prompted to write these lines, because it is too bad for a person to set vineyards for raisins, and cultivate them for four years, and then have nothing but dried Grapes, that he can hardly sell at any price."

The larger part of the raisins produced here last year was of the second and third qualities, but these have been desirable for cooking purposes; while the really good raisins have brought good prices. An old vineyard can be grafted with the new varieties, which will come into bearing the second year from the graft. A vineyard once reconstructed in this way, all the troublesome questions about remoteness from market and over-production are disposed of at once.

It is certain that our vineyard men must seek other outlets for their Grapes than such as they have heretofore found. They want more satisfactory returns, and something, also, to compensate them for waiting a great many years for only theoretical profits. It is not everyone who can turn his vineyard into an Orange orchard. But he can exchange inferior productions for the best in a short time. Where the Orange comes to perfection, the Muscat Grape also ripens, and only needs a skillful touch to turn it into the best raisin of commerce.—*Bulletin.*

THE FRUIT PROSPECT.

The prospect for an immense fruit crop in this valley the present season is most propitious. The orchards, for the last two months, have been a cloud of blossoms—first the Almond, next the Peach and Apricot, then the Cherry, and now the Plum, Prune, Pear, and Apple. The yield promises to be beyond all precedent, and hundreds of tons of choice fruits would be left to perish upon the ground, as in times past, but for the increased facilities for preserving and shipping it.

Two years ago, Mr. Dawson, then recently from the East, a gentleman of foresight and ability, conceiving the idea of starting a fruit cannery on an extensive scale, determined to preserve fruits in such a manner and of such a quality as would necessarily commend them to public use. He put up the first year 10,000 cans. His fruit was selected with great care, all imperfect fruit being rejected. It was carefully cleansed of all impurities, none but neat and tidy women being employed in its preparation, and preserved in the best possible manner. This fruit found a ready sale, and demonstrated the future success of the enterprise. Last year he erected suitable buildings for the business, and put up in like superior manner 100,000 cans. But this is scarcely a priming to what the business will grow to in his hands. The present year he will probably preserve a quarter of a million cans.

But we need in addition to this a fruit-drying establishment—in fact, a number of such establishments. The Alden process, now coming into use extensively in the East, could not fail of meeting with success here. It preserves the fruit in all its perfection of flavor by simply expelling the water, and retaining all of the valuable properties of the fruit. Last year our fruit-growers shipped a hundred car-loads of fruit—Pears mostly—from this valley to the East. By the Alden process they could save moving this immense bulk—finding it more profitable first to expel the useless water.

We regard fruit culture as the most important industry that our farmers can engage in, wherever the land is well adapted to the business. With skillful management we believe it can be made to pay thrice the profit of grain growing.—*San José Mercury.*

Nitrogen and Vegetation.—Our foreign journals bring the usual number of accounts of agricultural investigations, particularly in the experiment stations, of which some new ones have been lately established in Germany.

Ritthausen and Pott, of the station at Poppelsdorf, in Prussia, have lately been studying the influence of manures, rich in nitrogen, upon the composition of plants fertilized by the same. Ritthausen concludes that by increasing the amount of nitrogen in the food supplied to the plant, the percentage of nitrogen, both in the plant as a whole and in its different parts, may be increased.

Dehérain has investigated the relations of atmospheric nitrogen to vegetation by experiments on the absorption of nitrogen by carbonaceous matters, as glucose, decayed wood, etc., mixed with alkalies. He concludes that atmospheric nitrogen can, either in the cold or at the temperature of the soil, fix itself on carbonaceous matter analogous to that which is found in vegetable decomposition, and that the presence of oxygen is unfavorable to this reaction. He infers that carbonaceous matter in manure is advantageous, since it liber-

ates hydrogen in decomposing, and renders the conditions for absorbing nitrogen more favorable by removing oxygen from the air confined in the soil.—*Harper's Magazine.*

FOREST TREES FROM SEED.

Every year advances our knowledge of forest culture, and convinces those who give the subject any attention that it possesses all the importance claimed for it. Those most directly interested are the dwellers on the treeless plains of the West, but the people of the East are waking up to the fact that their forests are going, and that they must bestir themselves if they would have shade and timber, to say nothing of water. There is no use in thinking that a plantation of young trees can in all, or even most cases, be raised without much care. There are a good many chances that a young tree, whether it be transplanted or grown from the seed, will fail to reach maturity, but raising from the seed is attended with less first cost, and this, at least, is an attractive feature. We find in the *American Agriculturist* the following condensed statement of the properties and habits of various tree seeds, most of which may be obtained from any dealer who keeps a general assortment:

"*Evergreens* we can not advise the ordinary farmer to undertake to raise from seed, they require so much care in shading and otherwise, and small plants are sold by those who make a business of growing them at such low rates that we are sure that 90 in 100 will find it much more satisfactory in the end to purchase. We therefore confine our remarks to deciduous trees.

Tree Seeds that must be Sown as soon as Ripe.—Soft or Red, and Silver Maple, Elm, and Red Birch. If kept exposed even for a few days after they are gathered, their vitality will be destroyed. These seeds are generally kept by seedsmen; though some take orders in advance, to be filled when the seeds ripen. Those who wish to sow seeds of these should arrange beforehand with some friend to gather them, or dealer to supply them, and be prepared to sow the day they are received. The plants come up at once, and make nice young trees by fall.

Tree Seeds to be Sown in Place—that is, the seed is to be sown where the tree is to stand—include the different Hickories, the Butternut, and Black Walnut. The seeds are collected in fall, made into heaps, and covered with sods, over which are thrown several inches of earth. In the spring the nuts are sown in place, putting in two or three near together; and if all start, remove all but one.

Seeds of Trees that may be Sown in Fall.—Ash of various species, Liquid-amber or Sweet Gum, Tulip-tree, Cucumber, and other Magnolias. These may also be sown in spring if properly kept through the winter in sand.

Seeds better Sown in the Spring (they should be carefully kept through the winter in sand).—Maples of all kinds, including the Ash-leaf or Box Elder, and excepting the Silver and Soft; Birches, except the Red; Bass-wood; Kentucky Coffee-tree; Ailanthus; Catalpa; Paulownia.

Seeds needing Preparation before sowing in spring.—Osage Orange, scald and keep warm and moist until it sprouts; Button-ball, soak; Honey Locust, and Common or Black Locust, scald.

Seedling trees require just as much thinning and weeding as a crop of Carrots. If they suffer from the heat of

the sun, stick brush with the leaves on all over the bed sufficiently thick to give a proper shade, or use a screen of laths."

Will Cranberries grow in California?—We answer, yes, if properly cultivated on suitable soil. There is but little such soil in this State as they use East for Cranberry culture. There are many Cranberries now produced in the boggy soils in Oregon and Washington Territory. In some of the high mountain valleys are those natural bogs, that might be reclaimed and made profitable for Cranberry culture, and we believe that by a few years' flooding in dykes, a suitable bed for Cranberries might be made upon our ordinary soils. The New York *Horticulturist* thus tells how the culture is managed East: "A subscriber having asked us what were the cost and profits of Cranberry culture, we answer him as follows: 1. A good cranberry marsh must be made out of boggy, peaty land; sand must be carted upon it to the depth of six inches, and then the plants set out. The bed must also be so situated that a stream of running fresh water may be turned upon it at the proper time to flood it entirely, to prevent attacks of insects and frosts, and be as quickly shut off and drained. 2. The lowest cost per acre is $300 for a bed well prepared. From this upward to $600 and $1,000 per acre have often been expended. 3. The yield in bushels increases gradually from twenty bushels the first year up to 100 or more in the fifth year. Average price of Cranberries, $3 per bushel to the producer. It requires three years' time to get a good bed well planted in a producing condition, and the income is from $60 to $200 per acre for three years after that; after the sixth year, $300 to $600 per acre."—*Russian River Flag.*

Arrowroot. — The Arrowroot most esteemed in this country, is that grown and prepared in the Bermudas, whose salubrious climate more nearly resembles that of Persia, with the peculiar and agreeable addition of constant seabreezes, and which appears best adapted to produce the tubers in perfection. As the extent of these isles—nearly 500 in number— is only about 12,000 acres, occupying a space of scarcely twenty miles in length by six in breadth, but a small proportion of our supply is derived from them, and Jamaica Arrowroot, being nearly equal to it, comes largely in competition with genuine Bermuda. The East Indian is not so highly valued, it being too often adulterated with substitutes for the genuine. The cultivation has also been profitably conducted in Africa, and in the southern United States, where a large quantity, though of inferior quality, is annually produced. Sir S. W. Baker, in his journey through Arabia, speaks of a peculiar bulb resembling a Sweet Potato, but exceedingly long and thin, which was known to the Arabs as "baboon," and from which he "made excellent Arrowroot," in a somewhat primitive manner. The Arabs simply roast the roots on embers, and eat them as we do potatoes.—*N. Y. Mercantile Journal.*

How to Measure the Length of a Tree.—Take a forked stick; measure the length so that it will come exactly up to your eyes; then measure the length of the timber wanted—say forty feet—in a line out from the tree, and allow for the stump; then set up your stake, and lie down on your back with your heels at the stake; look through the stake, and the place where the eye strikes the tree will be the length of the timber. The ground ought to be level; if not, allowance can be made.

STEMLESS LADY'S SLIPPER.

(*Cypripedium acaule*, Ait.)

ACACIA GROVES ON THE UPPER NILE.

The rich and varying vegetation of the valley of the Upper Nile is a constant source of delight to the botanical traveler. The shore on either side presents a picture of tropical beauty; brilliant colored flowers toss their gay blossoms in the breeze, whole forests of Tamarisk and Acacia cover the hillsides, and even the surface of the water is beauteous with the broad rich leaves and fragrant flowers of many varieties of aquatic plants. The Acacia groves extend over an area a hundred miles square along the right bank of the stream. They produce gum in such unlimited quantities that, in the interests of commerce, they are specially worthy of regard. In the winter-time, with the greatest ease, in the course of a day, a hundred-weight of this valuable article could be collected by one man. It is a curious fact, however, that the gathering of this gum is much neglected, and the merchants of Khartoom are never able to supply a sufficient quantity to meet the demands of Europe. These Acacia-trees are called by the natives "soffar," a word signifying a flute. From the larvæ of insects which have worked a way to the inside, their ivory-white shoots are often distorted in form, and swollen out at their base with globular bladders measuring about an inch in diameter. After the mysterious insect has unaccountably managed to glide out of its circular hole, this thorn-like shoot becomes a sort of musical instrument, upon which the wind, as it plays, produces the regular sound of the flute. In the winter season, when the trees are stripped of their leaves, the boughs, white as chalk, stretch out like ghosts, and the wind, sighing through the insect-made flutes, fills the whole air with soft, melancholy tunes. One who has seen these "soffar" forests in a breezy moonlight night can never forget the strange and weird effect produced upon the imagination.—*Harper's Magazine.*

Wonderful Tree in Australia.—The Brisbane (Australia) *Courier* of Dec. 30, 1873, publishes the following official telegram from Mr. Walter Hill, the Government botanist, dated from Cardwell on the 27th, and received by the Queensland Secretary for Lands:

"Since the 20th of November we have examined the banks of the Mulgrave, Russell, Mossman, Daintree, and Hull rivers, and have been more or less successful in finding suitable land for sugar and other tropical and semi-tropical productions. The ascent of the summit of Bellenden Kerr was successfully made by Johnstone, Hill, and eight troopers. At 2,500 feet in height we observed an undescribed tree with crimson flowers, which excels the *Poinciana regia*, *Colvillia racemosa*, *Lagerstræmia regia*, and the *Jacaranda mimosifolia*. At 4,400 feet a Tree-fern, which will excel in grandeur all others of the alboreous class. A Palm-tree same height which will rival any of the British India species in gracefulness. On the banks of the Daintree we saw a Palm-tree Cocoa, which far exceeds the unique specimen from Brazil in grandeur and gracefulness. While cutting a given line on the banks of the river Johnstone, for the purpose of examining the land, an enormous Fig-tree stood in the way, far exceeding in stoutness and grandeur the renowned forest giants of California and Victoria. Three feet from the ground it measured 150 feet in circumference; at fifty-five feet, where it sent forth giant branches, the stem was nearly eighty feet in cir-

cumference. The river Johnstone, within a limited distance of the coast, offers the first and best inducements to sugar cultivation."

THE JOYS OF A GOOD GARDEN.

Let any farmer take say an acre of land, more or less, according to the size of his family, fence it so as to keep out fowls and all other depredators, make it thoroughly rich, and then plant one-half to Grapes, Blackberries, Raspberries, Gooseberries, and Strawberries, Currants, Asparagus, and Rhubarb or Pie-plant. On the other half let him plant, as soon as the ground is fit, Peas, Onions, Lettuce, Radishes, and a few early Beets; also sow some early Cabbage and Tomato seed for early plants, being careful as soon as they are up to cover them at night, to prevent injury by frost. Peas, Onions, Radishes, Lettuce, and Beets will stand considerable frost with little or no injury. Later, as danger from frost ceases, plant more Peas, Snap Beans, Parsnips, Carrots, late Beets, Summer, Fall, and Winter Squashes, a few hills of early Cucumbers, and any other vegetable that the family may like. Sow late Cabbage seed, and later in the season plant Cucumbers for pickles.

After the small fruits have come into full bearing, let us see what this acre of land will furnish a table. Very early in the season he will have Asparagus to whet his appetite on. Soon after, Radishes will be large enough to use. Anon, Currants and Gooseberries will have grown large enough to stew. He will soon after have the pleasure of eating green Peas and Beans, with Onions for seasoning; and a few early Cucumbers, to put him in the humor for Strawberry shortcake, cream, and Strawberries. And by the time he has finished these the Raspberries will be waiting his pleasure. If he is now tired of fruit, he can have some early Beets and Summer Squashes. The early Tomatoes should now be ripe, and Carrots and Parsnips large enough to dig, for a change. His Blackberries should now be ripe, soon to be followed by the delicious Grapes. If he is fond of a good baked Squash, let him now try the fine Boston Marrow or the American Turban, and he will have it.

Let the surplus small fruits be dried or canned for winter use. Put up a keg of Cucumber pickles; can, preserve, or put up in some way the surplus Tomatoes; make a barrel of krout from part of the Winter Cabbage. Holding up the remainder of the Parsnips, Carrots, and Fall and Winter Squashes, have an endless variety of green and good things, that will last all through the long and dreary winter. Some may think this a fancy and overdrawn picture; but let such try the experiment, and see if they do not then say, with me, that in no other way can they have so good, so healthful, and so cheap living.—*Exchange.*

California Coffee.—It has been recently discovered that the foot-hills in the northern portions of this State, notably in Placer County, are covered with a hardy wild shrub, which, upon investigation, turns out to be a Coffee plant. Those familiar with the genuine cultivated Coffee shrub grown in South America and the West Indies pronounce this unquestionably a plant of the same species, of course inferior, since it has been neglected and grown only in a wild state, but presumably susceptible of development to such a degree of perfection as to constitute its product a valuable article of commerce.

It is, at least, well worth the trouble of experiment to demonstrate the possibility of such a result. Even should this wild Coffee bush resist the kindly influences of cultivation and refuse to yield good berries, it may still prove of service in suggesting the experiment of introducing the cultivation of the real Coffee. So far as we are informed, no attempt has been made to test the suitability of our soil and climate for this crop, and it is too important a matter for the suggestion to be permitted to pass unheeded. Should it be found that we are able to produce a fair article of Coffee, a branch of agriculture will have been opened more profitable than any now known in the State.—*Chronicle.*

ORANGE CULTURE VS. VINE CULTURE.

We have lately published some interesting communications upon the subject of Orange culture in California. The facts set forth in the communications prove beyond a doubt that the Orange may be cultivated in nearly all parts of the State as successfully as the Apple, Peach or Plum. They also prove that the cultivation of the Orange, wherever engaged in in the State, has proved more profitable than the cultivation of any other fruit.

The cultivation of the Orange in some of the Southern Atlantic States seems to have been attended with the same pecuniary success as here. In Georgia the introduction of this fruit, and the great success which has attended it, have raised the value of land adapted to its culture to the sum of $500 an acre. In Los Angeles, the home of the vine, a locality in which the vine flourishes, and produces a wine equal to the most renowned wine-growing districts of the Old World, so great has been the success in Orange culture, and so profitable has its culture proven, that owners of the oldest and best vineyards are digging up the vines and planting the land in Orange-trees. The Los Angeles *Express*, in announcing this fact, says: "It makes one sad to see vineyard after vineyard torn up by the roots, and the fine old trunks cut up into firewood. The Wolfskill vineyard, one of the finest in the county, planted thirty-five years ago, is among those that have been dug up. On account of the low price of Grapes during late years, this vineyard has been maintained at an actual loss of $2,000 a year to the proprietors. The manufacture of wines and brandies from the Grape have been so weighed down by taxation and the oppression and annoyance of government red tape, that capital has been actually driven out of the business, and when last fall the Grape crop ripened, there was no market for the vintage. Grapes were sold at from fifty to fifty-five cents the hundred pounds, a price which barely covers the actual outlay. It is not to be expected that people will continue to suffer this loss when they can appropriate their lands to the cultivation of a fruit which is enriching all who have a few acres of bearing trees. Hence the movement to which we allude. It will take time for the trees to grow, but it is better that the lands should yield nothing for a few years than they should be an actual source of loss, and in this respect we can not but view the action of the vinemen as sound."—*Sacramento Record.*

M. Bert states that compressed oxygen is not only destructive to animal life, but that it also hinders the germination of seeds, the putrefaction of fragments of muscle, the change of starch into sugar by saliva, and the development of *mycoderma aceti.*

CEREUS GRANDIFLORUS—THE NIGHT-BLOOMING CEREUS.

How often have I been delighted to visit the collection of the intelligent cultivator of plants, to be warmed by his enthusiasm, to impart mutual instruction, and to share the pure pleasure arising from the contemplation of the floral beauties of nature. When we take a view of the floral display of the vegetable kingdom, how can the human mind be otherwise than interested? The grotesque forms of some excite our wonder, the gorgeous display of others our admiration, the graceful and elegant bespeak our esteem, and the fragile and lowly command our care.

When the magnificent flowers of *Cereus grandiflorus* are expanded they attract the admiration of everybody; it never opens its blossoms whilst under the direct influence of the sun's rays, and they close never to open again as soon as the beams of the morning sun glance upon the house in which it is grown. I prefer growing this Cereus in a pot to which is affixed a cylindrical trellis from three to four feet high. The plant can then be moved to the positions in the house best adapted for its growth, or when at rest during winter for the maturation of the sap; and when in flower it may, with facility, be removed to the drawing-room. When in a growing state it delights in a warm, moist atmosphere, where it will lengthen its stems, or produce new branches from one to two feet in length in one season. These should be tied to the trellis as regular as the contorted habit and brittleness of the stems will permit. As the stems advance in growth, numerous roots will be protruded from their under side, which will evidently reach the soil in the pot, and they will materially assist in the future growth of the plant, and the development of the flowers. As it is no easy matter to remove a plant of this description from one pot to another when once established on the trellis, care should be taken at first, to select a pot of sufficient size.

The soil should be a rich and friable loam, mixed with one-third well-rotted and thoroughly dried stable-dung broken into small lumps, to which should be added pieces of old mortar, to secure a good and sufficient drainage until the pot becomes filled with roots. When the plant has finished its growth for the season water should be gradually withheld, but it is by no means necessary to keep it so dry as to cause its succulent stems to shrivel. It should be placed during winter near the back wall of the house, and, that it may have the full influence of the sun, the top of the trellis should be about eighteen inches from the glass. As the spring advances, the old and well-matured stems acquire a purple tinge, the color being more intense about those parts where the flower-buds develop themselves. About the middle of May small fissures will be observed on the upper part of the stems, from which protrude what at first appear to be small balls of coarse white hair, but in which is inclosed the rudiment of the flower; the enlargement of these balls goes on very slowly, becoming gradually more lengthened until they assume a conical shape. At this period the plant should receive a generous treatment; a more liberal supply of water may be given, with occasional applications of liquid manure. The footstalk of the flower will now grow rapidly until it attains the length of from seven to nine inches, when it will appear as if covered with scales, bristled all over with hairs. From the middle to the latter end of June the first flow-

ers generally expand, but much depends on the previous brilliancy of the weather. The flower usually begins to open about five P.M., but in dull weather it may be as late as eight or nine o'clock. It is an object of interest to the curious to watch the progress of the expansion of the flower. The calyx or outer segments may be seen to move with a start or spring, now one, then another, until they are free from each other; they afterward expand imperceptibly, each segment standing apart and their points slightly recurved, forming a circle from eight to ten inches in diameter. In the meantime the petals slowly expand, and are disposed in the shape of a bell at the tops; but they gradually lessen downwards like a funnel, at the bottom of which is inserted the numerous stamens. These are beautifully arranged around the corolla, but the greater part lie on the under petals and surrounding the pistils. The time from the commencement to the full expansion of the blossom is from an hour and a half to two hours. The appearance of the flower is peculiar and grand; the numerous narrow segments of the calyx, which are yellow inside, appear like rays surrounding the corolla, which is itself a pure and delicate white, changing to green toward the bottom of the tube. It possesses a perfume which will fill the whole house in which it may be grown. The plant, after the flowering season is over, should have a short period of rest to recover its exhausted energies, and should afterward be stimulated with a moist and high temperature to promote its growth, and to fill its sap vessels with nutritious sap, to be elaborated in due time for the production of its splendid flowers.—*Gardener's Record.*

A GARDEN well kept is easily kept.

CASTOR OIL AS A LEATHER PRESERVATIVE.—A correspondent of the *Germantown Telegraph*, who says he has tested all the patented preparations and popular recipes for preserving leather, prefers castor oil to all of them. He adds:

"We have had boots a year old that we have oiled with it, and the leather was soft, smooth and water-proof to the last time they were used. We apply it clear, without heat. A little lampblack might be used on old leather, but it is seldom necessary on new, as the oil itself seems to keep the blacking on, and renders the leather black and of fine appearance. Those who have been annoyed with hard, cracked, water-soaked boots, the surface of the latter rough, without blacking, and the leather shrunken and wrinkled, so as to chafe, gall, and otherwise punish the feet, will find castor oil, well applied, to be satisfactory. We have used it for wagons and buggies, and find it is in every way superior. It will wear longer, lubricate better, and is less objectionable than anything we know of."

CORN CULTURE.—The *Democrat* informs us that the Sonoma County farmers are generally turning their attention to the cultivation of Indian Corn by way of rotation with Wheat, instead of summer-fallowing their Wheat lands. It says: "Land in this vicinity, on which the yield had decreased from forty to eight bushels to the acre by successive Wheat crops, has been restored by Corn culture to nearly its original productiveness. It is preferred to summer-fallow. Wheat land in the course of a few years becomes foul with weeds. The cultivation requisite in a Corn crop in a single season destroys them; a succeeding Wheat crop is free of weeds, and is otherwise improved in quality and quantity."

Editorial Portfolio.

Notwithstanding the mildness and excellence of our climate in general, even in our rainy season of the year, the weather and temperature of our late winter and spring months have been quite exceptional. We certainly ought not to complain of the plenteousness and continual fall of the gentle and penetrating rains we have had, though they have somewhat interfered with our personal enjoyment, but the remarkable lowness of the thermometer from early in December to the present month (May) has been almost unprecedented in this State. Yet when we rightly appreciate the rain-fall, which has already up to date reached over twenty-three inches, the average fall in this city, and our almost complete exemption from late and sometimes destructive spring frosts, such as we had last year, we have every reason to feel thankful for the blessings we have mentioned, rather than to dwell upon the (for California) extraordinarily long cold spell we have experienced. All our agricultural and horticultural productions are now almost beyond any possibility of failure, and will be immense in the subsequent wealth they will create sooner or later on our coast.

WOODWARD'S GARDENS.

Great improvements have lately been made and are still in progress in this upon many occasions quite crowded public resort. After our late fine rains all the beautiful vegetation in these delightful and interesting grounds is in a most flourishing and healthy condition. A large portion of the walks have been laid down with asphaltum, and in dryness, solidity, and smoothness are a great improvement even upon the good gravel pathways. The aquarium is being enlarged by some fine tanks near it on the outside. The bird, fish, and other animal departments are continually having new additions made to them.

CATALOGUES RECEIVED.

We have received No. 3 for this year of Mr. Vick's *Floral Guide*. It is replete with attractiveness and interest on many subjects useful to the horticulturist. Some of the topics in it are "The Government Seed Shop," "The Post Office," "Rustic Ornaments," "Cold Pits or Conservatories," "The Blue Gum," "Gold-fish and Aquariums," "The Lily of the Valley," "Cage Birds," "Preparation for Winter Flowers," and "A Little Gossip," on various matters useful to the florist and gardener.

We have received No. 7 (the April number for 1874) of the *Flower Garden*, a quarterly magazine, price $1 per annum, published by Beach, Son & Co., of 76 Fulton Street, Brooklyn, N. Y. This is an excellent catalogue, possessing the especial advantage of many pages of excellent horticultural information, much of it original. Also, the April number of the *Illustrated Quarterly Floral Work* published by Briggs & Brother, Rochester, N. Y., well worthy the attention of the floriculturist.

We were exceedingly gratified to take Mr. James Vick—the great seedsman, of Rochester, N. Y.—by the hand, the other day. This, we believe is his first trip to this coast. He comes to observe, and at the same time combine pleasure with observation. We wish him a most cordial reception and pleasant sojourn in our midst.

OUR EXCHANGE TABLE.

The *Gardener's Monthly* for May, published in Philadelphia, always welcome from its valuable contents, has come to hand. This is one of the few publications devoted to Horticulture which has existed and flourished for many years, and with the *Horticulturist* (New York), is one of our standard works of excellent, practical, and useful information for the florist, fruitist, and general horticulturist.

The *Cultivator and Country Gentleman* is also, as usual, on our table. This favorite and elaborately furnished vehicle of knowledge on Agriculture, Horticulture, and their kindred sciences needs no encomium from us. It has been long known and appreciated by all cultivators.

The *Ladies' Floral Cabinet* is a beautiful as well as an elegant and highly useful paper, devoted most especially to the home circle, with all the lovely adornments of the garden, the mansion, or the cottage, and their grounds.

Among other exchanges received are the *Rural New Yorker*, *Indiana Farmer*, *Texas Farm and Home*, *The American Farmer*, *The Willamette Farmer*, *Rural Press*, etc.

Señor Francisco 2 ? Casanueva, Consul-General of Chile for San Francisco, for a copy of the circular announcing the projected Second International Exhibition of Chile, in September next.

The *Overland* is also at hand, with more than its usual amount of excellent reading matter.

A consignment of young Fig-trees, of the white variety, seeds of a peculiar kind of Locust-tree, and Egyptian Wheat, were received at Stockton a few days since, direct from Dalmatia, Austria.

FAVORS RECEIVED.

Monthly Report of the Department of Agriculture for April and May, 1874, on the condition of "Winter Wheat," "Farm Animals," "Diseases of Farm Animals," "French Schools of Agriculture," "Facts from Official Sources," "Entomology," "Chemistry," "Botany, "Microscopy," etc.

NEW BOOKS.

The Illustration Horticole—Published at Ghent, Belgium, by Mr. Linden, and edited by Mr. Andre. This serial has had a world-wide reputation for the beauty of its colored plates and the excellence of its reading matter. Its circulation abroad has so increased that Mr. Linden now issues an edition in the English language, as well as the original in French. The number before us has a representation of *Oncidium fuscatum*, a great beauty—the *Ceroxylon andicola*, the Wax Palm of the Andes, and others, together with full accounts of the same.

The Great Western is the title of a new monthly published in Philadelphia. It is literary in character, but takes in science and art, Agriculture, Floriculture, and everything about which an intelligent person is supposed to care. It seems destined to take rank with the popular magazines of the day.

A Simple Tree-Protector. — The *Ironmonger*, an English periodical, describes a simple contrivance to protect ornamental trees and plants from the effects of frost. It consts of a conical frame of galvanized iron wire supported at its apex by a wooden post driven into the ground beside the tree; it is only needed to cover the wire with cloth, or even news paper, to render the tree safe from the frost.

NEW AND RARE PLANTS.

Tacsonia insignis.—Tacsonia is a genus nearly allied to the Passion Flower, and some of our best winter bloomers are found among them. The *Florist and Pomologist* figures this species: It is from Bolivia. As many as a dozen flowers are borne from each hanging branchlet. The flowers are of a brilliant carmine, and are sometimes six inches across. The *Florist and Pomologist* thinks it will do well in a cool greenhouse.

The White Salvia splendens.—Mr. Jos. Meloon, Bergen, N. J., contributes the following note in regard to this plant: "I see in the January number of the *Monthly*, a communication from W. L. Akers, of Johnstown, Pa., in which he criticises the White Salvia as being a very inferior variety of Salvia. And while I agree with him in part of his description, I must differ from him in other portions.

"The sporting tendency of the White Salvia was most prominently presented by the specimens cultivated by us the past summer. But while the color of the flower is not of the purest, and the blooms drop more readily than those of *S. splendens*, still, it is nearest to the latter variety in all qualities combined, and bedded in alternate rows or masses makes a most brilliant contrast. With us the past season, its growth has equaled the most vigorous, and side by side with the *splendens* variety, the blooms stood until a very severe frost cut them both down. It also seeds quite freely, although the seed is apt to shed before fully ripe.

"In cases of sporting, when the red mingles with the white on the same blooms, it is much handsomer than pure white or red specimens are, as the markings are very distinct.

"Taken altogether, the White Salvia, though not of great value by itself, is a superior bedding plant if used with the red varieties."—*Gardener's Monthly.*

Hybrid Begonias.—For some years attention was given to the improvement of the Begonia, with the view to the development of handsome foliage. Of late years hybridists have turned their attention to the production of novel colors, and other blooming attractions. Among these Mr. Bull announces in his new English catalogues:

"From the seed now offered, not only will most beautiful varieties be produced, but perfectly new kinds, for the flowers from which it was saved have all been carefully hybridized, pains having been taken that the varieties and colors were blended for that purpose.

The Begonias from which this seed was saved are new kinds of the handsome flowered bulbous-rooted section, many of them not yet sent out, and having been again hybridized, must give striking novelties of great merit. The flowers that this seed will produce will be of gigantic size, many of them as much as two inches in length by three inches in breadth, and the colors exceedingly varied: crimson, orange, pink, carmine, salmon, orange-scarlet, cinnamon, blush, lake, rose, vermilion, and various intermediate shades.

Brilliant, very rich bright orange, a fine showy flower.

Caroline, deep rosy pink, with broad petals.

Climax, deep rich rosy carmine, the two outer petals extremely broad.

Corsair, rosy salmon, profuse bloomer.

Dazzle, bright reddish crimson, a fine flower, with short broad petals.

Ensign, bright pink, a very elegant variety.

Gem, cream color, the reverse of the petals light pink.

Glitter, vivid orange scarlet, attractive.

Hermine, bright orange cinnamon.

Irene, salmon, distinct and good.

Lothair, deep rose, a fine flower, with short broad petals.

Magnet, beautiful light pink, the reverse of the petals deep pink.

Mazeppa, very light cream color, the reverse of the petals tinted with orange pink.

Meteor, intense scarlet vermilion, very bright and showy.

Phillis, sulphur, shaded with pink.

Seraph, soft pink, the exterior part of the two outer petals suffused with rose.

Surprise, bright pink, a very pretty color.

Trojan, bright rosy pink, very distinct."

Calophaca Wolgarica.—This is a pretty little shrub with pea-shaped yellow flowers, which are very attractive, as are also the red-colored seed-pods. In its ordinary state it can not be regarded as a weeper, but when grafted about four or five feet high on *Caragana arborescens* it forms a pleasing object. Its branches do not quite reach the ground, therefore "worked" plants are well adapted for fronts of shrubberies, or for the decoration of rock-work.—*The Garden.*

Lilium Krameri.—This is a beautiful new Lily from Japan, recently figured in the London *Pomologist and Florist*. It is not clear whether it is a hybrid, an evolution, or an original species. The flower figured is about six inches over, and of a beautiful rosy tint, with orange-red stamens.

Double Lilies.—There have been double kinds of Lilies known for some time. The double Tiger Lily is always appreciated. We understand a double *Lilium auratum* has appeared in England.

Principles of Pruning Trees.—W. H. Nash, in an article recently read before the Napa Grange, set forth the following as the principles to govern in pruning trees: 1. The vigor of a tree subjected to pruning depends in a great measure on the equal distribution of sap in all of its branches. 2. Prune the branches of the most vigorous parts very short, and those of the weak parts long. 3. Leave a large quantity of fruit on the strong part, and remove the whole or a greater part from the feeble. 4. Bend the strong parts and keep the weak erect. 5. Remove from the vigorous the superfluous shoots as early in the season as possible, and from the feeble parts as late as possible. 6. Pinch early the soft extremities of the shoots on the vigorous parts, and as late as possible on the feeble parts, excepting any shoots that may be too vigorous for their position. 7. The sap acts with greater force and produces more vigorous growth on a branch or shoot pruned short than on one pruned long. 8. The sap tending always to the extremities of shoots, causes the terminals to push with greater vigor than the laterals. 9. The more the sap is obstructed in its circulation the more likely it will be to produce fruit-buds. 10. The leaves serve to prepare the sap absorbed by the roots for the nourishment of the tree, and aid the formation of buds on the shoots. All trees deprived, therefore, of their leaves are liable to perish.

When Beans are preserved for the manufacture of sugar they give off carbonic acid and obsorb oxygen. This result is owing to the oxidation of the sugar, and in the course of thirty days a very considerable portion of the sugar is lost.—*Scribner's for May.*

FLORAL REVIEW.

BY F. A. MILLER.

The mild and pleasant weather of the past weeks has wonderfully advanced vegetation in and out of doors, and the hills and dales are everywhere covered with luxuriant green, intermingled with every imaginable color and hue of our native flowers. Our gardens begin to look bright and cheerful; every day develops new attractions, and each plant is watched with more than ordinary care. It is true, our gardens need not be destitute of flowers during the winter months, if properly managed; but we do not find them so bright, perfect, and sweet as spring and summer makes them.

Acacias are in bloom, and fill the air with their sweet perfume. As ornamental trees, they have no superiors, and I am sorry to notice that they are much less in demand than they were some time since.

The Lilac attracts much attention, and seems to become more and more popular with our people, now that some of the specimens planted a few years since are sufficiently grown up to produce an abundance of flowers. While we meet the purple-flowering Lilac very frequently, the white seems to be as yet rather scarce. Both are most desirable deciduous flowering shrubs, and their flowers are delightfully fragrant.

The Snowball, the Deutzia, the Wiegelia, the Spiræa, and the Almond, are all in full bloom, and if these flowering shrubs have heretofore been neglected and scarcely sought after, their popularity will increase from year to year.

Roses are in their full glory, and continue to be everybody's pets. Unfortunately, the mildew, which has made its appearance on our Rose-bushes, seems to become more annoying every year. In many gardens Rose-bushes are affected to an alarming extent; so much, that all the blooms are crippled and the foliage destroyed. Our florists must give this matter their serious and immediate attention, for the case is a grave one. Many remedies have been suggested, and have been previously published in these columns. The application of black sulphur mixed with water has the desired effect, if applied twice a month. Sulphurous acid, mixed with fifteen times its quantity of water, has been used successfully. As the cheapest and best method of curing mildew, we recommend the application of strong tobacco-water, which also has the good effect of destroying the green fly and other obnoxious insects. We put a lot of tobacco stems in a barrel, pour water over them, and after a day or two we sprinkle the affected bushes with the liquid early in the morning or late in the evening. The effect is as remarkable as it is successful. If this treatment is renewed every week or two, Rose-bushes can be kept clear of mildew.

Pinks are producing their full quota of flowers; they are very much in demand, and the varieties now cultivated on this coast compare very favorably with any collection in the East. Fine varieties are as yet scarce in the market; there seems to be some difficulty unaccounted for in the propagation of many of the choicest kinds.

The Clematis, Clianthus, Chorizema, *Solanum jasminoides*, and *Wisteria sinensis* are in bloom, and deserve notice as most desirable climbers.

In the way of herbaceous plants we have the Forget-me-not, the Auricula, the Bleeding Heart (*Dielytra spectabilis*), some hybrid Amaryllis, *Echium grandiflorum*, *Gypsophila elegans*, and others, in perfection.

In the greenhouse the Cape Jasmine is taking the place of the Camellia, which is rapidly going out of season. The very exquisite odor of the Cape Jasmine (*Gardenia*) makes it one of the most desirable plants under cultivation. To have it succeed well, it requires a warm temperature and somewhat moist atmosphere — a condition of things which can not readily be provided in this climate without artificial heat. It is for this particular reason, that amateurs do not succeed well with its cultivation. Otherwise the Cape Jasmine grows very freely and is easily propagated.

Azaleas, Rhododendrons, Cacti, Rhyncospermum, *Astilbe japonica*, Eranthemums, *Clerodendron Balfouri*, *Hoyas* (Waxflower), *Jasminum Catalonicum*, and Orange blossoms, are plentiful, and constitute the chief material for fine bouquets, etc.

THE MULBERRY AS A SHADE TREE.—The Sacramento *Record* says: "It is said that the *alba* and *moretti* varieties of the Mulberry make as pretty a variety of shade and ornamental trees as any that can be found," and gives many excellent reasons why they should be set out in preference to the Locust and other trees, to which more favor is shown. Among the reasons given why the Mulberry should be preferred, the fact that it bears a palatable edible fruit, good for domestic use, or to divert the birds from the Cherries or more choice fruits, is mentioned, and also the probable value in the future of the foliage for silk raising. The writer might have mentioned that the foliage will also furnish a rich fodder which is much relished by all domestic stock; and were all our roadsides shaded by well-grown Mulberry-trees, they could largely help out the supplies for stock in times of scarcity.

REMARKS ON FRUIT CULTURE, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Although Nature has beneficently bestowed upon man, just as they are, many minor wild fruits, such as Huckleberries and Cranberries, Persimmons and Papaws, etc., yet in many cases—such as the Crab Apple, Sloe, Pear, etc.—man may be said in many respects to have made the choicest fruits from these originals, and, always helped by Nature, has achieved wonderful triumphs of horticultural skill. Other fruits—such as Currants, Gooseberries, Raspberries, Blackberries, Chestnuts, and especially Strawberries—have been received by man with their complete original flavor, and only required him to improve their size and quantity, or prolong their time of bearing.

As the matter now stands, we owe most of our best fruits to what is called the Old World; but it is rather an interesting subject upon which to speculate, as to what will in the future arise from the improvement of some of the native fruits of this our New World, or America. There are our *Chicosa*, the Peach Plum, and our wild red and yellow *Prunus Americana*, which have already shown great capacity for improvement. It would probably be hardly worth our while to pay any attention to improving our Wild Cherry, as any seedling from it would not be likely to be as large as the sorts of Cherry we now possess, although their flavor might be good. Why should we not have manifold and most luscious varieties of Persimmon and Papaw? The former might become, by cultivation, engrafting, or budding, equal to the *Kaki* we have lately acquired from the far East. With regard to wild Strawberries, Cur-

rants, and Gooseberries, by attention to their culture we might be able to accomplish something, too, as we possess several promising species, differing from the European types, in different parts of the States and Territories. As to Blackberries and Raspberries, particularly the first, we have already achieved a good deal, and we are likely by careful attention to create an earlier development, as well as a diversification, in these our native species. Indeed, many of our very finest kinds of both have already sprung from our American types, *Fragaria Virginiana* with its varieties (which, as well as the Old World *F. vesca*, occurs all across the continent), and *F. Chilensis*, which is found all along the Pacific slope to Oregon, and probably to Washington Territory.

How many other fruits of value there are in this country yet undiscovered we can not tell; but it is to be hoped, if only for mere curiosity, we shall at some future time know of them.

As we in California, owing to our favorable climate, can successfully cultivate all the foreign Grapes, as well as nearly all the indigenous kinds of this continent, our wild varieties are not of so much importance to us as to the Eastern States; but if we needed them, they have such a start with these already in the East, and seedlings, whether from crosses or otherwise, can be so easily produced and selected, and reproduced in so short a time, that they have nearly arrived at a state of perfection, and we could if we wished avail ourselves of these.

Attention may be paid to the low Blackberry or Dewberry, and to the Sand Blackberry of the South, in order to lay the foundation of a greater diversity of excellent sorts.

Cranberries and Huckleberries will hardly admit of much improvement, unless it be increase of size, or greater change with respect either to acidity or sweetness.

The *Asimina* (or Western Papaw) and the Persimmon are the chief of the wild fruits which have evidently many capabilities, that may in all probability be developed in the future. Several better varieties from spontaneous seedlings, of both Persimmons and Papaws, have been found, and can therefore be selected from. "The Custard Apple of the West Indies gives some idea," says a late writer on Pomology, "of what might be made of our Papaw, when ameliorated by cultivation and close selection from several generations."

Our climate and soil, and general freedom from noxious insects and the "black-knot," on this slope, are much in favor of our American Plums improving upon their wild forms, if they were systematically attended to.

In nuts, too, there is a considerable field for improvement; but we rather look, at present, for the older States to take the initiatory steps in these matters, than a new and most productive State like California, successful in so many varieties of pomological and other productions. This success and favor from Nature are apt to lead to contentment and supineness, and we are inclined to be very well satisfied with the advantages we so fortunately possess, instead of branching out toward further labor and speculation in the fruit way.

The first Strawberries of the season (two pounds) appeared in the market on the 13th of April. They were raised by R. Syer, of San Jose, and shipped by him to Levy & Co., 310 Washington Street, and sold at $2 per pound. This is nearly a month later than usual, the first in 1873 having arrived on the 13th of March; but this fruit had not been received in any considerable quantity

up to the last of April, the present season, and will not be in abundance until the first week in May. On the 10th of April other fruits had undergone no change since the previous week. The California Orange crop showed but few signs of exhaustion up to the last of April. Tahiti Oranges were then plentiful at 25c. to 50c. per dozen.

Vegetables were rapidly improving at the end of April. Green Peas and Asparagus were abundant then, at greatly reduced prices. The former were quoted at 6c., and the latter at 5c. to 8c., per lb. New Potatoes were received in considerable quantities, much improved in size and quality; but prices continued firm at 5c. to 8c. per lb. Rhubarb was down to 6c.@8c. per lb. Other vegetables were at the prices of the previous week.

Another cargo of Tahiti Oranges arrived on the 10th of April, and, though prices were slightly reduced, they did not interfere to any great extent with the sale of the California product. Bananas sold at 50c., and Mangoes at $1, per doz.; Smyrna Figs, 35c. per lb.; Apples, by the box, delivered, $2@$2½; Italian Chestnuts, 50c. per lb.

As late as the 20th of April, Marrowfat Squashes were very scarce, and prices high. Tomatoes from Mexico sold at 25c., New Potatoes 5c. to 6c., per lb.; Spinach 6c., Lettuce 15c. to 20c., per doz.; Salsify, 6c. to 8c. per bunch; Potatoes, by the sack, delivered, $2 to $2¼ per 100 lbs.

A few pounds of Strawberries were received daily along the middle of April, but brought fancy prices. The crop is very late, and the demand unusually large, the prices up to the 20th of April being double those usually obtained for the first lots received. The delay in the Strawberry crop has been very favorable for the sale of Oranges. The receipts from Los Angeles were liberal, and the demand active, notwithstanding the abundance of Tahitian fruit. Consignments of Eastern Cranberries arrived by rail during April, and met with fair inquiry. The Australian steamer brought a shipment of Sydney Lemons and a few boxes of Oranges. The market is still well supplied, and the venture did not prove very remunerative. About 400 pounds of Strawberries were received on the 21st of April, and sold from first hands at 35c. to 60c. per lb. About the 22d of April the weather set in warm, the berries ripened rapidly, and by the 25th liberal supplies of this delicious fruit began to come in.

During the last week of April the market was thoroughly glutted with Asparagus, and although prices were reduced to low figures, the supply was too large for the demand, and considerable quantities had to be dumped. The glut in Asparagus was due in part to the decreased consumption caused by the abundance of Green Peas. Rhubarb was plentiful, but, owing to the light supply of fruit, was in good demand. Marrowfat Squash was very scarce at that time, and prices further advanced.

On the 22d of April about fifteen chests of Strawberries were received, but the demand was very active, and prices were still high. The crop will, no doubt, be immense, and of good quality owing to the late favorable spring weather. The last of April the supply was plentiful enough to bring prices down to reasonable figures. Receipts of Los Angeles Oranges kept well up, about 600 boxes having arrived by steamer and many more expected. Asparagus was, towards the last of April, only one cent per pound.

Following are the quotations: Apples, choice, $1 50 to $2 50 per box;

common, 75c. to $1 25 per box. Oranges, Tahiti, $18 to $20 per M.; Los Angeles, $15 to $45 per M. Lemons, Sicily, $10 to $12 per box; Malaga, $10 to $12 per box; Los Angeles, $15 to $30 per M. Limes, $10 to $12 per M. Bananas, $2 to $3 per bunch. Pine Apples, $5 to $8 per doz. Cocoanuts, $7 per 100. Dried Fruit—Apples, 6c. to 7c. per lb.; Peaches, 9c. to 10c.; Pitted Plums, 16c. to 18c.; Figs, 6c. to 8c. per lb.; Strawberries, 20c. to 25c. per lb. Oregon Apples are in good supply. Oranges are plentiful, and of good quality generally.

During the first part of this month (May), Strawberries arrived in great quantities, the crop being very large and good in quality. Berries, Currants, etc., will be very plentiful ere long, the past rainy season having been greatly in their favor, and the lateness of the spring also being rather an advantage to all fruits than otherwise.

The receipts of Strawberries during the first part of May increased from 300 to 400 chests per day, but the demand still exceeded the supply. We expect that, in the height of the season, the shipments will reach 1,000 chests per day. The first Gooseberries of the season were received about the 1st of May from the Sacramento River, and were retailed at 25c. per lb. Cherries began to appear in small quantities the first week in May.

The last steamer from the southern coast brought over 200,000 Los Angeles Oranges—an unusually heavy shipment for this time of the year. The demand for this fruit, although it is very fine, has somewhat fallen off since the advent of Strawberries, and prices are a shade lower. In other fruits, no change.

Ashes invigorate all kinds of trees.

Correspondence.

CALYCANTHUS.

Editor California Horticulturist:

A correspondent—Keystone—in the April number of this magazine, in his communication on the "Vigorous Condition of Stockton Plants," makes inquiry about "a shrub which was very common in the gardens of the interior of Pennsylvania, and in all the Middle States, etc." This is undoubtedly what is popularly called "The Sweet-scented Shrub," or Calycanthus, (Allspice-tree, Linn., natural order, *Calycantheæ*), a small North American shrub, remarkable, chiefly, for the agreeable aromatic fragrance of its blossoms. There are five species; all are deciduous, and have chocolate-colored flowers, which, though destitute of petals, are not the less interesting, the loss being compensated in the large colored calyx. The plants are rather tardy of propagation, which is best effected by means of layers.

I have noticed in the small ravines of Sonoma Valley, a wild species of this shrub. This was in bloom when I saw it, though the flowers were smaller and not so delightfully odorous as our cultivated sort. E. J. Hooper.

San Francisco, April 21.

Asphalt paper is employed for wrapping silks and other articles to be protected from moisture. Tubes made of this paper are about one-fifth the weight of iron, and may be used for the conveyance of water.

Silks are by some manufacturers treated with a solution of acetate of lead to increase their weight; poisonous properties are thus at times imparted to the tissue in question.

Editorial Gleanings.

Flowers for the Sick.—In an upper room in a poor tenement-house lay a sick child, wasted with fever and the prostration which followed. It had seemed impossible to arouse him, or excite the slightest interest in anything. The young lady who had carried her flower-basket to the room selected a bunch of shining golden buttercups, and held them up before the child. The dull languid eye brightened, the tiny emaciated hand opened to receive them; too feeble for a spoken word, the smile that flitted across the wee white face was eloquence enough. The fingers closed tightly over the simple flowers that were like yellow sunshine to the little sufferer. When a second visit, with fresh flowers, was made on Thursday, the boy's mother said, "Jimmy would not lay the flowers out of his hand while he was awake; only when he slept could I put them in water to freshen a bit, for he must have them in his hand again as soon as he waked." Sure enough, the little fellow still held his withered treasures, which had been more to him than doctors' visits or prescriptions. Fresh flowers from the basket brought a smile and look of grateful recognition to his face; the long, weary hours of convalescence were lightened and brightened for one little sufferer by the Flower Mission.—*Harper's Magazine.*

The New "Insecticide."—Hot alum-water is a recent suggestion for insecticide. It will destroy red and black ants, cockroaches, spiders, chintz-bugs, and all the crawling pests which infest our houses. Take two pounds of alum and dissolve in three or four quarts of boiling water; let it stand on the fire until the alum disappears; then apply it with a brush, while nearly boiling hot, to every corner and crevice in your closets, bedsteads, pantry shelves, and the like. Brush the crevices in the floor of the skirting or mop-boards, if you suspect they harbor vermin. If, in whitewashing a cellar, plenty of alum is added to the lime, it will also serve to keep insects at a distance. Cockroaches will flee the paint which has been washed in cool alum-water. Sugar barrels and boxes can be freed from ants by drawing a wide chalk-mark around the edge of the top of them. The mark must be unbroken, or they will creep over it, but a continuous chalk line, half an inch in width, will set their depredations at naught. Powdered alum or borax will keep chintz-bugs at a respectful distance, and travelers should always carry a package of it in their hand-bags, to scatter over and under their pillows, in places where they have reason to suspect the presence of such bedfellows—*Germantown Telegraph.*

Almond Orchards in Marysville.—The *Appeal* says: "There are several young Almond orchards in this vicinity, and all of them appear to be in the most prosperous condition. The largest orchard is owned by Mr. Taylor, of Washington, Yolo County, and is situated a few miles north-east of the city, near the terminus of Brown's Valley grade. This orchard covers several acres. The trees are now four years old, and are in full blossom, and apparently will yield largely. Ex-Alderman Blodgett has also on his lot, corner of I and Seventh streets, a fine orchard of Almond-trees, three years old, and which are very promising. The Almond has been quite extensively planted in this city and vicinity, and the experi-

ment is proving a great success. The soil and climate is as favorable as for Peaches and Apricots, and at no distant day large crops of Almonds will be grown hereabout."

Asparagus. — Among the profitable shipments which have been made to Eastern markets within the last three or four years is that of Asparagus. This vegetable can be grown here so as to place it in the Chicago market nearly three months in advance of that grown on the other side. One man in the vicinity of Sacramento has a field of not less than twenty acres in Asparagus. Most of his shipments are made to Chicago, a car-load being made up for a single shipment. His Asparagus field has yielded him a net profit of a thousand dollars an acre for some time. It will probably be good for a like profit for many years to come.—*Foot-hill Tidings, April* 20.

Dr. Woods relates the following circumstance, which appears to show that sometimes, at least, malarial poison is to be found in water, and not in the air: Two ships were dispatched simultaneously with troops from Algeria to France, both under similar circumstances, with the exception that the supply of water had been drawn, in one case, from the low, marshy lands where ague was prevalent, while the other ship had taken water from a locality situated at a greater elevation, and where the disease was unknown. The passengers on the first transport were generally seized with remittent fever, whereas no case of illness occurred on the other vessel.

A Fig orchard at Mormon Island, in Sacramento County, contains 1,000 bearing trees of the White Smyrna variety.

The Fresno *Expositor* has the following from Borden: "Friedlander & Chapman are planting the largest Almond orchard in the world — 30,000 trees. They have ninety acres of Alfalfa, which is looking very fine. They are growing Flax, Tobacco, Buckwheat, Castor Beans, and have the finest garden in the valley, in which they have growing Oranges, Almonds, Dates, Sugar Cane, etc."

The *Garden* relates that cuttings have been taken from England to Victoria, and worked with success nine months after they were separated from the parent plant.

METEOROLOGICAL RECORD,

For the Month ending April 30th, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.18 in.
do	12 M.	30.18
do	3 P. M.	30.17
do	6 P. M.	30.16
Greatest height, on the 14th at 12 M. and 15th at 9 A.M.		30.36
Least height, on the 10th at 6 P. M.		29.89

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		56°
do	12 M	61°
do	3 P. M.	60°
do	6 P. M.	55°
Greatest height, on the 22d at 3 P.M.		71°
Least height, on the 10th at 6 P.M.		49°

SELF-REGISTERING THERMOMETER.

Mean height during the night	45°
Highest point at sunrise on the 30th	56°
Lowest point at sunrise on the 6th	41°

WINDS.

North and north-east on 5 days; north-west on 4 days; south-west on 7 days; west on 14 days.

WEATHER.

Clear on 12 days; cloudy on 7 days; variable on 11 days; rainy on 7 days.

RAIN GAUGE.

April	2d	0.02	inches.
"	4th	0.08	"
"	5th	0 01	"
"	10th	0.03	"
"	12th	0.62	"
"	13th	0.03	"
"	30th	0.25	"
Total		1.04	"
Previously reported		22.52	"
Total rain of the season up to date		23.56	"

PANSY (Viola tricolor).

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. I. JUNE, 1874. No. 6.

PASSIFLORA (PASSION-VINE.)

BY F. A. MILLER.

Nearly all the varieties of the Passion-vine can be grown successfully in the open air; and, considering the beauty of their flowers, it is surprising that so few of them are cultivated here—the old variety of *Passiflora cœrulea*, with here and there a specimen of *P. edulis* or *P. coccinea*, being nearly all we see. They are fast-growing climbers, evergreen, and can not fail to give general satisfaction. Several varieties produce edible fruits, such as *P. edulis*, *P. alata*, *P. incarnata*, *P. quadrangularis*, etc.

As to the origin of the name, I extract from the *Treasury of Botany* the following interesting paragraph:

"These singular and beautiful plants are chiefly natives of tropical America, a few being indigenous in Asia. The name was applied from the resemblance afforded by the parts of the plant to the instruments of our Lord's Passion and its attendant circumstances. Thus, the three nails—two for the hands, one for the feet—are represented by the stigmas; the five anthers indicate the five wounds; the rays of glory, or some say the crown of thorns, are represented by the rays of the 'corona;' the ten parts of the perianth represent the apostles, two of them absent—Peter who denied and Judas who betrayed our Lord; and the wicked hands of His persecutors are seen in the digitate leaves of the plant, and the scourges in the tendrils."

I further note the following remarks from the same author, on the edible fruits which some varieties bear:

"The part that is eaten is either the fleshy axil attached to the seeds, or the juicy pulp in which they are imbedded. This pulp has an agreeably cool taste in some species, and a sweet mawkish flavor in others. In the West Indies the pulp is sucked through a hole in the rind. Fruits of the Granadilla and some other of the edible species are commonly seen in the Paris markets, and occasionally in Covent Garden, as they not unfrequently ripen in this country."

Although so many of the species furnish edible fruits, they are nevertheless not devoid of useful qualities in other parts. Thus the root of *P. quadrangularis* is stated to possess powerful narcotic properties, and to be used in the Mauritius as a diuretic and emetic; the roots of *P. contrayerva* and *P. normalis*

are considered as antidotes to poison, and the flowers of *P. rubra* are stated to be used in the form of a tincture, for their narcotic effects, in the West Indies. *P. fœtida* has a reputation as an expectorant, and as a remedy in hysteria and female complaints; its leaves are also employed for poultices in inflammatory affections of the skin. The bitter and astringent leaves of *P. laurifolia* are used as anthelmintics, while those of some other species are mentioned as being employed in intermittent fevers. But, aside from all these qualities, I would recommend the cultivation of the Passion-vine for ornament, and particularly some of the new varieties produced by hybridization, the flowers of which are really grand and beautiful. I cultivate the following varieties, and they are doing well:

Passiflora alata, the flowers of which are dark red and very fragrant; the ray or crown is white, spotted black and purple. A most exquisite variety.

P. Decaisneana, a hybrid with large scarlet flowers.

P. quadrangularis, found in Jamaica; flowers large, rosy red, green upon the outside.

P. cærulea grandiflora, native of Brazil; flowers white, with a blue crown; a fine variety, and very hardy.

P. princeps (*P. racemosa*), from Brazil, an exceedingly fine variety. The flower is of a fine scarlet, its crown dark rich blue, borne in racemes. This is one of the most effective varieties.

P. trifasciata, cultivated mainly for its beautiful variegated foliage. This variety may be considered a greenhouse plant, as it does not seem to succeed well in the open air here.

All of these named varieties may be freely propagated by cuttings at almost any time, provided that the wood be sufficiently hardened.

TREE-FERNS.

The Balantium or *Dicksonia Antarctica* is the most noble and stately of all the species of Tree-ferns. The stems are both tall and stout, attaining, in its native country, as we are told, from thirty to thirty-five feet in height, and measuring from one to two feet in diameter. Upon the summit of these stately stems is borne a grand crown of dark green, plume-like fronds, ranging from three to ten feet in length. The young fronds are beautifully arched, but with age they bend over and become pendulous. It is a native of the mountain gullies and ravines in Tasmania and Australia.

Tree-ferns are a genus of stately and beautiful plants, of which about two hundred distinct species are known to botanists, though few have, as yet, found their way into our conservatories. Most of those which we have are imported from New Zealand, Australia, and Tasmania. The expense of importation and their slow growth have, thus far, made them costly luxuries. They serve a double purpose, however, in decorating the conservatory in the winter and the lawn in summer. When warm weather is upon us, the tubs in which they are grown may be set out of doors, thus making an ornament than which there can be none finer or more highly prized.

A writer in *The Garden*, speaking of the best way to construct a Fern-house, says: "If no natural ravine or dell exist in the garden, make one; for there is no necessity that a Fern-house should have high glass sides, or any light at the sides. Therefore I would have the bottom several feet below the surface. By this means, height is obtained at little expense, and the plants will not outgrow their accommodations. It is not absolutely essential that Tree-ferns

should be grown in such a house. They will thrive admirably in any ordinary conservatory, and are especially adapted to those places where, from want of sunlight and other causes, any other class of plants would not live. Avoid over-potting. There is no necessity for the annual moving that soon makes them unwieldy. In Germany large Ferns and Palms are seen growing in comparatively very small tubs or pots. The secret of their being kept in good health lies in a little extra supply of water."

In potting Tree-ferns use equal parts of good peat and loam, mixed with sharp sand. They thrive best in a moist air, and the stems should be frequently sprinkled with the syringe.—*The Flower Garden.*

THE ELM (ULMUS CAMPESTRIS).

BY E. J. HOOPER.

The Elm (natural order *Ulmaceæ*) is universally allowed to rank second only to that undisputed monarch of the forest, the

"Lord of the woods! the long surviving Oak."

The majesty, dignity, grace, and beauty of its form, the rapidity of its growth, the ease with which it may be propagated and cultivated, its adaptability to the soils most prevalent among us, and the value and almost universal applicability of its timber, have all so combined in its favor, that it would be difficult to name any tree more generally prevalent both in Europe and in the United States, especially the eastern portion of the latter.

This species of Elm will grow, and even thrive, on very inferior land; but a dry, rich, and strong clay or adobe soil is that in which it most delights. On such, though the rate of growth is less rapid than on lighter lands, the timber produced is more valuable, being of very close and tough texture, and almost the weight and strength of iron, and it is applied to many economical and agricultural purposes. Its twigs yield excellent charcoal. The bark is used occasionally as an astringent medicine, and, like that of the Lime-tree, is sometimes manufactured into ropes and mats. The inner bark of the American Slippery Elm is well known for its external and internal applicability as a softener and soother in sores and coughs. This tree produces its leaves so abundantly as fully to justify the epithet applied to it by Virgil:

"Fruitful in leaves, the Elm."

They were used by the Romans as fodder for their cattle, and are spoken of as superior, in this respect, to those of any other tree. It is said that twenty pecks of these leaves dried, will go as far as thirty pounds of hay.

Few, if any, of our timber trees exceed the Elm in height, and the epithet "lofty" is peculiarly applicable to it. It averages from seventy to one hundred feet in height, and often attains a yet greater altitude, with a trunk of four or five feet in diameter. The branches of one kind partake of an upright, and those of another an elegant drooping character. The spray is light and slender, and spreads in alternate angles from the branch. The leaves, which are smaller and more numerous than those of most trees of equal size, are rough and harsh to the touch, having small gutters in them; of deeper green when fully matured than those of many other trees, and rather glossy on the upper surface. The blossoms are formed upon the shoots of the preceding year, in the form of a spicated ball,

about the size of a nutmeg, and of dark crimson (or purplish) color. This bloom sometimes blows in such profusion as to thicken and much enrich the spray. It appears very early in the spring, some time before that of many other trees.

The Elm is rather deficient in the distinctness of character which distinguishes the Oak and the Ash, and this is a good deal of a defect, for strong characteristics in vegetation are a great source of picturesque beauty. But though it may want the twisted massive limbs, the stupendous trunk, the thick expansive head of the one, and the easy graceful stem and drooping airy foliage of the other, yet, in the dignity of its form, in the loose yet light masses of its foliage, in the beauties of its spring and autumn tints, the Elm possesses characters peculiarly its own, and those which render it one of the principal ornaments of our fields and pleasure-grounds. Its shade is said to be rather beneficial than injurious to surrounding vegetation, and its lofty and umbrageous growth furnishes a protecting shelter and screen to pasture-grounds in exposed districts.

Elms are often planted around cemeteries. In such localities it is even more prevalent than the Yew. Grey associates the Yew and the Elm in his Church-yard Elegy:

"Beneath those rugged Elms, that Yew-tree's shade,
Where heaves the turf in many a moldering heap,
Each in his narrow cell forever laid,
The rude forefathers of the hamlet sleep."

The Elm as a shade tree in the very heart of our cities is a great acquisition, as may be seen in our post-office lot, and gives a peculiar beauty and interest to the sidewalks and streets, as it does in the rural districts, blending its high form, and spreading its light and verdant and sometimes drooping canopy alike beside the stately mansion, the humble cottage, the church-yard, and the highway. Milton says:

"Not always city pent, or pent at home
I dwell; but when spring calls me forth to roam
Expatiate in our proud suburban shades
Of branching Elm that never sun pervades."

This species of Elm (*campestris*) produces abundance of suckers or shoots from the root, and by these it is readily propagated, though it is generally increased in nurseries by layers from stool plants. These, when rooted, can be at once removed to their destined site, and after that require very little attention. I will close this notice of an ever favorite tree by giving some appropriate lines by a good poet:

——"To the sylvan realm
I turn my steps; and see! yon glorious Elm
Proffers so close a shade, that e'en the dew
(As if cool morn still o'er the greensward threw
Her sheltering veil) within the chaliced flower
Lies safe, unconscious of the noontide hour.
Here, then, where scarce a straggling beam invades
The leafy twilight; here, where eve's soft shades
Seem stealing on mid-day, embowered I lie,
Till Phœbus' steeds shall gain the western sky;
And thoughts, like lights and shadows o'er the grass,
As bright, as transient, o'er my mind shall pass."

Recent experiments have demonstrated that by putting cut-flowers in a vase, with a little water, under a glass shade, they will be preserved for a long time in fresh beauty. Some Maiden-hair Fern thus treated was as perfect at the end of a fortnight as when it was first placed under the glass. It is suggested that this blooming might be still further prolonged by inserting the flower stems in wet sand instead of in water alone.

THE WILD SHEEP OF CALIFORNIA.

I have been greatly interested in studying their habits during the last four years, while engaged in the work of exploring these high regions. In spring and summer the males form separate bands. They are usually met in small flocks, numbering from three to twenty, feeding along the edges of glacier meadows, or resting among the castle-like crags of lofty summits; and, whether feeding or resting, or scaling wild cliffs for pleasure, their noble forms, the very embodiment of muscular beauty, never fail to strike the beholder with liveliest admiration. Their resting-places seem to be chosen with reference to sunshine and a wide outlook, and, most of all, to safety from the attacks of wolves. Their feeding-grounds are among the most beautiful of the wild Sierra gardens, bright with daisies and gentians, and mats of blooming shrubs. These are hidden away high on the sides of rough cañons, where light is abundant, or down in the valleys, along lake-borders, and stream-banks, where the plushy turf is greenest, and the purple heather grows. Sweet grasses also grow in these happy Alpine gardens, but the wild sheep eats little besides the spicy leaves and shoots of the various shrubs and bushes, perhaps relishing both their taste and beauty, although tame men are slow to suspect wild sheep of seeing more than grass. When winter storms fall, decking their summer pastures in the lavish bloom of snow, then, like the blue-birds and robins, our brave sheep gather and go to warmer climates, usually descending the eastern flank of the range to the narrow, birch-filled gorges that open into the sage plains, where snow never falls to any great depth, the elevation above the sea being about from 5,000 to 7,000 feet. Here they sojourn until spring sunshine unlocks the cañons and warms the pastures of their glorious Alps.

In the months of June and July they bring forth their young, in the most solitary and inaccessible crags, far above the nest of the eagle. I have frequently come upon the beds of the ewes and lambs at an elevation of from 12,000 to 13,000 feet above sea-level. These beds consist simply of an oval-shaped hollow, pawed out among loose disintegrating rock-chips and sand, upon some sunny spot commanding a good outlook, and partially sheltered from the winds that sweep passionately across those lofty crags almost without intermission. Such is the cradle of the little mountaineer, aloft in the sky, rocked in storms, curtained in clouds, sleeping in thin, icy air; but, wrapped in his hairy coat, nourished by a warm, strong mother, defended from the talons of the eagle and teeth of the sly coyote, the bonnie lamb grows apace. He learns to nibble the purple daisy and leaves of the white spiræa; his horns begin to shoot, and, ere summer is done, he is strong and agile, and goes forth with the flock, shepherded by the same Divine love that tends the more helpless human lamb in its warm cradle by the fireside.—*John Muir, in Overland Monthly for April.*

The influence of forests in drawing moisture from the heavens may be seen from the experience of San Diego, California. Previous to 1863, there was yearly a rainy season which made the soil nourishing and productive. In 1863 a destructive fire swept over the greater part of the country, cutting down the luxuriant chaparral, and blackening the hills. Since then there has been no rainy season at San Diego.

MOUNTAIN MEADOWS, LAKES, AND PRAIRIES.

BY DR. HENRY DEGROOT.

WEAVERVILLE, TRINITY CO., CAL., MAY, 1874.

In my last letter to the HORTICULTURIST my remarks were mostly confined to a description of the forests, grasses, and farming resources of Trinity County. Let me now say a word of certain other products and natural features of this region, the most of which are common also to Klamath and Siskiyou counties. The entire surface of this north country consists of lofty mountains, skirted occasionally by a narrow margin of foot-hills, the whole being cut by numerous deep cañons, through which flow many large streams. There is but a limited amount of bottom lands along the streams, nor is the area of the foot-hills at all extensive. The prairies and natural meadows here are mostly found far up the sides and sometimes quite upon the tops of the mountains. In Trinity County we have a number of these meadows situated at an altitude of six or seven thousand feet. They generally consist of the low borders of little lakes, which, becoming the receptacles of innumerable rills, send off great streams that go bounding in cascades down the sides of the mountains. The water in these lakes, coming from the snowy heights above, is pure and cold, and so deep that it wears always a dark blue tinge. As the most of these lakelets have been appropriated by the ditch-builders for reservoir purposes, the beautiful little meadows that surround them are doomed to early extinction. But their loss will not be great, their situation rendering them unavailable for either hay-making or pasturage. Farther north, among the Salmon River and the Klamath mountains, there are many small prairies which grow the blue bunch-grass in great profusion early in the season, at which time it affords excellent feed for stock. But this grass so dries up before the summer is over as to leave little nutriment, forcing the cattle to seek other localities for subsistence. Farther north and west we encounter

THE FERN LANDS,

none of which are found in Trinity or other places to the south. All over the State this plant is met with in the woods, but is of diminutive size and scattered growth. Only in these and still more northern regions does it attain a large size and take possession of extensive tracts of land to the exclusion of all other plants, and sometimes also of shrubs and trees. Over on the Klamath and westward along the coast these patches of Fern occur, covering often large areas. Indeed, the entire slope of the mountains along the northerly side of that river for forty miles above its mouth is covered with this worthless stuff; for nothing will feed upon it, nor has it ever been found of use for any other earthly purpose except as a shelter for the rattlesnake, which abounds here, or to hide the bears and rabbits that sometimes seek it for a covert. It might to be sure be used for the extirpation of still more worthless plants, if such there are, inasmuch as none could resist its destructive tendency were it suffered to extend itself among them. But the remedy would, however, be as bad as the disease, since, once rooted, it is exceedingly tenacious of existence, many deep plowings being required to destroy its vitality. While this weed does not so far inland nor anywhere on the mountains reach so large a size as along the coast, it nevertheless attains a height of three or four feet forty miles up the Klamath, and stands so thick that it is difficult

for a man to make his way through it. As it is always green, and covers the mountain sides with but little interruption, it imparts to the country, when viewed from a distance, a cheerful aspect. Seen a little way off, one ignorant of its character would take this growth to be a luxuriant coat of grass or crop of unripe grain. Even when aware of the hideous deception, the traveler through these vast and lonely mountains is betrayed into a sort of vague looking for farm-houses and other evidences of human habitation, where these great clearings open before him and so much rank verdure meets the eye. Only at long intervals, however, are any signs of improvement visible; these consisting mostly of the cabins of the *squaw men*, who support themselves and a numerous half-breed progeny by hunting, fishing, and the cultivation of a few acres rescued after a sturdy conflict with the all but irrepressible Fern.

Throughout the counties of Del Norte and Klamath, reaching south into Humboldt, there extends along the sea-coast a belt of Fern land having an average width of about one mile. The growth of this plant is here enormous, the stems being heavy and standing from six to eight feet high. The soil along this belt, as is generally the case with these Fern-growing lands, is very rich; producing, when once thoroughly reclaimed, abundant and unfailing crops of vegetables, grass, and all kinds of grain except Wheat. Berries, and fruit save the Apple and Grape, also do well here. Owing to excessive dampness, there being much fog even in summer, the Wheat suffers from rust, and the Grapes are mildewed, while the Apples are insipid and spongy. But there is no better country for growing vegetables and the cereals other than Wheat, or for dairying purposes, in the State. It takes three or four years to thoroughly exterminate the Ferns, after which there is no more trouble. Nor is there much difficulty even with the first plowing, unless the Ferns are very stout, since these plants keep the ground as friable as if it had been in summer fallow for years. Owing to its fertility and the ease with which it can be cultivated, the Indians of Oregon, Washington Territory, and British Columbia select this land for their Potato patches; and, though kept under steady culture for generations, it never fails to bring a good crop. There is then a likelihood that these Fern-clad mountains, now such absolute and lonely wastes, will some day be reclaimed and converted into productive pasture-land and grain-fields. The hills where now the worthless brake waves in perennial verdure may yet be yellow with cereal harvests, and purple with clouds of Peach and Apple blossoms — possibly white with bursting bolls of Cotton. The soil and climate of these northern counties may have capabilities of which we little know. The orchards of Trinity County ripen the Apple and the Almond, and the Rose blooms in her gardens all winter. The productive energies of nature reach here over a scale the range of which has not yet been fully tested. No experiments have been made with the more tender tropical plants and fruits; the farthest we have gone in that direction being to make trial of the Fig, Orange, and Almond, all of which have been perfectly matured in the open air. This entire region, with the exceptions named, is marvelously well suited for the raising of fruit. The snow upon the mountains, while productive of no severely cold weather—ice of any considerable thickness never forming in the valleys—has still the effect to keep the atmos-

phere at a low temperature, securing to the orchardist the benefits of a northern winter. The trees and vines, thus restrained from a too early budding, escape the later frosts, insuring for the crop greater certainty, and for the fruit superior flavor.

This county produces a variety of wild fruits and berries, some of the latter ripening early and possessing an excellent flavor. This is especially true of the Blackberry, which might therefore, no doubt be grown to advantage by our horticulturists; since, besides being prolific and hardy, their fruit would come into the market long before that of the cultivated varieties. The same might be true of the Gooseberry and Currant, also indigenous to this region. Besides these products, we have here the wild Peach, Coffee, and Nutmeg, while a little farther north and over on the coast we find the Whortle, the Sallal, and the Salmon berry. The wild Peach, Coffee, and Nutmeg bear only a partial, scarcely more than a fancied resemblance to the cultivated. It is even doubtful whether they belong to the same species, or whether they could by the most careful culture be rendered useful as a condiment of comestible purposes.

Ornamental Hedging.—The Hemlock is the evergreen *par excellence* for ornamental hedging. Combining as it does all the excellencies of other species, it will in addition thrive beneath the shade of trees where most kinds would fail. Those living near its native haunts may remove the young plants (say nine to eleven inches high) to their gardens; set them closely on the north side of a fence; erect a slight protection over them, and then at the end of two years they will answer for hedging in the full sun.—*N. Y. Tribune.*

OUR FRUIT MARKET.

Soon our markets will teem with the new season's fruit, ripening now under the influence of a genial sun, and citizens and strangers will again wonder at the size and profusion of the pomological wonders of California. Everything has this year conspired to render the fruit crop remarkably abundant, and, uninjured by frosts or fierce winds, it will come into this market by hundreds of tons from all parts of the State, but especially from the fertile counties that surround the bay of San Francisco. In some localities the fruit crop of this year will be double that of 1873. From the valley of Santa Clara comes the most cheering intelligence, but all fruit-growing localities report an unusually favorable prospect. There is probably no State in the Union better suited for fruit culture than California. Out of upwards of eighty million acres there are at least twenty-five millions that might be devoted to it. Indeed, much of the land that is worthless for any other purpose will return a profit of hundreds of dollars per acre when planted with fruit-trees. We have, therefore, in our future fruit crops a source of untold wealth, beside which all the far-famed riches of our placers sink into positive insignificance.

The fruit season lasts for half the year, from July to December, though long before July the first new fruits make their appearance in our city markets. In fact, this season, though particularly late, Strawberries have already begun to come down in considerable quantities, suitable for eating, but not for packing. During the remainder of the year, between December and May, the market is occupied chiefly by foreign fruit—Oranges, Lemons, Bananas, Cocoa-nuts, etc.—from the islands of the

Pacific Ocean. During the regular fruit season, the lower part of the city, the streets, wharves and stores—particularly in the neighborhood of Davis and Washington streets—are filled to overflowing with fruit of all kinds, packed away in cases or baskets, or open for the inspection of purchasers, and of the water-front *gamins*, who are ever on the alert to make free but unbidden lunches. Here at least one-fourth of all the fruit brought to the city is wasted, having been damaged in transit or in handling. It sometimes litters the sidewalks and streets, and it is a pity that the idea of selling it cheaply by auction to poor families has not occurred to some one, long ere now. It would not only put thousands of dollars into the pockets of the growers, but would afford citizens of small means an opportunity of obtaining a cheap and wholesome addition to the domestic larder.

The fruit supplies of San Francisco come from widely distant portions of the State, but are, generally speaking, all derived from particular localities. The valley surrounding the Bay of San Francisco, and along the Sacramento and Old rivers, contain the most fruit-growers. The counties of Sonoma, Solano, and Napa to the north, of Santa Clara to the south, and of Alameda to the east, are the chief supply source near the bay. In the valley of the Sacramento, in the county of the same name, and along that river for a great distance, may be found some of the greatest fruit-ranches in the State. Some of these cover hundreds of acres, and contain thousands of fruit-trees. From the southern counties, particularly from Los Angeles, we used to receive large quantities of Grapes, but of late years our supply from this source has been diminishing. Its crops of Oranges and Lemons, of which were shipped last year to San Francisco five million, and seven hundred thousand, respectively, do not sell so well in San Francisco as they otherwise would were the competition from Mexico and Tahiti withdrawn. The great bulk of the Grapes sold in San Francisco come from Sacramento, Sonoma, Solano, and Santa Clara. The Muscat, the Tokay, and the Mission are the principal varieties. The former have been introduced of late years, the latter nearly a century ago by the Spanish missionaries. Very few of the Sonoma growers send their Grapes to market; out of several hundred not more than half a dozen. The reverse, however, is the case as regards Solano, where comparatively little wine is made. Apples come from all parts of the State—the best from the northerly portion. Pears are shipped principally from Alameda, Napa, and Santa Clara, the Bartlett variety coming chiefly from the latter county. The Sacramento River and the Old River send us most of the Peaches that reach this market. Old River also sends us Apricots, as also do Sonoma, Napa, and Santa Clara. Thence also come Plums, which are likewise furnished in considerable quantities by Alameda. The Cherries sold in San Francisco grow principally to the north and east of the bay, in Alameda, Napa, Sonoma, and Colusa. Nectarines are grown extensively in Sacramento, Sonoma, and Napa, while some Quinces are raised in the counties surrounding the bay. The southern counties, of course, principally produce our Oranges, Lemons, and Figs, though they are grown in small quantities even as far north as Sonoma. Sufficient attention has not, however, as yet been given to the cultivation of Oranges and Lemons, the result of which is that we import immense quantities from Mexico and Tahiti, and shall

for a considerable period continue to do so.

The transportation to market of the fruit crop of the State employs during the season a great number of people. On the Sacramento river the steamers load from ranch to ranch, most of the fruit-ranches being contiguous to the river. From the Santa Clara Valley fruit is carried chiefly by rail; but the steamer *Reform*, which is able to carry several thousands of boxes, has already begun to make trips to and from Alviso, and will prove a formidable competitor of the railroad. Of course, all the Oranges and Lemons come by steamer, and are mostly loaded at Los Angeles. As before intimated, the amount of fruit damaged while being brought to market is very great, and it is surprising that means for its prevention have not been long since adopted. A great deal of the loss is caused by imperfect packing. Apples come in boxes of sixty pounds each, the receipts averaging 1,500 boxes per day during the season. The receipts of Peaches, in thirty-pound boxes, average 4,000 boxes per day. Pears are packed somewhat in the same manner as Apples, and average 1,500 boxes per day. Grapes are in boxes of all sizes, principally of thirty and forty pounds each. The quantity sent to the market is immense, individual growers sending as many as 10,000 boxes during the season. Receipts of Plums, in sixty-pound boxes, average 1,000 boxes per day. Fifteen hundred boxes of Apricots per day are received in the market. Cherries and small fruits come in boxes of twenty-five pounds each, and in chests containing from 120 to 150 pounds, in quantities not easily ascertainable. The prices on the wharf last year of the various kinds of fruit averaged as follows per box: Apples, 30 cents to $1.25; Pears, $1.25 to $2.50; Peaches, 75 cents to $1.25; Apricots, per pound, 4 cents; Plums, 3½ cents; Grapes from 1½ to 5 cents; Blackberries, 9 cents; Gooseberries, 7¾ cents; Cherries, 10 to 25 cents. Freight by steamer and rail was nearly as follows: Apples, 12½ cents per box; Peaches, 10 cents; Grapes, 10 to 12½ cents; Plums, 10 cents; Pears, 12½ cents, and the smaller fruits 35 cents per chest. What is the most notable in the matter of price is the immense discrepancy between wholesale and retail prices, it being sufficient to say, without entering into particulars, that the latter was from twice to five times the former. In this, as in other cases, the middlemen make immense profits. The value of the fruit crop of last year may be estimated in round numbers at two millions of dollars. From the tenor of the reports from all portions of the State the fruit crop of 1874 will exceed that of last year by about fifty per cent., and as the largely increased demand for packing will keep up the price, its value may be estimated fairly at three millions of dollars. Of the total yield, about one-fourth is packed throughout the State; from one-fourth to one-third is damaged by carelessness, and the remainder enters into consumption as fresh fruit. The export last year aggregated about two millions of pounds by rail and sea, of which two-thirds were packed. California fruit in an unpacked state has been shipped even to Great Britain. Fruit-packing forms now one of the most important of our industries; in a decade it will outstrip all. And when more attention shall be paid to Orange and Lemon culture, we shall be able to ship millions of boxes yearly to Eastern cities, which are now in great part supplied from the Mediterranean. —*Chronicle.*

VIOLA TRICOLOR (PANSY).

BY F. A. MILLER.

The Pansy (see frontispiece) is a universal favorite, known and admired by everybody, and for many good reasons it is deservedly called the "Pet of the Garden." The richness and endless variation in color of its flowers, its pleasing form, the easy manner in which it can be cultivated (producing an abundance of flowers both early as well as late in the season, and more particularly with us in California throughout the entire winter)—all of these excellent qualities make it indispensable to the garden. Quite a number of names have been given to it, irrespective of its botanical appellation. With the French the most popular name is "*Pensée;*" with the English, "Heart's-ease;" with the Americans, "Pansy;" with the Germans, "*Stiefmuetterchen.*"

The Pansy is generally considered an annual, because it is every year raised from the seed, and flowers within two months from the time of planting the seed. With us it is a perennial; but I have always found that to have good Pansies, fresh seed should be sown at least every spring, and a much better result can be accomplished by planting twice a year, early in spring and in autumn. Pansies, if allowed to become old, are apt to degenerate in color as well as in size. They require a very rich soil, a good deal of moisture, and a cool atmosphere; it is difficult to have fine blooms during very warm weather. The best Pansies I have had were planted either in October or in April, although in the peculiarly cool temperature of San Francisco fine flowers may be had all the year round, provided that the soil is well manured and kept moist.

The most important matter in the culture of good Pansies is to obtain the very best of seed; and frequent failures in obtaining first-class flowers must be attributed to the inferiority of the seed, which should only be gathered from the very finest and most perfect flowers—a precaution which seedsmen generally will not take. Purchase your Pansy seed from a house of well-established reputation. The seed may be sown in a box or pot filled with light sandy soil, and covered about one-eighth of an inch with the same material. Water well after sowing, and if you have any glass handy it will be conducive to the early germination of the seed to cover the box or pot with it, giving a little air during pleasant weather. The glass should be painted or whitewashed upon one side. After the plants are up, and have produced their second leaves, the glass may be taken off altogether; but a little shading from the sun during bright days is advisable, until the plants have become sufficiently hardened to be planted out wherever they are desired to grow and flower. Before planting, the ground should be well enriched, thoroughly spaded, and moistened if dry. Water gently after transplanting, and in a few days the young plants will be sufficiently established to take care of themselves.

Pansy seed may also be sown in the open ground, if the soil is well prepared and of light sandy quality. The former method, however, is the best and most certain.

At some future time I will say a few words as to the qualities of a good Pansy, and the varieties which are now considered the best.

The best labels for plants and trees may be made by writing with a lead pencil on slips of zinc, and attaching these to the plants by copper wire.—*Horticulturist.*

CALIFORNIA ORCHARDS.

In the Marysville *Appeal* of a recent date appeared an account of the Briggs orchard near Yuba City, which is claimed as one of the foremost in the State. This may be, but it is surpassed by an orchard in Alameda County—that of Wm. Meek, at San Lorenzo. Mr. Meek may be said to be the pioneer fruitier of this coast, having as early as 1847 planted the first orchard of grafted trees in Oregon. In 1860, Mr. Meek commenced farming and fruit-growing at San Lorenzo, Alameda County, and is now the proprietor of 2,200 acres of as fine farming and fruit land as there is in the State of California.

Mr. Briggs is stated to have 210 acres under fruit-trees. Mr. Meek has 260 acres. Almonds he makes his specialty, of which he has 27,000 trees in the ground; he has also 225,000 Currant-bushes, 4,200 Cherry-trees, 3,000 Plums and Prunes, besides large numbers of the best varieties of Apples, Pears, Peaches, Apricots, etc. He has experimented with Oranges and Lemons, and this year has commenced raising from the seed quite a large number. He is confident of their success, as they have done well in the orchard of his neighbor and old Oregon partner, Mr. Lewelling.

Mr. Meek is equally successful as a grain-grower. In 1872 he had 30,000 centals of Wheat and Barley, and promises to have as large a crop this year. He is careful in the rotation of his crops, and pursues in this regard the following course: Pastures five or six hundred acres one year; the next year he sows it with Wheat and Chevalier Barley, part each, and the third year with common brewing Barley. Alameda Barley is the best in the market, and brings the highest price. This year, in addition to his many other crops, Mr. Meek puts in 40 acres of Tobacco. His nursery embraces almost every variety of fruit-tree, and this season alone he has sold 20,000 Almond-trees. The Almond is subject to injury by frost, as it blooms early, but the crop promises to be the most profitable raised.

Origin of Double Geraniums.—Jean Sisley, a correspondent of the *Garden*, gives the history of the origin of double Pelargoniums, which was furnished him by M. Henri Lecoq, of Clermont-Ferrond, France. The first double Geranium is growing in M. Lecoq's garden, being, so far as known, an accidental seedling. Seeds from it, however, were sown by a horticulturist of that place, and several young double plants were produced, one of which was sold to M. Van Houtte, of Ghent. In 1869 M. Emile Chate, of Paris, went to Clermont-Ferrond, and, liking the young double Pelargoniums, purchased two. In June, 1864, he sent some flowers of one to M. Victor Lemoine, at Nancy, who immediately used the pollen of these flowers to fertilize Beaute de Suresnes, a pink Zonale. From this cross was obtained Gloire de Nancy. In 1867, by the same process, he obtained Madame Lemoine, the first double cherry pink Zonale, and Wilhelm Pfitzer, double scarlet; Marie Lemoine, one of the best double bloomers; Le Vesuve, double red, and Victor Lemoine. Many others, sold in England under different names, were raised from seed of Victor Lemoine. In 1872 Mr. Sisley obtained the first white double, Aline Sisley, by cross-breeding a white single with a double red seedling. Several choice double Geraniums have been grown at Ghent and in different places in France, but the origin of our best double flowers is given above by Mr. Sisley.

TREATMENT OF POULTRY, AND OTHER FARMING ITEMS.

BY MRS. A. HONKARENKO.

Last year, in the month of July, my husband, being disappointed in his city pursuits, proposed to me to retire into the country. We purchased a tract of eighty acres of land in the Eden mountains, Contra Costa County, Cal., where we only found a beautiful view and a plenty of rocks. In the month of August we built a small cottage. My husband found some old lumber, and put up a chicken-house of unique architectural proportions, but after being whitewashed it looked quite neat. In September we bought three dozen chickens, paying $21 for them. I have charge of the chicken department.

Many of the fowls are affected with scrofula in their feet and legs. This disease is contagious, and those that are suffering from it are not good layers, because they can not exercise enough One of the hens died from the disease; we dissected her, and found her choked with yolks. We took a cracker-box and converted it into a hospital for fowls affected with scrofula. I made a salve of white beeswax, lard, and turpentine, and by rubbing their legs with this preparation once or twice a day for one week, they soon became well.

To keep fowls healthy, the chicken-house should be kept clean and dry, and the floor covered with sand. Morning and evening I feed them with cracked wheat or barley; in the winter with cracked barley, adding fat and a little pepper to make them lay. Several times I found eggs without shells, so I burnt some bones to supply lime, and gave it to the fowls to eat.

I have sufficient eggs for my own use daily, and, from the middle of September to Christmas day, I received $18 from eggs that I sold during that time. I have also kept eggs for hatching, and now have the pleasure of feeding 100 beautiful fowls.

At the same time we purchased a cow with a young calf. She was a fearfully wild animal. We kept her staked, and when my husband milked her he had to tie her head and feet. Many times she has run over the hills like an infuriated tigress, until she was entirely exhausted. Now we have so domesticated her that she is like a kitten, and no trouble to milk. We had milk all winter from this wild animal, and made a little butter Christmas week.

Last November we planted Spinach, Lettuce, Peas, Radishes, and 130 hills of Potatoes. We had new Potatoes in the month of February for our own use, and the other vegetables all winter. Now we have planted vegetables of every kind, and soon expect to enjoy a fine vegetable garden. The ground is good; rocky in some places, but if the rocks are removed it is very fine land. We planted 250 Currant-bushes, 200 Grape-cuttings, Raspberries, Gooseberries, etc. They are all growing rapidly. We also put down some Olive-trees for experiment, and they are growing well.

[The foregoing indicates plainly what can be effected among our foot-hills, almost without means, even by inexperienced persons. There is no "Pike County" system of farming about such people. They work with Providence, and do not wait for Providence to do everything for them, as is too much the case in our prolific climate.—EDITOR.]

IN a report on the enamels employed to coat the interior of cast-iron cooking utensils, M. Poggiale states that many of these enamels contain lead, and dilute acids at the boiling point of water extract the lead in a majority of cases.

GRAFTING APPLE-TREES IN THE TOP.

An Illinois correspondent of *The Country Gentleman* gives the following very sensible views of top-grafting Apple-trees, which are of substantial practical value: "As a means of obtaining an early bearing and hardy Apple orchard, the following has been recommended by a friend of mine, a young and successful nurseryman and orchardist. Whether his advice should be followed or not, I am not so sure about; but it is possible some of the facts he gives, and the reasons he offers, are worth repeating. It is a fact that from twenty to thirty per cent. of the bearing Apple-trees in this part of the State have been killed within the past three years; and it is another fact, that of the young budded or grafted trees planted out at the same time, seventy-five per cent. are either dead or in a dying condition. Moreover, it is to be observed here that there is a wide difference in the development of trees of the same varieties, coming from different nurseries. Some trees make only a moderate wood growth, commence bearing early, bear continuously, and, it must be admitted, show early signs of decay; while others of the same varieties make a good deal of sprouty wood growth, a dense head, bear rarely before the tenth or twelfth year, never largely, and appear to be as much given to producing wood as the other is to making fruit. My friend thinks this difference in development is due to the difference in the mode of propagating adopted in the different nurseries. Trees from a small nursery, where the buds and cions for grafting are procured from mature and bearing trees, make trees that have very moderate wood growth, and bear early and heavily; others from large commercial nurseries, being necessarily propagated from the young and refuse sprouty growths of one, two, and three year old stocks, retain that habit when they get to be trees, and are therefore comparatively worthless. This striking difference in the character of trees procured from different nurseries, has never been sufficiently accounted for, and my friend's suggestion may help to solve the problem. His reasons, then, for recommending the setting out of seedlings, allowing them to remain one or two years in place and then top-grafting, are that native seedlings are undoubtedly hardier than those brought from a distance, and that since it is almost impossible to ascertain at the time of purchasing whether the young trees have been budded or grafted with buds or cions from bearing trees, or from the shoots or suckers of young ones, it is the shortest, cheapest, and surest way of procuring an early bearing orchard to procure cions from bearing trees and have them inserted. A seedling transplanted at three years may be grafted at four years and will bear two years after, while the average budded or grafted trees will not do as much at the tenth year.

NEW TUBEROUS-ROOTED BEGONIAS.

We feel assured that any plant bearing the name of Begonia will be received with favor by a flower-loving public. The easy culture, extreme beauty, and delicacy of the old varieties, have made them special favorites with amateurs. The new tuberous-rooted plant, the bulbs and seeds of which are imported this year for the first time, far exceeds in its size of flowers and brilliancy of colors anything of the kind that we have before possessed. The bulbs produce vigorous, branching, and at the same time sufficiently compact plants.

These are, generally, from twelve to eighteen inches high, and are covered, during the whole summer and until frost fairly sets in, with bright and elegant flowers.

B. Sedeni is, perhaps, the finest of these new varieties. It has large flowers, and is the most brilliant in color. Its reddish stems are furnished with a few long woolly hairs. The leaves are long, relatively narrow, unequal sided, and of a pale green color. The flowers have four to five petals—according to the sex—some of which measure an inch and a half or more in length. They are of a fine blood-red or flame color. If grown in a greenhouse or conservatory, it should have little heat and a great deal of air. It seems to thrive best in a rich, well-mixed soil of fresh earth and decayed leaves. It may be set out in the open border as soon as all danger from frost has passed, and it will succeed as well in the shade as in the sun. Although the flowering season lasts for several months, the plants should be taken into the house or conservatory as soon as frosty weather approaches. As our seasons in this latitude are somewhat short, we would suggest the keeping of the plants in a pot, which may be plunged in the flower border during warm weather, and taken up, at any time, without retarding their growth. As soon as the flowers cease to appear, the plant should be allowed a period of rest, and from this time they should be watered less and less, until the watering is stopped altogether. They should then remain undisturbed until the next season.

B. Sedeni may be increased by cuttings, but the method of doing this is somewhat peculiar. The cuttings must not be buried, as thus they would be apt to die without rooting. Place a little sod on slightly raised and partly shaded ground, and there, in open air, prick the cuttings, and they will soon root themselves. If there is too much light, shade them with a sheet of paper, or other article. The cuttings should be started soon enough to have time for rooting and forming bulblets before the end of the growing season, as otherwise they would not endure the winter.

The origin of *B. Sedeni* is not certainly known. The generally accepted opinion makes it a hybrid of *B. Boliviensis* and *B. Chelsoni*, but it is superior in beauty and much richer in color than either of them. The culture of the other tuberous-rooted varieties is about the same as that given for *B. Sedeni*.

The *Begonia Boliviensis* has been longer and is better known than *B. Sedeni*. Its flowers are not so large, and they do not correspond so exactly in color with the stems as do other varieties of Begonia—its stem being of a more greenish tinge.—*The Flower Garden.*

Don't Neglect the Trees.—Take care of the old ones, they are the connecting links between the present generation and those who have lived before us. There is a certain sombre solemnity that broods over the aged forest patriarch. Among its gray old boughs we read of other days, of an unremembered past, and a sort of grandeur steals into our contemplations, and a feeling of awe, akin to reverence, casts its unsought and yet pleasing shadow upon our souls, and our thoughts revert back to the flitting generations of mankind which this old tree has so long outlived. And so in the young trees, which we care for so gently, there dwells a nature that inspires delight, and distills it through all the gentler streams of life. And they too will live to inspire love, and awe, and reverence in com-

ing generations, which will be realized as "an emanation from the indwelling spirit of Deity."—*The Evergreen.*

A FLYING VISIT TO SOME OF THE NURSERIES AND FLORAL ESTABLISHMENTS IN OAKLAND.

BY E. J. HOOPER.

Going from San Francisco and its prevalent strong and cold winds and dense fogs, to Oakland, where these unpleasant visitants are moderated even in the small distance between the two cities—and consequently where the air is milder and more agreeable to both man and vegetation—one can not but be impressed with the difference in the general growth and luxuriant appearance of the trees, shrubs, and flowers, compared with those in our great metropolis. (It is true there are some exceptions to this in our city, in the locations of our nurseries.) It has been my pleasure lately, in the highest flush and glow of this delightful spring-time of the year, to view and enjoy the vast floral wealth for which this, as a second Brooklyn to New York, can most justly take credit to itself—or, rather, which she owes to a rich soil and a most genial climate; although the earth, being adobe, has required many additions by man of fertilizing substances, and much mechanical labor.

This beautiful suburb, if one may be permitted so to designate it, may very appropriately be called "*The* Garden City;" for these lovely gardens, in connection with princely mansions or handsome dwellings, everywhere abound. What glorious masses of brilliant and variously colored plants and flowers arrest the enchanted and ravished eye, in whatever direction it may turn! Nature here seems to possess the fullest opportunity and greatest means to perform her best with her arborescent and floral powers. In the East, unless with great pains and labor, and only in rather exceptional cases, can we witness any similar display to such as here meets our naturally impassioned gaze. In our much-favored clime and soil on this coast, every plant and flower in favorable locations grows and flourishes with a vigor, gigantic size, luxuriance, and even glow (because of abundance of efflorescence) of color, which we do not often witness in any of our Eastern States.

In one of the best and most neat and systematically arranged and managed of the floral-sale places in Oakland—the Bay Nursery—I observed a large bed of Carnations so densely thick with flower shoots (it was too early in the season for them to be in full bloom) that they were almost as abundant as the ears in the most closely planted grain-field that could ever be seen, and these were mostly very choice varieties. It was the same with the Roses, Verbenas, Gladioli, Heliotropes, Heaths, and indeed almost any of the families of flowers that can be named. The beds of all the Roses (even of one-year-old cuttings) and other flowers, in the nurseries I had time to visit—namely, of Messrs. Hutchison, Nicholson & Davis (successors of Mr. Kelsey) Nolan, and Hampton & Turnbull—were one dense and gorgeous mass of bloom, and each Rose individually of gigantic size according to its variety. Here there is no killing outright or cutting down of plants by the frosts of winter, nor any great care nor shelter needed. Here the soil, too, seems to suit them well, it being formed chiefly of a rather kind and favorable loam with the adobe foundation, in which, generally speaking, flowers of more substance and depth of coloring will be produced than in

that of a soil of a lighter or more sandy character.

It is hardly necessary for me to say, that the establishments of the nurserymen and florists I have just named—especially Messrs. Hutchison, Nicholson & Davis, and Hampton & Turnbull (although these latter gentlemen have commenced in a new location), are in a flourishing condition, and well supplied with an excellent stock of both old and new plants. This is mostly well known to the public at large. Among these florists, it is not too much to say, there are to be found as many as 1,500 varieties of plants; and at this time there are in these gardens, distributed more or less among these florists, 250 of them in full bloom and in the most luxuriant condition. Not less than 150 sorts of Roses are blowing in these establishments, 100 varieties of Pinks and Carnations, twenty-five of Lilies, thirty of Tulips, seventy-five of Geraniums (the "double white" Geranium among them, now beginning to be in plenty), and many rare plants, among which is that beautiful plant the *Atropodium citratum*, *Abutilon Thompsonii*, *A. camelio*, and the attractive, fine-colored, striped or fringed, and costly plant, *Yucca gloriosa*, a large specimen of which in the gardens of an Oakland amateur is valued at over $100, and is much handsomer, at least in foliage, than the Yucca or Spanish Bayonet, now in bloom at the Military Academy, which has attracted much notice. Its flowers are similar in color and in lily or bell-like form to those of the *Yucca filamentosa* (which throws up several flower-stalks), but much larger in stalk and flowers; similar in habit to the Agave, and about one-fourth the size of a well-grown Century Plant.

Among many other fine plants in these nurseries are *Astilbe Japonica* (Spiræa Japonica), *Eucharis Amazonica*, *Cobœa alba* (a fine climber), *Cobœa scandens variegata*, *Salvia splendens alba*, *Passiflora princeps*, *Begonia Boliviensis*, *Strelitzia reginæ* (Bird of Paradise), *Deutzia crenata flore pleno*, Dwarf Pomegranate, *Spiræa Billardi* (rose-colored flowers), *Alyssum maritima fol. var.*, *Clematis purpurea grandiflora* (the purple flowering Clematis, large and beautiful), White Wistaria, Purple Magnolia (very rare) from Japan, Double White Thorn, Double Red Thorn, etc.

ALL ABOUT THE GLADIOLUS.

It seems singular that all authorities should concur in deriving the word Gladiolus from the Latin *Gladius*, a sword; when the Latin word *Gladiolus*, a small sword, not only better indicates its habit, but is the very word itself. Its nominative plural, *Gladioli*, is certainly more euphonious than the mongrel sound, Gladioluses.

Upwards of twenty years ago the first seedling Gladiolus was produced by Van Houtte, who named it *Gandavensis*, from its native town of Gand. It is a hybrid of *Psittacinus* and *Cardinalus*, which may be considered the parent stock of the almost innumerable hybrids that have been since produced in France, Germany, England, and finally in the United States.

Inexperienced amateurs are wont to consider the production of a new variety by hybridization as a complicated process, understood and practiced successfully only by professional florists. This is a sad mistake, since the operation is simple enough; and by the mistake we deprive ourselves of the stirring delight of creating new combinations, which are all our own, and to which we are entitled to confer such names as fancy may suggest. It is true that a little of care, and a good deal of pa-

tience are requisite, as we watch and protect them *ab ovo usque ad mala*, but we are glad to forget this when, during the third or fourth season, a flower of rare beauty unfolds itself, unlike, in some of its features, any other flower upon the face of the earth.

The simpler, though less reliable mode of hybridizing, is as follows: Suppose we wish to mix a Shakspeare with a Vulcan. Just as soon as a flower of each is fully opened, and the pollen of the Vulcan is matured upon its anthers, remove the anthers by their filaments, and rub them carefully and persistently over the trifid stigmas of the pistil of the Shakspeare. But the fecundation of the pistil of the Shakspeare may already have been accomplished from its own pollen, so that, in order to feel *confident* that our union has been effected, (as in the safer method) the anthers of the Shakspeare should be removed as soon as the flower has sufficiently developed to enable us to do this without injury to the corolla. A very fine clean brush may be used in collecting and spreading the pollen from the anthers of the Vulcan to the pistil of the Shakspeare, at a later stage of maturity. The enlargement of the ovary will soon afford us unmistakable evidence that our experiment has proved a success.

The seed-pods (three-celled and containing from fifty to seventy-five winged bulblets not larger than pin-heads) may be cut off with the peduncle when ripened, or left until the bulbs themselves are taken up for the winter. Separated from the cells of the pericarp, and placed in envelopes or boxes in a temperature not less than thirty-two, they will require no further attention. In the ensuing spring, as soon as the ground has mellowed, prepare a little plat four feet square in a warm exposure. This will be found ample for the growth of a thousand seeds or more. Two inches of soil (two-thirds sod soil or leaf-mold, one-sixth old manure, one-sixth pure sand) should be thoroughly mixed, sifted, and firmly leveled over the plat. In the latter part of May eradicate all grass and seeds that may spring up from the soil, and re-pulverize and level its surface. Sow the seeds (it matters not how closely together so that they do not rest the one upon the other) and cover adequately—an eighth of an inch, perhaps—with a reserved portion of the above compost.

The first season's growth will consist of a single, slender, upright blade of grass, from two to four inches in height, and the seedling bulblet will be found, at its expiration, to have doubled, trebled, quadrupled its size. It will be noticed, therefore, that bottom heat or protection of awnings or boughs, etc., so generally recommended, are as needless as they are, sometimes, unattainable. Dispose of them for the winter precisely the same as before, and prepare a plat for the second season's growth the same as for the first, only adding an inch to its depth and planting the bulblets half an inch apart.

The subterranean stem of the Gladiolus is properly a *corm* destitute of fleshy scales, and yielding up its life in one season to the support of the progeny. Blooming bulbs vary from half an inch to four inches in diameter, and the flower of the one may be just as perfect as that of the other; so that we should not be influenced in our selection so much by size as by their depth, solidity, and symmetry.

Specific rules as to the composition of the soil in which it is advisable to plant the bulbs of Gladioli need not be presented. Their unsqueamish appetites and robust health insure a vig-

orous growth, if we will but avoid all low, heavy, damp situations, and supply a liberal admixture of sand and a surface dressing of manure. The constituents of the soil and size of the bulbs determine the depth at which they should be planted. If the soil be loose and sandy, and the bulbs large, four inches, measuring from the top, will not be found too deep, and will afford a strong support to the plant when in its perfection. As the soil is less sandy, they should be planted nearer the surface, limited only by a depth sufficient for the development of the new bulbs without exposure. When stakes are deemed necessary, stick them so that the plant will incline away from the stake and rest upon the yarn, which must be fastened around the flowering stalk just below the first bud. If planted in beds, they may be placed so that the bulbs almost touch each other, if so desired, since they derive very little lateral support, and their adventitious roots spread out scarcely beyond their own circumferences.

To insure a constant bloom through the summer and fall, until severe frosts; begin planting from the fifth to the fifteenth of April, depending upon the promise of settled weather. Nothing is gained by planting earlier: the bulbs remain without a thought of germination, likely to rot or to invite the attacks of worms by their external decomposition. The following experiment, made in the spring of 1871, is relevant. Don Juan, Vesta, and Meteor were planted March 23. Don Juan and Vesta appeared April 30th, and Meteor rotted. John Bull, Stella, and Le Pousin were planted April 5th, in the same soil, exposure, etc., and they also appeared April 30th.

Nor is it advisable, either, to start in pots. Our season and climate are perfectly adapted to their culture, and what is gained by forcing is more than lost by the check they experience when plunged into the open ground. Dividing our collection into sixteen parts, we may continue to plant one part every week until the 1st of August; leaving the largest number of bulbs in those parts which are to bloom when we desire our finest display. Remove the bulbs from the earth when it is evident from the leaves that the plant has passed its fullest development. Those planted late in spring or early in summer need not be removed until after frost. Indeed, the fact that the surface of the ground may freeze without injury to the bulb, renders all solicitude upon this score unnecessary.

Various methods of preserving the bulbs and bulblets during the winter have been suggested. Merely placing them in small boxes with a cover of rags, tissue-paper, sawdust or sand, and avoiding a temperature above sixty or below thirty-two, is plainly the simplest, and may be relied upon as insuring their best health and vigor. The bulbs should be dried in the sun under cover of glass or in the window of a room. Two inches of the stalks should be left upon each, and to this a little ticket, with the name, may be easily and securely attached.

The bulblets, (varying in size from an eighth to a half inch diameter, and from one to fifteen in number) which form for the most part between the old and new bulbs, differ from the parents only in that they require one or more additional seasons of growth before they can bloom. They are just as true to every characteristic of the parent as the new bulb or bulbs that form above it, and flower the ensuing season. If, having a rare bulb, we desire to induce the formation of bulblets, it is well to dig down to its surface, after the leaves

have grown a foot, and gently scratch its sides until the cuticle is penetrated in various places.

Most of us, who are interested in plants, are possessed of an especial fondness for particular flowers, of which our friends, who view them through plain glasses, can feel but a slender appreciation. But, whether we view the Gladiolus as regards its prolific reproduction, its blooming period, its easy culture, its compactness, its freedom from insects, or its incomparable spikes of bloom, if it does not justify the furious enthusiasm which made a Tulip worth its weight in gold, it certainly merits to be ranked among our choicest flowers. —*The Flower Garden.*

TREE PLANTING.

With the rapid destruction of our forest trees, it is none too early to agitate the subject of replacing the trees by cultivation in some practical form. This subject is receiving special attention in some parts of the West, and individual farmers, communities, and clubs are setting out trees on a large scale. Will it not pay in New England? The production of wood for fuel and mechanical purposes would no doubt have a greater interest, but for the too vague ideas of the slowness of tree growth. There are trees that with proper cultivation will grow very rapidly; some, it is said, will acquire a circumference in five years of from eight to ten inches. With this rapidity of growth, it is easily seen that a few acres in a short time, with the prospect of a scarcity and a high price of timber, would make a valuable product. We mention different kinds of trees which are especially valuable for their wood and fruit, and are easily cultivated. One is the Chestnut, which is already a specialty with nurserymen, who provide the small trees. But they can be grown from the seed. This kind of tree is adapted to rough, untillable land, much of which has been cleared up and is now going to waste. The Maple, which is of a little slower growth than the Chestnut, yet grows rapidly, and the wood is very valuable; some varieties are especially adapted to wet and swampy lands. For ornamental foliage and for sugar, the Maple should be one of the most popular of trees, and the timber is getting to be almost as valuable for mechanical purposes as some of the foreign woods. It was once stated that one Ash-tree in this country made over three thousand rake-handles.

We have thus spoken of forest-tree culture as a source of profit; and much more will be said, we are sure, of the practicability of this culture after it has been tried, for it is comparatively a new subject, and needs at least to be experimented upon to get the facts. That it will pay, on a small or large scale, there can be no question, if there was no other object but to raise trees for the timber. But we want more trees for their fruit, for their shade and protection, for fuel, and especially for their climatic influence; for the destruction of our forests has unquestionably had the effect to turn away the fall of rain, causing the drying up of springs, and the decrease of supply for our water-power fed by the small streams. If trees were planted upon the hill-tops of New England, they would break the force of storms, shield from the winds, and increase the fall of rain. Tree planting by the way-side or in orchards should receive more attention, and it may become a department in Agriculture that will be as successful as any other.—*New England Homestead.*

A LESSON TO FRUIT-GROWERS.

Last spring the bloom of the fruit-trees, as now, promised a very large crop of fruit of nearly all varieties, in all sections of the State. Then, as now, the weather up to the first of April indicated a plentiful supply of moisture in the ground to mature the crop promised. The orchardists therefore generally took no steps to thin out on those trees that were plainly setting too much fruit for them to mature in good condition, even for a favorable season. The season did not maintain during the summer the promises of the spring. The north winds of the latter part of April and May blew away the dampness from the soil, and even dried up the sap of the trees themselves. The fruit on the overloaded trees first felt the effects of the drought, and its growth was checked when not half size. The limbs of the trees, especially of the Peach, being deprived of the natural supply of sap and consequent elasticity, broke down under the burden they had been allowed to attempt to bear, and the orchardists and the country were great losers. The experience of the past season should teach our orchardists a lesson for a rule of action this. However this season may terminate, whether favorable or unfavorable to maturing the fruit, the only safe plan for our orchardists to pursue at this time is to thin out the blossoms, or the small fruit when set, on all trees indicating too great a quantity to well mature. The superiority in size and flavor of the fruit left after such thinning will abundantly pay for the labor of thinning, even should the season continue favorable to the end. However, should the present season fail to fulfill its present promises, as did the last, the precaution taken and labor expended by our orchardists, in thinning out the present crop, will not only be well paid for, but their trees will be saved from injury and damage. We know that orchardists may look upon the thinning-out process as slow and expensive, but it has been found to pay, and pay well, in every other country, and most certainly would in this.—*Sacramento Record.*

The Fever-tree.—A recent number of the *Scientific American* has an interesting article on the Fever-tree of Australia. The article is illustrated by a very perfect drawing of a branch with foliage and seed. We recognize at once in this cut our old friend the Blue Gum, with its botanical name of *Eucalyptus globulus*, whose virtues we have set forth in a number of articles. The sanitary qualities of this fever-tree were recently discussed by the French Academy of Sciences, with satisfactory conclusions. This tree is becoming very abundant in California. Probably not less than 100,000 young trees have been sold in San Francisco and Oakland this year. In the latter city there are trees of this species which were set out about twelve years ago. We judge that these trees are now about seventy feet high, and not less than twenty inches in diameter. But any one who will take the trouble to go out on Telegraph Avenue, to a point near the Military Academy, can verify these estimates.

Now it is not to be denied that there is an undesirable amount of malaria in California. There is hardly a town in the State wholly free from it. In Kern County, and in the rich bottom lands of the interior, malaria, or chills and fever, is very common. The Blue Gum possesses anti-febrile qualities, and so probably does the whole family of aromatic gum-trees. They will grow any-

where in the State where it is not too cold, and they grow with astonishing rapidity. The 160 acres planted with gum-trees two or three years ago by Mr. Stratton, now Surveyor-general, constitute a forest, with the promise of yielding more satisfactory returns than ordinary grain crops. If this fever-tree has this double value, it ought to be planted on every farm where it can be made to grow in California. —*S. F. Bulletin.*

Birds in the Woods.—One can not go far into the woods in any direction without observing what a protest the birds utter at first. There are harsh screams, sharp notes of warning, and general scolding. Now, every bird has a great deal of curiosity to take a look at strangers. For a time they flit about in the tall tree-tops, and afterward begin to hop down to lower limbs, and, gradually descending, come to the ground, or on to low bushes. By remaining quiet an hour or two, a dozen or more will circle around within a few feet, turning their heads on one side occasionally, and quizzing in a saucy, merry way. In a little while one may be on intimate terms with the very birds which protested so loudly at his coming. They will tell him a great many secrets. The leaves of his book on ornithology may be a quarter of a mile square, but what can not be read on one day may be read on some other. Even an owl burrowing with a ground-squirrel, and both agreeing very well as tenants in common with a rattlesnake, may suggest questions of affinity and community which it might be inconvenient to answer at once. If you prefer to have some readings in the book of nature, you can turn down a leaf and go back the next day with the certainty that no one has lugged off the volume. And if your finger-mark is a tree 250 feet high, there will be no great difficulty in finding the place.—*W. C. Bartlett, in Overland for April.*

FAST COLORS—HOW TO TEST THEM.

This is a subject that we are certain will interest not only the dyers, printers, and dealers in cloth and glove-leather, but also many other classes of manufacturers and consumers. Professor Stein, of Dresden, has recently published a little book on this subject, from which we extract a few tests which can be readily applied by persons who are not chemists, and who have no laboratories to work in.

Red.—A piece of goods is first boiled in soap-water, which should remain colorless or nearly so. Secondly, it is boiled in lime-water, which should be colored but little, if any, while the color of the goods must grow paler, or become brown or yellow. These simple experiments suffice to indicate the presence or absence of cam-wood, archil, saf-flower, santel, and the coal-tar colors.

Yellow.—The most permanent yellow is madder; the least so are Orleans and turmeric. Only those of the first class will stand washing. To test a yellow, it is first boiled in water, then in alcohol, and finally in lime-water. If the former are colored quite yellow, and the latter a reddish-brown tint, the color is not fast.

Blue.—This color is not fast, if on boiling with alcohol it gives to the liquid a red, a violet-red, or a blue color; or if, on warming it with muriatic acid and water, or alcohol, the liquid turns red or brown-red.

Violet and Purple.—Madder violets, and those formed by combining indigo-carmine with cochineal, are fast. If

fast colors are combined with fugitive colors, they lose their value. All violets are to be considered poor if they give up a considerable amount of color when boiled in equal parts of water and alcohol, and allowed to stand ten or fifteen minutes. Also, if they change to a brown or reddish brown by boiling in diluted muriatic acid.

Orange.—The goods are first boiled in water; if this is colored, the colors are fugitive. If the water remains colorless, the sample is next boiled with alcohol, to which it should give no color.

Green.—Diluted alcohol should not be colored blue, green, or yellow, when boiled with the goods, nor should muriatic acid acquire a red or blue color.

Browns.—Are not so easily tested. If, however, they give a red color to water, or a yellow color to alcohol, they may be considered as fugitive.

Black.—If, on boiling the goods in water containing some muriatic acid, it only imparts a yellow color to the liquid, the color is fast. If on the other hand the liquid acquires a red color, and the stuff turns brown or reddish brown, the dye is not permanent, but nearly worthless.—*Journal of Applied Chemistry.*

Growth of Trees.—For the successful growth of trees, fruit, evergreen, and forest, it is essential that air and moisture penetrate to the roots. Therefore, unless the earth is made mellow upon the surface around newly planted trees, they "languish and pine," and "languishing they die." Turf or grass sod is usually very close and dense, and not only very effectually prevents the necessary aeration of the soil, but in many cases prevents sufficient moisture reaching the roots. Then never dig a hole in greensward or grass land to plant trees in.

Editorial Portfolio.

The newness and freshness of California is a marked feature of interest to all visitors from abroad, and this inquiry is now rapidly extending itself, so that those who have been here once will surely be the forerunners of many friends, to whom the details of delightful sojourns and the novelties encountered here will be a constant source of delight, only to be fully gratified by actual experience. Recently we have had among us some of England's brightest literary men, who were struck with the marvelously favorable conditions of so new a country. These men were close observers; they inquired into the forces now here for the future development of so great a territory; they looked at the physical condition of the population, made comparisons with other sections of the country, asked about the manner and mode of bringing our many acres to the notice of the immigrant, discussed the best manner of fostering all interests conducive to the welfare and betterment of the working classes, and consulted our leading men upon a wide scope of topics.

What specially attracted our attention was the interest they took in our flora, making close inquiry and preserving most rare plants that came in their way. Can we fully estimate the benefit to come to us from such careful observers? Their associates are the learned of the world, and will not such investigations in a thousand ways come back to help us in our yet comparatively pioneer work? Beyond the seas, in crowded centres of population, they will appreciate the wide virgin domain here open for settlement.

In another respect we are highly pleased, and that is the commendable effort making on the part of the Central

Pacific Railroad Company in gathering the plant-life of this coast, for exhibition at the next Mechanics' Institute Fair to be held in this city. The company will also make such an exhibition an important feature of the Centennial Fair at Philadelphia in 1876. In this laudable work the Express Company of Wells, Fargo & Co. will render assistance in collecting and forwarding. Let us all lend a helping hand, and the results will, in a comparatively short period of time, greatly surprise us and the whole world.

Wet and Dry Seasons.—We learn from Governor Stanford, President of the Central Pacific Railroad Company, that it is the purpose of the company to investigate the wet and dry seasons of California by felling one of the oldest Oaks to be found in the State; the locality to be well considered as to the distribution of the rainfall. They will take a tree that is say two hundred years old, make a clear horizontal saw-cut near the base (leaving well-defined faces), and by observing the layers or rings of growth of each year, they think it possible to note, with approximate accuracy, the rainfall during those two hundred years. This is an important matter for investigation, for it might to some degree foretell the future fall of rain on this coast—an all-absorbing subject to the agriculturist in this climate.

Mechanics' Institute Fair.—Progress is rapidly being made with the extensive building for the next exhibition of this society. It is projected on a vast scale, and will undoubtedly be one of the finest exhibitions ever held in this city. The Fair will open on the 18th of August next.

The Humea Elegans Purpurea.—This graceful biennial, with its showers of drooping, grass-like blossoms, may be charmingly used to give height and lightness to the centres of flower-beds and garden vases; serving, indeed, the same purpose as do ornamental grasses in a bouquet. It is also effective when used as a background, with standard Fuchsias, and other tall flowers, for beds that skirt the piazza and walls of the house. Though its minute blossoms are fascinatingly pretty when closely examined, they are not at all showy in form or color, and, apart from their undeniable grace, the plant may have few qualities to recommend it to general favor. But, in connection with more brilliant flowers, its mellow russet, wrought of tiny flecks of brightest hues, gives the effect of a Persian fabric, toning and blending to a rich and pleasant harmony the sometimes startling contrasts of the garden.

The *Humea* is a native of New South Wales, and belongs to the extensive and intricate order of the *Compositæ*. The seed should b sown in a moderate hot-bed early in the summer; then potted off and kept in the open air until winter, when the plant must be removed to the greenhouse to await its final setting out in the garden during the spring of the second year. It is well to repot the plants several times during the first summer, and each time into a somewhat larger pot. This process will so decidedly increase its strength and vigor as to amply repay the additional trouble.—*Flower Garden.*

The operator's activity, in spring, almost regulates the whole season. Every weed ought to be cut down as soon as it appears, and the proverbial saying will be realized, "A garden that is well kept is easily kept."

REMARKS ON FRUIT CULTURE, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Take this year altogether, so far it is a most prolific one. There is a great abundance of all kinds of fruit except Apples. With regard to these, this is styled by some cultivators the odd or alternate year. In other words, it is found that Apples bear very fully only every other year. This does not refer to all sorts of this valuable fruit, but to the majority of them. From whatever cause this may arise, whether from the nature of some particular kinds, or from their habit of over-bearing one year and a consequent weakness and exhaustion the next, or for certain other reasons, there can be no doubt of this fact. No matter how these trees may be pruned, and otherwise treated, they will fall off in their profuse bearing every second year to about one-third less than their full bearing. This of course may happen at different times, and to the different cultivators in different localities. This year this happens to be the case at the Suscol orchards of Mr. Thompson.

With respect to Cherries this season, the north winds, although they have been far from frequent this spring, have diminished the productiveness of the May-duke, and some of the earliest sorts. These winds appear to have injuriously affected the blossoms in their earliest stage, and, consequently, these kinds will have a diminished crop. All the later varieties are bearing as full as usual, and their profuse crop every year does not affect their productiveness in this our favorable climate. Upon the whole, the generality of the fruits have been uninjured by frosts or blighting or drying winds.

Strawberries, though particularly late, when they did come came speedily, in vast quantities, suitable for eating but not for packing.

I have for several years referred to the immense profits made by middle-men. It is a great pity that the enormous quantity of fruit that is wasted because the middle-men can not obtain the prices they put upon it, is not purchased by some, and sold cheaply at auction to the poorer classes of the people. This would be a great advantage to the growers, and would afford citizens of slender incomes a good chance of getting a healthy diet to be added to the other food on their tables.

The Grape crop, in consequence of no injurious frosts, nor destructive insects, nor rot, will be vastly great this year, unless an inimical agent of some kind should arise between the present time and maturity. Every year the best kinds are being increased, and the more common, as the Mission, are being less planted. As to the Eastern sorts—the Catawba, Isabella, Ives Seedling, etc., etc., native seedlings—they are not of a quality sufficiently good to compete with the foreign ones, and are merely raised chiefly in gardens on trellises as fancy fruit, and for their beauty and delightful shade. Their pulp is comparatively firm, solid, and acid, and their juice, especially that of the Catawba, is very agreeable to the palate.

Our weather and climate this last winter and spring have been peculiar. We have had a fine and plentiful rainfall, but it has been attended with unusual cold throughout the winter and spring months. This would lead us to speak of changes of climate, probably, in all countries. It would appear that the climate of any particular region is not persistently the same through a long series of years. It is liable to be affect-

ed by agricultural operations, drainage, tree-planting, destruction or denudation of forests, change of ocean currents, and other circumstances. We have at some seasons cold when we should expect heat, and warmth when we had every reason to look for cold or frost. Meteorologists who profess to speak scientifically, fail to enlighten us on the cause or causes of these phenomena.

I have several times noticed that successful and deserving process of fruit and vegetable drying—*the Alden*—now in full operation at San Lorenzo and five or six other points in this State. This process is now fast becoming generally known. It removes the water from animal and vegetable substances in a few hours, by pneumatic evaporation. The conditions of the natural or common method of drying are such, that decay commences before evaporation begins, and continues through every stage of the process, until all the essential flavors, which constitute the charm of freshness, are lost. The most delicate fruits and berries, and the ordinary products of the farm and garden, are, when subjected to this plan, in from two to four hours deprived of water, and become also greatly reduced in bulk (for instance, three ounces of Pears dried by this process would by the ordinary method of canning have weighed two pounds—a grand item in the expense of transportation), and can, at any time, by simply soaking in cold water, be restored (for cooking purposes) to their original flavor, form, and substance. To quote the words of the circular in this business, which it requires nothing but common sense to indorse: "There are thousands of acres in California where all the conditions are favorable for the production, in the greatest abundance and perfection, of the finer varieties of fruits, such especially, as Prunes, Plums, Apricots, and raisin Grapes" [the Muscat of Alexandria, for instance]; "fruits which can not be successfully raised east of the Rocky Mountains, and for which there is, and always will be, an unlimited demand." Sun-dried fruit may be considered comparatively a failure. There were about eighty evaporators in full successful operation during last year, located in twelve States. The improvements made in this business, and the reduction in the expense of the machinery, etc., will doubtless render the cost of this method not too great for general introduction and adoption. The superior excellence of the fruits, etc., so treated will always make them command higher prices than the common dried fruits.

Since our last report all kinds of vegetables, of course, are greatly increased in supply, and much cheaper. Cucumbers have come in fast without protection. The first Currants and Blackberries were received on the 15th of May from Alameda; the last from Mr. Aughinbaugh. This Blackberry is a seedling originated by Mr. Aughinbaugh, and its arrival in market in a perfectly ripe condition sustains his claim that it is a month earlier than any other variety. The fruit is very large, and of fine flavor. Strawberries were still plentiful and cheap (at one time the market was glutted with them), up to the second week of this month (June). Cherries were received in great quantities all through the latter part of May, and are still in good plenty, and at reasonable prices. Gooseberries have been since the 15th of May sufficiently abundant and cheap. Currants became plentiful about the first week in June. About the 22d of last month the supply of Strawberries reached from 600 to 700 chests, say 60,000 pounds per day, and prices showed an important decline.

TAMARIX.

These very elegant and hardy shrubs should be more extensively used in our gardens and lawns. The flowers and foliage both are ornamental; the latter remaining till quite late in the season. Its numerous branches are profusely covered with very delicate, slender, thread-like leaves, which give them a feathery effect; somewhat like, but more elegant than those of the graceful Pines. The flowers are very minute, appearing in the spring before the foliage, and covering the plant with long terminal spikes of pinkish blossoms. The shrubs bloom a second time in the autumn, but not so profusely. They require a deep sandy soil, and present the best effect when planted singly in the grass. When once established, no further attention is necessary except an annual pruning. But this is of great importance. Cut them back, half way down, every spring, as otherwise the branches will grow scraggy and awkward.

The Tamarix is supposed to have received its name from the Tamarisci, who, in ancient times, inhabited the Spanish side of the Pyrenees. It grows plentifully on the banks of the Tanaris, in Spain. There are not many species, but all are easily grown in any temperate climate. As they thrive better where both air and soil are impregnated with salt, they are especially adapted for the gardens and lawns of sea-port towns. In England it is frequently found on the south coast, and often attains a height of from twenty to thirty feet, with a stem twelve inches in circumference. It seems to be the only shrub that grows well in positions exposed to the spray of the sea. It is said to be particularly beautiful in France on the road from Pontorson to Mount St. Michel, where it forms high hedges to the extreme edge of the sea-sands. It was not originally a native of that place, but sprung up in its appointed time, when the salt waves took possession of the wide tract of meadow and forest.

The twigs of the Tamarix are considered slightly tonic, and its ashes yield a remarkable quantity of sulphate of soda. The celebrated manna of Mount Sinai is supposed to have been an exudation from one of the species of Tamarix, and to have been caused by a small insect of the *Coccus* tribe, which sometimes covers the larger branches. This manna-like substance consists entirely of pure mucilaginous sugar—a singular production, in view of the fact that the plants grow only in saline situations. The Tamarix may be propagated by cuttings taken off in the autumn.—*The Flower Garden.*

Orange Culture in Florida.—As evidence of what has been done in Orange culture in the State, we cite a few instances. Dummitt's grove, on Indian River, is perhaps the finest in the State. It cost its proprietor to take care of it last year $1,000, and yielded 600,000 Oranges, for which he was paid $11,000. This grove has 3,000 trees, which, with proper care, would average 3,000 Oranges each, and give an annual income of $50,000 to $75,000. H. L. Hart's grove, at Palatka, yields him an annual income of $15,000 to $20,000. Arthur Ginn's grove of 1,100 trees, at Mellouville, pays him $12,000 to $15,000 yearly, and is worth $100,000. Besides these groves there are a great number of splendid promise; but, having been planted of late years, the incomes derived from them are as yet of little moment. Mr. De Barry, of New York, has a grove of 20,000 trees, near Enterprise. Mr. C. S. Brown, of New York, has one oppo-

site Palatka, of 1,200 trees; and Mr. James Patterson, of Toronto, has on Banana River a grove of 8,000 trees.—*Palatka (Fla.) Herald.*

THE CLOTH OF GOLD ROSE.

Andrew S. Fuller, of the *Rural New Yorker*, expresses doubt whether any of the newly famous yellow Roses are at all superior to the old and well-known "Cloth of Gold," and speaks thus of his experience with it: "More than twenty years ago I purchased a plant of the beautiful Noisette Rose, known as the Chromatella, or Cloth of Gold. It has been a favorite of mine ever since, and, although many competitors of a similar color have been introduced, like the Marechal Niel and Isabella Sprunt, still our old Rose is without a superior. Like some other varieties of this class, the plants do not bloom very freely upon their own roots until two or three years old, but then they make up for lost time. When grafted or budded upon strong Manetti or other free-growing stocks, the plants will bloom when only a few months old; but the novice in Rose culture is likely to allow suckers to grow from the roots of the stock, thereby robbing the graft of sustenance, soon destroying it. If a person can only have patience, and wait for a plant on its own roots to attain age or size, he will be well repaid in abundance of the most deliciously fragrant, large, pale lemon-yellow colored Roses that the most enthusiastic admirer of flowers could desire. A six-year old plant of this old Cloth of Gold Rose has been perfuming my greenhouse for several weeks, and to-day it is loaded with dozens of full-blown flowers, and half-opened buds; and, upon the whole, it is as grand an ornament as one could wish for conservatory or parlor. Plants of this old Rose can be had very cheap of our florists, and no person who loves Roses should be without it. If a person has no greenhouse in which to keep the plants in winter, they may be bent down and covered with earth, or dug up and heeled in and then protected with coarse litter or manure."

Editorial Gleanings.

Poisonous Plants.—Every year, and chiefly in the spring, we read accounts of poisoning by the eating of wild roots or plants. These cases are generally of children who meet with roots which they take to be familiar vegetables, such as the Parsnip or Carrot. The roots which are the cause of these accidents are usually those which belong to the natural order *Umbelliferæ*, or the same family as the Carrot and Parsnip, and some are easily mistaken, by inexperienced persons, for those useful vegetables. We have two species of *Rhus* which are poisonous to the touch. One of these is called Poison-ivy, and may be met with in almost any woods, running over rocks or ascending trees. The other species is a shrub which grows in swamps. Some people are much more susceptible than others to the poisonous influence of these plants. Indeed, many people can handle them with impunity, while others are poisoned by a touch, and some think that the neighborhood of the plant communicates the poison. The Poison-ivy vine is often confounded with Virginia Creeper or Woodbine (*Ampelopsis quinquefolia*) which is perfectly harmless. They may be readily distinguished by observing that the leaves of the Ivy are in threes, while those of the Creeper or Woodbine are in fives.

A few of our native plants enjoy the reputation of being poisonous, rather

from their relationship to other poisonous plants than from actual poisonous properties. This is the case with some species of *Solanum* and *Physalis*, which belong to the natural order *Solanaceæ;* to which also belong Tobacco, Henbane, Nightshade, and other poisonous plants. *Solanum nigrum*, sometimes called the Ground-cherry, is very common in waste places and cultivated fields, and is by some thought to be poisonous, but I have often seen its black berries eaten with relish and even made into pies, though they are not sufficiently tart to be agreeable. We have several species of *Physalis* or Ground-cherry, whose berries, when mature, are pleasant-tasting and harmless. The more general diffusion of botanical knowledge would undoubtedly be the means of avoiding much suffering, and many accidents which now occur from ignorance of the nature of the plants.—*U. S. Agricultural Report.*

Nut Orchards.—W. W. Hubbell, of Rutland, Ohio, writes to an Eastern paper: "I have often wondered why some of your numerous patrons have not written you a line for publication concerning the cultivation of all kinds of nut-bearing trees. Little attention has thus far been given in this country to such culture. Now, as to the market value of nuts, it is known that the price of edible nuts has steadily increased as they have become more scarce, until at the present time our native Chestnuts sometimes bring in the market ten to twelve dollars a bushel, and Hickory-nuts as much as four dollars. Nuts of all kinds can be improved by grafting, by securing cions from bearing trees that are known to produce the largest and finest nuts. I have had some little experience in grafting Chestnuts and Persimmons from some of the largest sorts that I ever saw. They are twice as large as the common kind. Both the Chestnut and the Persimmon possess a superior flavor. I have a small young bearing orchard of the Persimmon and Chestnut, five years from the grafting, and I would be happy to exchange, for some superior kinds, grafts from my large, superior Chestnuts and Persimmons; also, a very large kind of Hickory-nut that I am cultivating in my nut-bearing orchard."

Rest Necessary to Plants.—In an address given at the Agricultural College, Amherst, Mass., Col. Wm. T. Clark remarks: "The distinction between deciduous and evergreen species is, that the former lose their foliage at the end of the growing season, while the latter retain each perfected leaf one, two, or three years. Nevertheless, evergreens usually have their time of rest no less than deciduous plants, and those which are deciduous in one climate may become evergreens in another. Thus the Apple and the Plane tree have become evergreens in Madeira. Prof. Hoffman made a series of experiments from 1863 to 1870, to determine whether this period of rest was really necessary for ordinary plants. He found that when the Lilac and other similar species were forced under glass to grow continuously by the constant presence of heat, light, moisture, and proper soil, they ceased to blossom after the first year, and died in the second or third year. Hence the importance, so well known to skillful gardeners, of giving alternations of heat and cold, moisture and drought, during their proper seasons of activity and repose, to plants cultivated under glass. The difficulty often experienced in getting flowers from specimens of Cactus and other house-plants, by persons who, being ignorant of these

facts, carefully water them alike at all times through the year, is thus readily explained. The plants have no opportunity to ripen their tissues, and never are in a condition to blossom after the fall of the leaves.

Pampas Grass.—(*Gynerium argenteum.*) This noble and now well-known ornamental grass deserves as much attention as any plant in cultivation, though thorough preparation for its perfect development is rarely made. What is there in the garden more nobly distinct and beautiful than the great silvery plumes of the Pampas Grass, waving in the autumn wind? It is well worthy of extensive use, if only for its foliage, which forms huge dense tufts, three or four feet high and as many feet across. These tufts are composed of long narrow leaves, very rough on the edges and of a pale-green color. The flower-stalks appear in autumn, and rise from four to ten feet, according to the strength of the plant. The blossoms are produced in a very large, dense panicle, formed of little spikes of about six flowers each, covered with silky silvery hairs. It thrives best in a light, rich, deep loam, and in sheltered situations, where its foliage will not be injured by the wind. We rarely see so fine specimens as those in quiet nooks where well protected by the surrounding vegetation.

But the Pampas Grass, like the Yucca, should stand alone. If grouped with other plants, the graceful effect of its fountain-like outline will be entirely destroyed. It is a native of the pampas or prairies of South America, chiefly in Paraguay, and thrives wonderfully well in Germany. In our Southern States it would probably grow without care, but in this latitude of short summers we must give it much attention. Strong vigorous plants should be obtained, if we wish them to flower before frost.—*Flower Garden.*

Manure for Orange-trees.—We have repeatedly been asked: "What kind of manure is best for Orange-trees when planted in soil such as is found on the sea-coast?" We answer: After having made the holes for the trees to be planted in, take some wood-soil, such as consists of rotten and decayed wood and leaves, or well-rotted compost, consisting of dirt, lime, leaves, and road or lot scrapings (no fresh animal manure), deposit a bucketful or two in each hole, and plant the tree on top; or, which we consider a better plan, set the tree in the hole, and cover the roots with the above manure, shaking the tree while throwing it on, and finish with the original soil on top. There should be no manure on the surface. Where the soil is naturally strong, it is sufficient to cover the roots with the top soil taken out of the hole, and on this spread from two to three quarts of slaked lime. After planting, we would advise to mulch under all circumstances. Salt-marsh grass is the very best material; next, pine straw, dead weeds, etc. Burnt oyster-shells will answer the purpose where lime is desired. After having been applied for some time, and when weeds commence to appear, incorporate it lightly with the soil with a hoe, and then mulch.—*Our Home Journal.*

Carpeting the Garden Bed.—Carpeting is a point in gardening which has received less attention than its importance demands. Not only is it useful in heightening the general effect, but it is the means of saving very much otherwise necessary labor. Where greenhouse plants are used to decorate the ground—whether they be turned out, or

the pot plunged in the earth—carpeting becomes very desirable to cover the intermediate soil. For permanent climbing, too, this is often a matter of great importance. For these purposes Portulaccas are often used, but the seed germinates so slowly that the plants make little show until near the end of the season. The *Gnaphalium laustum* answers very much better for the purpose. It is propagated with ease, grows rapidly, and soon covers the soil with a carpet of a neutral gray tint, against which bright foliage and flowers show to the best advantage.

Moneywort (*Lysimachia nummularia*), which grows rapidly enough, and makes as dense a mat as may be desired when allowed to become a weed, and *Cerastium Brebersteini* (Mouse-ear Chickweed) are also said to promise well in the same direction. The common Periwinkle (*Vinca*) and the Moss Pink (*Phlox subulata*) are deserving of trial, also. Low-growing plants, which would flourish well beneath the drip and in the dense shade of shrubs, covering the surface and doing away with the necessity of weeding, are much to be desired. But we must not forget to so prepare the soil for the shrubs that they will not need the usual supplies of manure forked in.—*Flower Garden.*

Strength of Timber.—The strength of a piece of timber depends on the part of the tree from which it was taken. Up to a certain age the heart of the tree is the best; after that period, it begins to fail gradually. The worst part of the tree is the sap-wood, which is next the bark. It is softer than the other part of the wood, and is liable to premature decay. The deleterious component of the sap-wood is absorbed, if the tree is allowed to grow for a long period, and in time the old sap-wood becomes proper timber-fibre, similar to the heart-wood. Hence, the goodness of a tree for timber purposes depends on the age at which the tree was cut down. When young, the heart-wood is the best; at maturity, with the exception of the sap-wood, the trunk is equally good throughout, and, when the tree is allowed to grow too long, the heart-wood is the first to show signs of weakness, and deteriorates gradually.

The best timber is secured by felling the tree at the age of maturity, which depends on its nature, as well as on the soil and climate. The Ash, Beech, Elm, and Fir are generally considered at their best when at seventy or eighty years.

The White Willow has been used very successfully in Iowa for fencing. C. B. Mendenhall, of Marshall County in that State, has about thirteen miles of White Willow fencing, from three to seven years' growth, of which about half will turn cattle. He has also a grove of White Willows, set out about six years ago, which is considered worth five hundred dollars an acre. The prairie farmers of the West are evidently determined that the lack of forest trees shall not prevent them from having picturesque and well-protected fields.

Oxalis.—Those who plant the pretty little summer-blooming Oxalis may be sure of satisfactory results. Whether it is sown out-doors or in the house, in the border, the vase, or the basket, the Oxalis always thrives and blooms well, and covers itself with pretty little blossoms the entire season. The bulbs should be planted an inch apart. In the autumn they should be taken up, dried, and kept in a dry place free from frost until spring.

Mildew on the Grapes.—Experience has proved that Grapes mildew much more in California in seasons when the soil is well saturated with water, as the present, than in seasons of less moisture. The only remedy yet discovered for this disease or enemy of the Grape is the flour of sulphur, or common ground sulphur. Those who wish to secure beyond a peradventure a good crop of well-grown Grapes, should not neglect to apply the sulphur to their vines as soon as the leaves are fairly out of the buds, and then again when the stems are formed and the blossoms fully open. If sulphur be well applied at these times, there need be but little apprehension of mildew. It has been ascertained that the sulphur thus applied to the leaves of the Grape is absorbed by them, enters into the circulating sap, and prevents the growth of the fungus called mildew. It is also one of the best and most effectual manures for the vine, as it forms combinations which furnish the ingredients of vine growth.

Protection to Strawberries.—A correspondent of the Nashville *Rural Sun* suggests the erection of marten-boxes among the Strawberry-beds as a sure preventive of the destruction of the berry by birds. He found it a success, and says that the marten never touches the berry, but drives off the blue-jay, cat, blue, and all other birds that feed upon the berry. He adds that while the parties living near him resorted to the scarecrow and a bell, his berries were fully protected, while theirs were almost totally destroyed.

The seed farms at Erfurt, Prussia, cover many square miles, hundreds of acres being, in the season, gay with Asters alone.

Fuchsia Seed.—A party visiting a Fuchsia house, on one of the seed farms of Europe, was asked to guess the weight of seed procured from that one house—about ten by thirty feet in size. Twenty, ten, and even as little as one pound were suggested, but the fact proved that the entire product was only *one quarter of an ounce.*

The Fern-house at Kew Garden, near London, is furnished with green glass. Here the Ferns may imagine themselves in some shady dell never reached by the direct rays of the sun.

If castor-oil is mixed with glycerine and a few drops of the oil of cinnamon added, the taste of the castor-oil can scarcely be recognized.

METEOROLOGICAL RECORD,

For the Month ending May 31st, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.09 In.
do	12 M.	30.90
do	3 P. M.	30.08
do	6 P. M.	30.08
Highest point on the 1st and 2d, at 12 M.		30.24
Lowest point, on the 4th at 9 A. M.		29.94

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		60°
do	12 M.	64°
do	3 P. M.	64°
do	6 P. M.	59°
Highest point, on the 30th, at 12 M.		82°
Lowest point on the 2d, at 9 A.M.		52°

SELF-REGISTERING THERMOMETER.

Mean height during the night	49°
Highest point at sunrise on the 30th	62°
Lowest point at sunrise on the 7th	44°

WINDS.

North and north-west on 9 days; south and south-west on 3 days; west on 19 days.

WEATHER.

Clear on 8 days; cloudy on 5 days; variable on 18 days; rainy on 4 days.

RAIN GAUGE.

May	4th	0.01	inches.
..	5th	0 25	"
..	6th	0.04	"
..	22d	0.04	"
Total		0.34	"
Previously reported		23.56	"
Total rain of the season up to date		23.90	"

Climbing Annuals.

1. *Canary Flower.* 2. *Convolvulus minor.* 3. *Digitalis.* 4. *Scyphantus.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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ALPINE PLANTS.

BY F. A. MILLER.

The term "Alpine plants" is applied to those herbaceous plants which are found in high altitudes, in mountainous regions.

Most of the readers of the *Horticulturist* are undoubtedly aware that the class of plants referred to includes many very beautiful varieties, and I really can not account for the fact that they are almost entirely excluded from our gardens. For twenty or more years past, English gardeners have given them much attention, and now they form most important features in every garden in that country. In the Eastern United States very little attention is paid to these plants, and in California, where all of them are supposed to be perfectly hardy, hardly any have made their appearance, save here and there a specimen of Canterbury Bell, Primula, and Forget-me-not.

The cultivation of Alpine plants is attended with less difficulties than that of most other plants; the majority of them are easily grown from seeds, and as they are hardy here, we could have many of them in bloom during our winter months. I can vouch for this assertion, inasmuch as *Auriculas*, *Myosotis*, *Campanulas*, *Linaria*, *Pentstemons*, and others have bloomed with us in the open air during the past winter season. We cultivate these and several others, not for market (we know very well we have no market here for them), but partly for our own amusement, and partly for cut-flowers, of which we always experience a scarcity during the winter months.

I should like very much to see some efforts made to introduce more of the Alpines here, and if some of our gardeners and amateurs feel disposed to give them a trial, I would suggest the selection of some of the following varieties, all of which are easily cultivated, and are really meritorious:

Gentiana, including a number of varieties, all of which produce blue flowers; *Gentiana Andrewsii* is one of the finest, its flowers being very large and of a rich deep purplish-blue color. A species similar in flower to the above I found near the summit of the Sierra Nevada Mountains last summer, and I have seldom beheld a more beautiful sight. I counted over 200 flowers on one plant, standing about twelve

inches high, and of eighteen inches in diameter, forming a compact growth. The flowers were one inch in diameter, one and a half long, and of a rich velvety blue color. I understand this species is described as *Gentiana simplex*, but am not certain on this point. I dug up five plants, and took them home with me. They kept on flowering for several weeks. During last winter they were kept in the greenhouse by mistake, and unfortunately occupied a very damp place, which resulted in the loss of the plants. Nearly all of the Gentianas are well worth cultivating, but the two mentioned above are really exquisite. *Gentiana Andrewsii* is also, I believe, a native of North America.

Astilbe Japonica has lately been introduced into this conntry, but is very rarely met with. The few plants which are cultivated here are treated as greenhouse plants, and although they do well under glass, if plenty of air is provided, they do much better in the garden. Its feather-like spikes of white flowers are produced in greater abundance, and together with its graceful shiny green foliage form a pretty object in the garden or conservatory. If planted out it soon forms a number of offsets, which can be readily divided for the purpose of propagation. The *Astilbe Japonica*—sometimes called *Spiræa Japonica*—is, as its specific name indicates, a native of Japan, and is perfectly hardy with us here. It should be in every garden.

[To be Continued.]

Best Time to Manure Trees.—Mr. Meehan says a top-dressing of good manure put under the trees soon after midsummer, when the second growth, which is always made soon after this season, is about beginning, produces marked good results.

HANGING BASKETS.

This graceful and convenient form of decoration increases in popularity from year to year. Many a city home which would otherwise be destitute of floral adornment is brightened by them, and in the country among people of taste and refinement they are becoming more and more common.

Material.—The baskets themselves are made of wire, terra-cotta, or wood. The first named is the most usual, but the small terra-cotta baskets are extremely neat and elegant for bay-windows or other interior situations. They possess with the rustic wood baskets the additional advantage over the wire of retaining moisture longer, and thus suffering less from neglect of frequent watering. The wood basket generally consists of a turned wooden bowl, covered over with twigs and roots to give it a rustic appearance. When this kind of basket is used, care should be exercised to see there are a few holes in the bottom to permit drainage. The matter is scarcely ever attended to by the makers, and florists who sell them ready filled with plants are apt to neglect it. The consequence is that the basket soon becomes water-logged, and the plants contained in it die of wet feet. Where provision for drainage has been neglected until after the basket is filled, holes may be bored from the outside, and the dropsical condition relieved. The wire baskets are first lined with thick moss and afterward filled with earth, into which the growing plants are set. They must be watered every day, as the drying air penetrates them on every side. A new style of wire basket is provided with a zinc reservoir beneath, which holds a week's supply of water. These are convenient but expensive.

Selection of Plants.—The central

portion of the basket should be filled with upright plants of a neat dwarf habit, and around the edges those of creeping or trailing growth. But while a basket filled with any bright, thrifty plants of suitable habit of growth, is a thing of beauty, it is far better to make such a combination of color as to present a harmonious living picture. The colors not only of the flowers, but also of the foliage employed, should be studied with a view to this effect. Our greenhouses furnish such a variety of plants with ornamental foliage—crimson, golden, white, bronze-purple and silvery grey—that almost any desired effect of color can be produced independently of the blossoms. When a less complicated style is preferred, a basket may be made beautiful by its very simplicity. In such cases a single plant is sufficient, provided it makes up by its luxuriance of growth for the lack of variety. We saw a very attractive basket recently, which was completely wreathed with the rich foliage and bright mauve-colored flowers of an Ivy Geranium. A plant of *Saxifraga sarmentosa*, commonly called Strawberry Geranium, set in the centre of a small basket, will soon cover the surface with leaves, while the long tendrils and tassel-like stolons droop gracefully down the sides. Another useful plant in this way is the *Convolvulus Mauritanicus*, a single specimen of which will soon make the basket a rich mass of bright green foliage and blue flowers.

Country Baskets.—No one need be deprived of hanging baskets on account of remoteness from greenhouses or inability to purchase greenhouse plants. No baskets are produced more exquisite than can be made by judicious use of the plants found in the forests and fields. The basket itself may be made of woven twigs, the end of an old keg covered over with rustic branches and roots, or the steel springs of a superannuated hoop-skirt. Then for filling, the forest furnishes abundance of moss, rich, light soil, and Ferns, Partridge-berry, Saxifragas, and all the immense variety of other plants which love to nestle in its shades or seek its open sunny banks.

Care of Baskets.—The first and most essential requisite for the health and even the life of plants suspended in baskets, is sufficiently frequent watering. Their wants in this respect vary, of course, with the size of the baskets and the material used. Wire baskets, in addition to being sprinkled every day and the moss kept fresh, are greatly benefited by an occasional dipping in water. Wood and terra-cotta baskets evaporate only at the surface, and therefore need less frequent watering. Partial shade is essential to the lush growth and luxuriance which are desirable in a hanging basket. If exposed all day to the full glare of the summer sun, no amount of watering or of care can preserve them from a parched and shriveled-up appearance. Another requisite to the health and full development of plants in baskets is that they should not be overcrowded. Those which are bought from the florist's ready-made are almost invariably overgrown or overcrowded. This is not the fault of the florist, for the public taste demands a rich, luxuriant appearance. No possible promise of future beauty and perfection can atone in the market for the want of present thriftiness, and therefore the florists are compelled, in order to meet the public taste, either to crowd the baskets full of young plants, or keep them until the plants contained have reached the utmost limit of growth in the greenhouse. In either case the falling-off in appearance is certain and

speedy. The only remedy is for the purchaser to choose those that contain an overabundance of vigorous young plants, and then thin out, removing such superfluous ones as can be spared with the least injury to the general effect. The basket will look a little scraggy at first, but the subsequent growth will soon fill up the vacancies. —*Country Gentleman.*

SUCCULENTS AS DECORATIVE PLANTS.

BY CHARLES H. HOVEY.

The class of plants known as succulents is now attracting much attention among gardeners and amateurs on account of their decorative qualities for both the greenhouse and the garden. Their various, and often grotesque, forms, and interesting habit of growth, give them a peculiar interest, and afford a never-ending source of study and amusement. Many of them are desirable additions to any collection of plants; some being fine bloomers, lasting in flower from two to three months, while others are indispensable for bedding purposes. Their great tenacity of life, or, in other words, the impunity with which they bear neglect, as also their rapidity of growth when cared for, render them universal favorites.

Of all the plants grouped under the title of succulents, the Echeverias will undoubtedly prove the most generally useful. They afford so great a variety in style of growth, and such decided contrasts in color, that in time we shall have our groups of Echeverias, producing a more unique and as striking an effect as we now have from our masses of Geraniums, Coleus, and similar bedding plants. It may be remarked that some botanists include these plants in the genus *Cotyledon;* but as this is still a disputed point, it is best in the present article to use the names by which they are known in the collections of florists and in their catalogues. The following species and varieties are some of the most desirable for the greenhouse and garden:

Echeveria agavoides.—One of the rarest and best of the Echeverias; a dwarf, compact grower, with leaves of a semi-transparent green color, tipped with red, exactly resembling in its appearance a miniature Agave.

E. argentea vera.—A new variety from California; leaves six or seven inches long, and from one to two in width; the whole plant is completely covered with a thick white powder; this variety most generally grows in clumps, and is very showy.

E. Californica. — Also rather new, from the Pacific Coast; with long, narrow, green leaves; somewhat resembling in style of growth *E. agavoides;* a dwarf, dense grower, and very distinct.

E. farinosa.—Another recent introduction from California; leaves long, narrow, sharply-pointed, and of a beautiful white color; similar to *E. argentea vera*, and one of the best.

E. lurida.—This variety is probably a hybrid from *E. sanguinea*, which it resembles in growth; the young leaves are of a bluish red, fading to a rusty brown; a promising species.

E. metallica. — This is the most generally grown of all the Echeverias, and is perhaps the most effective for greenhouse and garden, its large, pink, metallic leaves showing off to great advantage; and its being a very free grower will render it the most popular of all the Echeverias.

E. metallica glauca.—Somewhat similar to the preceding, but more compact and regular; leaves large and of a bluish white color; fine for bedding, and a good flowering variety.

E. Mexicana.—A new variety, after the style of *E. secunda glauca*, but much superior; of regular and compact growth, with leaves of a beautiful pale blue color; it forms a perfect rosette, and must supersede all others of its style for edging purposes; synonymous with *E. rosularis.*

E. pumila.—In growth similar to *E. secunda;* leaves long, narrow, and of a glaucous green color; a distinct variety.

E. racemosa.—A variety said to be a hybrid from *E. sanguinea*, which it resembles in growth; leaves of a pinkish, salmon color.

E. rosea.—Resembling the Cotyledons more than the Echeverias in growth; leaves green, slightly tinged or edged with red.

E. retusa glauca.—A strong-growing variety, with glaucous green leaves; one of the best flowering varieties.

E. retusa floribunda splendens.—The best of all the Echeverias for flowering; flowers a brilliant scarlet, and a very free bloomer; similar in growth to *E. retusa glauca*, but with narrower leaves.

E. sanguinea.—A distinct species, with long, narrow leaves, slightly channeled, and of a dark red color; fine for bedding in contrast with the light-colored varieties.

E. scaphophylla.—One of the newest of the Echeverias, a hybrid between *E. agavoides* and *E. linguæfolia;* leaves blunt, and slightly channeled like the latter, but in growth and color similar to *E. agavoides.*

E. secunda.—An old variety, with green leaves; a dwarf and compact grower, and fine for bedding.

E. secunda glauca.—One of the best for bedding; similar to *E. secunda* in growth, with leaves of a bluish white color; next to *E. metallica*, perhaps the most generally grown.

E. secunda glauca major.—New and fine; a large variety of *E. secunda glauca*, with leaves not quite so light colored.

E. secunda ramosa.—A monstrosity in habit of growth; stem flat, broad, and covered at the top with numerous small green leaves; in appearance resembling the flower of a Cockscomb.

E. nuda, E. linguæfolia, E. lutea gigantea—are all very similar to *E. retusa glauca*, and all are good flowering varieties.

Of the above varieties, the six most distinct in style of growth and contrast of color are *E. metallica, E. Mexicana, E. farinosa, E. agavoides, E. sanguinea*, and *E. metallica glauca.* All the species and varieties above described may be propagated from seeds and cuttings, and most of them from single leaves. If raised from seed, it should be sown and treated similarly to Cineraria or Calceolaria seed. If propagated from cuttings or leaves, they should be laid away on a dry shelf until they become thoroughly dry or callous, and then be potted in a light, sandy mixture, and sparingly watered until rooted. As soon as rooted, if they are re-potted in a mixture of leaf-mold or well-rotted manure and loam, with one-fifth part sand, they will amply repay the trouble of re-potting.—*American Agriculturist.*

Prices of Cut Flowers in England.—There is a regular flower market in London—Covent Garden Market—in which the value of flowers can be regulated tolerably by that true measure, *demand.* In a recent report we notice that about the middle of March, Azalea flowers brought about 50 cents per dozen; Camellias about $1; Carnations, 75 cents; Heliotrope, 12 cents; Gardenias, $2 to $4; Roses, $1 to $2. The Stephanotus and Japan Spiræa are standard market flowers.

SILENCE OF THE FOREST.

We often read, in books of travel, of the silence and gloom of the Brazilian forests. They are realities, and the impression deepens on a longer acquaintance. The few sounds of birds are of that pensive or mysterious character which intensifies the feeling of solitude rather than imparts a sense of life and cheerfulness. Sometimes, in the midst of the stillness, a sudden yell or scream will startle one; this comes from some defenseless fruit-eating animal, which is pounced upon by a tiger-cat or stealthy boa-constrictor. Morning and evening the howling monkeys make a most fearful and harrowing noise, under which it is difficult to keep up one's buoyancy of spirit. The feeling of inhospitable wildness which the forest is calculated to inspire, is increased tenfold under this fearful uproar. Often, even in the still hours of midday, a sudden crash will be heard resounding afar through the wilderness, as some great bough or entire tree falls to the ground. There are, besides, many sounds which it is impossible to account for. I found the natives generally as much at a loss in this respect as myself. Sometimes a sound is heard like the clang of an iron bar against a hard, hollow tree, or a piercing cry rends the air; these are not repeated, and the succeeding silence tends to heighten the unpleasant impression which they make on the mind. With the natives it is always the *Curupira*, the wild man or spirit of the forest, which produces all noises they are unable to explain. Myths are the rude theories which mankind, in the infancy of knowledge, invent to explain natural phenomena. The *Curupira* is a mysterious being, whose attributes are uncertain, for they vary according to locality. Sometimes he is described as an ourang-outang, being covered with long, shaggy hair, living in trees. At others he is said to have cloven feet and a bright red face. He has a wife and children, and sometimes comes down to the *rocas* to steal the *mandioca*. At one time I had a Mameluco youth in my service, whose head was full of the legends and superstitions of the country. He always went with me into the forest; in fact, I could not get him to go alone, and whenever we heard any of the strange noises mentioned above, he used to tremble with fear. He would crouch down behind me, and beg of me to turn back. He became easy only after he had made a charm to protect us from the *Curupira*. For this purpose he took a young palm-leaf, plaited it, and formed it into a ring, which he hung to a branch on our track.—*Pen and Plow.*

REPORT ON HORTICULTURE FROM CALIFORNIA TO THE AMERICAN POMOLOGICAL SOCIETY.

BY DR. J. STRENTZEL.

Twenty years only have elapsed since the culture of fruit in California has been earnestly engaged in. The liberal recompense realized by the pioneers stimulated others in their efforts to excel. Money and toil were lavishly spent to obtain the best and rarest seeds; and the choice fruits of Eastern nurseries, transplanted here, found a congenial soil and a climate most favorable for their development. Consequently, our best orchards and vineyards are overcrowded with varieties, and the owners are forced, by the demands of their markets, to discard even good ones, if not embraced within popular favor.

As one of the most important labors

of the American Pomological Society is to perfect a list of the best varieties of fruits adapted to the greatest extent of country, and most profitable culture, your committee will be governed by the same action, and restrict itself to that consideration, as regards California.

Conditions predicated upon mean temperature, rainfall, component constituents of the soil, aspect, altitude, an atmosphere more or less infused with moisture, and other meteorological conditions, exercise the same influence here, and are so favorably arranged for fruit culture, that, upon any given spot in California, a greater variety of fruits can be well grown than under a corresponding latitude on the eastern side of the continent; thus, all the semi-tropical fruits can be raised in conjunction with those of the northern clime. Our Astrachans, Baldwins, and Pippins, will be recognized as such wherever shown; but, if disguised, it is only by their Sunday clothing, more gorgeous with the tints of the unclouded solar rays; and fed upon the doubly-distilled moisture, derived mainly by condensation, they are sweeter and richer. Besides, judicious irrigation can easily modify any deficiency of juiciness, and protract the season of their ripening. By the time another decade of national life is absorbed, the wastage of water will be economized and retained for the sustenance of plant life during the season of drought. Human knowledge can hardly predict the modifications and the perfection fruit culture will ultimately attain by those efforts; but in California will be the throne of Pomona's most exalted realm—the hills clothed with the vine, every nook covered with fruit-bearing trees, Mulberry groves skirting the plain, Oranges, Date Palms, Olives, and Figs, along the grand irrigating ditches of the San Joaquin, will proclaim her dominion.

A fortune will reward the originator of a first-class early Apple. The Harvest, now heading the list, is only of second quality, and the gorgeously arrayed Astrachan still lower in our estimation. The Early Strawberry is in every way excellent, but ripening late. For cooking, during the months of June and July, the Dutch Codlin holds its sway. Fall Pippin, Holland Pippin, Gravenstein, Lyscom, Maiden's Blush, Roxbury Russet, do well until late in autumn. Rhode Island Greening, Baldwin, Swaar, Newtown Pippin, Spitzenberg, and White Winter Pearmain, will fill the list for winter. Apples keep well all winter, piled under the trees, and sheltered from rain and sun.

A choice selection of Pears would be covered by Bloodgood, Bartlett, Washington, Seckel, Winter Nelis, Flemish Beauty. Duchesse and Easter Beurre attain great size, but they are not favorites with the public. Belle Lucrative, Louise Bonne de Jersey, Beurre d'Anjou, Stevens' Genesee, Doyenne, are a drug in the market. Glout Morceau and Vicar are worthless.

Experiments in progress with seedling Pears are full of interest, and sustain the hope that some of our best varieties can be revivified as seedlings, thus producing a new generation to propagate from. By selecting a variety with large, full seeds, and hybridizing —artificially, or by chance—the seedlings thus raised will at once equal, and possibly may excel in some desirable qualities, the parental stock on either side. This will hold good with all other varieties of fruit.

The Peach is the most hardy tree grown here; will survive the worst ill-usage, and repay it without diminution

of fruits. All it requires is close pruning, shortening-in, and chopping-down of the worn-out branches, to sprout from the ground with renewed vigor, and bear another series of superior crops. In wet years, the curl prevails, and recently a white fungus attacks the fruit, in blotches, and the ends of the shoots.

A few Nectarines are raised, the fruit being inferior in flavor to the Peach.

Apricots—the Large Early and the Peach are favorites, and bear profusely, but are often cut short by spring frosts. Peach stock preferred.

Plums bear abundantly, and, so far, no curculio has appeared. All varieties do best on Peach stocks.

Quinces produce regular crops. The largest fruit is grown on the Portugal, attaining the weight of over two pounds. The tree is subject to the black knot.

Cherry-trees are very tender; the least bruise of the stem starts the exuding sap, and decay follows. To shade the stem any way most convenient or practicable will be found beneficial. A cement of clay and ashes plastered over the stem and thicker branches appears to answer well. Black varieties are preferred here. There are two varieties brought out under the name of Royal Ann. One is a black, superior to the Black Tartarian; the other a white.

The Fig fairly luxuriates under our bright skies. Furnished with sufficient moisture, it produces enormous crops.

Pomegranates thrive well.

The Olive is, as yet, little appreciated. Grown easily from cuttings, requiring hardly any pruning, attaining the age of several centuries, and bearing regular crops of Olives, as highly prized in the green state as for oil—it will be, by the next generation, more extensively utilized.

Almonds, Walnuts, Pecans and Chestnuts, the most valuable of nut-bearing trees, come into bearing at an early age; the Japan Chestnut fruiting the second year from graft.

Oranges and Limes, with more or less protection, grow luxuriantly along and near our line of coast for five hundred miles.

The *Agave Americana*, or Century Plant, is utilized as a hedge plant.

Currants, Blackberries, Gooseberries, Raspberries, and Strawberries, bear abundantly.

The lordly Banana begins to spread its mammoth foliage in many a garden spot.

Thus, under the influence of skilled industry, and the vivifying flow of waters to be utilized, all the semi-tropical fruits will find here a congenial home. But the glory of California will be her vineyards. Innumerable little nooks and valleys, rich with the attributes of surrounding mountains, and under most favorable climatic conditions, are waiting for patient labor to clothe them with the clustering Grape. All the finest varieties succeed admirably, and the product—either to be utilized for wine or raisins—is all that could be desired.

It is not to be inferred, nor is it claimed, that the horticulturist in California needs only to plant a tree or a vine to realize, in a few years, several hundred pounds of Apples per tree, or even a thousand pounds of Grapes to the vine. He has to contend with many evils, as in other climes, or avocations; constant vigilance and sound judgment are required to supply the most favorable conditions for the development of his nurslings, and destroy in the beginning their enemies. Different varieties of fungoid growths and injurious insects begin to multiply.

All experienced viniculturists pronounce this the most favorite land of the grape; still, oidium is known: the borer, and especially the thrip, do considerable injury. Thus, every laborer in Pomona's realm is interested in the experience of his co-laborers.

A new-comer opens a most willing ear to an oft-repeated tale, but full of novelty to him; so, to compare experiences, I take the liberty to make these deductions:

That clean culture is indispensable for orchard and vineyard.

That the raising of other crops between trees, when abundant manures are not obtainable, is a killing of the goose laying golden eggs.

Alkaline or earthy washes of the stem and larger branches are conducive to the health of the trees.

By repeatedly scraping off the earth around the trees and vines, early in the spring, many insects, their eggs and larvæ, are destroyed.

That careful pruning and shortening-in of the shoots is indispensable to the production of fine and large fruits. All the pruning should be carefully husbanded, and returned to the soil. To light bonfires for the destruction of insects, to raise smoke to avoid injury from spring frosts, are probably the most available and serviceable means for destroying fungoid and insect growths on foliage and fruit; by fumigation of the whole orchard and vineyard, making numerous smoldering fires, with the addition of coal-tar, or asphaltum and sulphur.

Large Mignonette.—Mr. James Fleming, seedsman of New York, exhibited in his store-window this spring, spikes of Mignonette seventeen inches in length—almost all the length in full bloom. Who can beat this?

THE BAOBAB.

The Baobab is a plant of monstrous size, the most colossal and the most ancient vegetable monument on earth. It has round, woolly leaves, which consist of from three to seven leaflets radiating from a common centre, and giving them somewhat the appearance of a hand, and a magnificent white flower. It is an enormous tree, holding among plants the place which the elephant holds among animals—a hoary witness of the last changes which the earth has undergone, and deluges that have buried beneath their waves the productions of early ages. Several Baobabs that have been measured were found to be from seventy to seventy-seven feet in circumference. From its branches hang, at times, colossal nests three feet in length, and resembling large oval baskets open at the bottom, and looking from the distance like so many signal-flags.

It would take fifteen men, with their arms extended, to embrace the trunk of one of these great trees, which, in the countries through which the Senegal flows, are venerated as sacred monuments. Enormous branches are given off from the central stem a few feet from the ground and spread out horizontally, giving the tree a diameter of over one hundred feet. "Each of these branches," says Mr. Danton, "would be a monster tree elsewhere, and taken together, they seem to make up a forest rather than a tree."

It is only at the age of eight hundred years that the Baobabs attain their full size, and then cease to grow.

The fruit of this tree is oblong; the color of the shell passes in ripening from green to yellow and brown. The fruit is called "monkey bread." It contains a spongy substance, paler than chocolate, and filled with abundant

juice. The bark is ashy gray in color, and almost an inch in thickness. The negroes of the Senegal grind it down to powder, and in this state they use it to season their food, and to maintain a moderately free perspiration, which enables them to more easily withstand the heat. It serves also as an antidote for certain fevers.—*The Wonders of Vegetation.*

THE EFFECTS OF ELECTRICITY ON PLANTS.

In the March number of the *Journal* we gave some account of M. Blondeau's investigations with regard to the action of heat on plants. After completing the series of experiments there described, he was led to inquire whether electricity acts on plants in the same manner as heat—that is, as a toxical agent—or whether it kills them by destroying the organs necessary to the maintenance of life. The subject has hitherto been little investigated, observations having been limited to the effects of powerful batteries or of lightning. In these cases the plant has always been killed, but apparently from the laceration of its tissues.

M. Blondeau employed electricity of feeble tension, from Bunsen cells, measured in each case by a galvanometer. The plant used in most of the experiments was the Balsam (*Balsamina impatiens*), which is very sensitive to external influences. Its juicy stem, moreover, is a good conductor of electricity, and the delicate tint of its flowers is readily affected by that agent.

The current from a single Bunsen cell was sent for half an hour through the lower part of the stem of a Balsam, the points of the wires being inserted two centimetres (.78 of an inch) apart. The plant showed no change during the experiment, but soon after withered above the part acted upon by the current. With two cells the effect was more rapid, and the plant was quickly killed. That this was due to the decomposition of the tissues by the electricity was proved by a further experiment. The current was sent through a part of the plant studded with roseate blossoms, the color of which could be changed to blue by the action of an alkali. It was found that the flowers near the negative pole became blue, showing that alkaline substances were accumulated there; and this could result only from the decomposition of the plant-structure.

The action of induction currents was also studied, the sensitive plant *Mimosa pudica* being taken for the first experiments. A slight shock closed the leaflets and depressed the petioles, but the effect was transient and the plant apparently none the worse for it. Exposed to heavier and more continuous shocks, the plant was killed, though its tissues showed no change. Experiments on single leaves showed that they would recover from the effects of a current acting for a few minutes, but not when it had been acting, though without any increase in tension, for fifteen minutes or more. In all cases flowers were more readily affected than leaves. Buds also were killed by the current.

The action on the woody portions of plants was less marked than on the soft and pulpy parts. An induction current sent through the stem of the *Nerium oleander* did not perceptibly affect it; but, when sent through a branch bearing flowers, the latter soon withered. Similar results were obtained with Lavender and Fuchsia: the stem and leaves withstanding the effects of the current, while the flowers soon dropped off. M. Blondeau expresses the opinion that

the ligneous tissues would be disorganized by more powerful or more prolonged currents, but he does not appear to have settled this point experimentally.

Some experiments were also made on fruits and seeds. The current was sent for several minutes through an Apple, which was on a branch with several others, nearly ripe. After a few days it fell off, being apparently riper than the others, which remained on the tree. The electricity appeared not only to have hastened its maturity, but also to have affected its tissues, as it soon began to decay, and in a few days was completely rotten. Pears and Peaches were experimented upon in the same way, and with similar results.

Peas and Beans that had been soaked in water were exposed to the action of the current, and then planted in pots; other non-electrified seeds of the same sort being planted at the same time for purposes of comparison. The former sprouted in three days, the latter only after six days; but though the plants stimulated by electricity at first grew more rapidly, the others soon overtook them. The current appeared to have hastened the disintegration of the substances enclosing the embryo, which thus got its first supplies of food more readily, but its development was not otherwise promoted.

On the whole, the induction current seems to act upon plants very much as it does upon animals. In both, if its intensity goes beyond a certain point, it tends to disorganize the tissues and prevent them from fulfilling their functions; and if the action is too long continued, it may destroy them completely. —*Boston Journal of Chemistry.*

The highest rate of interest that we pay is for borrowed trouble.

THE AQUARIUM.

Just now the aquarium on a grand scale is "the rage" in Europe, especially in England. The success of the gigantic aquaria at Naples, at the Sydenham Crystal Palace, and at Brighton, has been so marked that rival establishments are being proposed in many other places. Liverpool is to have one that will not be inferior to any of its predecessors, if indeed it does not surpass them all. Another is in progress at the popular sea-side resort of Margate, and the other leading watering-places are expected soon to follow the fashion.

We wish that the aquarium might become equally popular in this country, not only as a public exhibition, but on the amateur or parlor scale. Many of our readers can recollect the brief aquarial furor of some twenty years ago. The aquarium was then a new thing, and Gosse's books on the subject had a great run. His suggestions for starting and managing an aquarium were excellent for that day, and many people wanted to try the thing. Some succeeded very well and kept their little tanks in good condition for months, but the majority had the "bad luck" that might have been anticipated in an undertaking requiring constant care and attention, and soon tired of the new scientific toy. The aquarium went out of fashion as suddenly as it had come in, and from that day to this a really good thing of the kind has been a rare sight in America.

As we have said, we hope that the growing popularity of the aquarium abroad will awaken a fresh interest in the subject here. Much has been learned in these twenty years with regard to the stocking and managing of aquaria, and the amateur who makes his first

experiments now will have the advantage of this. With reasonable care and patience he is sure of success. A good book on the subject, suited to American shores and up with the times, is a desideratum. Of recent English books we know of nothing better than the revised edition of Canon Kingsley's *Glaucus, or the Wonders of the Sea-shore*, just published by Macmillan & Co. It will be found very pleasant reading, whether one is planning an aquarium or not. The descriptions of the strange marine creatures, like all of Kingsley's descriptions, are capital. Take this one:

"Here are a group of milk-white slugs, from two to six inches in length, cuddling snugly together. You try to pull them off, and find that they give you some trouble, such a firm hold have the delicate white sucking arms, which fringe each of their five edges. You see at the head nothing but a yellow dimple; for eating and breathing are suspended till the return of the tide; but once settled in a jar of salt water, each will protrude a large, chocolate-colored head, tipped with a ring of ten feathery gills, of the loveliest white and primrose; in the centre whereof lies *perdu* a mouth with sturdy teeth—if indeed they, as well as the whole inside of the worthy fellow, have not been lately got rid of, and what you see be not a mere bag, without intestine or other organ; but only for the time being. For hear it, worn-out epicures and old Indians who bemoan your livers, this little *holothuria* knows a secret which, if he could tell it, you would be glad to buy of him for thousands sterling. To him blue pill and muriatic acid are superfluous, and travels to German Brunnen a waste of time. Happy holothuria! who possesses really that secret of everlasting youth which ancient fable bestowed on the serpent and the eagle. For when his teeth ache or his digestive organs trouble him, all he has to do is just to cast up forthwith his entire insides, grow a fresh set in a month or so, and then eat away as merrily as ever."

Here is another passage which we can not refrain from quoting:

"There lies an animal as foul and monstrous to the eye as 'hydra, gorgon, or chimæra dire,' and yet so wondrously fitted to its work that we must needs endure for our own instruction to handle and to look at it. Its name, if you wish for it, is *Nemertes;* probably *N. Borlasii;* a worm of very 'low' organization, though well fitted enough for its own work. You see it? That black, slimy, knotted lump among the gravel, small enough to be taken up in a dessert spoon. Look now, as it is raised and its coils drawn out. Three feet—six—nine, at least; with a capacity of seemingly endless expansion; a slimy tape of living caoutchouc, some eighth of an inch in diameter, a dark, chocolate-black, with paler longitudinal lines. Is it alive? It lies motionless, trailing itself among the gravel; you can not tell where it begins or ends; it may be a dead strip of sea-weed, or even a tarred string. So thinks the little fish who plays over and over it, till he touches at last what is too surely a head. In an instant a bell-shaped sucker mouth has fastened to his side. In another instant from one lip a concave double proboscis, just like a tapir's (another instance of the repetition of forms), has clasped him like a finger; and now begins the struggle—but in vain. He is being played with such a fishing-line as the skill of a Wilson or a Stoddart never could invent; a living line, with elasticity beyond that of the most delicate fly-rod, which follows every lunge, shortening and lengthening, slipping and twining round every piece of gravel and stem of sea-weed, with a tiring drag such as no Highland wrist or step could ever bring to bear on salmon or on trout. The victim is tired now; and slowly and yet dexterously his blind assailant is feeling and shifting along his side, till he reaches one end of him; and then the black lips expand, and slowly and surely the curved finger begins packing him end foremost down into the gullet, where he sinks inch by inch, till the swelling which marks his place is lost among the coils, and he is, probably macerated to a pulp long be-

fore he has reached the opposite extremity of his cave of doom. Once safe down, the black murderer slowly contracts again into a knotted heap, and lies, like a boa with a stag inside him, motionless and blest."

This graphic picture will serve to show what strange scenes may sometimes be witnessed in the miniature sea of a parlor aquarium. The following note is appended to the passage in this new edition of the book:

"Certain Parisian zoologists have done me the honor to hint that this description was a play of fancy. I can only answer that I saw it in my own aquarium. I am not, I hope, in the habit of drawing on my fancy in the presence of infinitely more marvelous nature. Truth is quite strange enough to be interesting without lies."—*Boston Journal of Chemistry.*

THE ORIGIN OF THE DAHLIA.

The first mention of the plant occurs in Hernandez, who published a history of Mexico in 1651, and who figured two separate species. Menonville, who was employed by the French minister to steal the cochineal insect from the Spaniards, was the second to notice its existence. The first scientific description was given by the Abbe Cavanilles, from a specimen which flowered at Madrid in 1790, who named the plant after his friend Andrew Dahl, the Swedish botanist. The Dahlia was sent to Europe from the Botanic Gardens of Mexico to the Royal Gardens, Madrid, where it first flowered in 1789, from whence it was introduced to England by the Marchioness of Bute in the same year; but this single plant speedily perished, and it did not again appear in this country till the old single variety, *Coccinea*, was flowered by Fraser at Chelsea, in 1803, and figured in Curtis' *Botanical Magazine*, plate 702. This plant also perished. Meantime Cavanilles sent specimens of the three varieties then known to the *Jardin des Plantes*, in 1802, where they were successfully cultivated, and numerous varieties were produced in France between that date and 1814, when, on the return of peace, the improved flower created a great sensation among English visitors to Paris, which led to large importations of the root during the ensuing winter. Lady Holland sent seeds, not roots, from Madrid in May, 1805. The first plant flowered at Holland House in the September following, and was figured in Andrews' *Botany*. The seeds ripened in 1805, and were generally distributed in 1806. The original plants at Madrid do not appear to have yielded many varieties — not more than three are mentioned. Humboldt, however, who found the plant growing in sandy meadows, 5,000 feet above the sea, sent home fresh seed from Mexico in 1804 to Paris and Berlin, from which the numerous varieties subsequently obtained were derived. The first double flower was produced at Berlin in 1809, and even so late as 1818 Sabine was told of a double white, but "doubted its existence." It is interesting to remark that De Candolle expressed his opinion that he should never see a blue Dahlia, on the ground that blue and yellow, being the fundamental types of colors in flowers, mutually exclude each other. The root was included in the *Bon Jardinier* for 1817, among the *Plantes potageres*, but no mention is made of its use for Palestine soup.—*John W. Ford, in the "Garden."*

ADULTERATED PEPPER.—M. Bouchardat found that the most common adulterant of ground pepper in France was the dried refuse potato skins from the starch factories.

ABSORPTIVE POWER OF PLANTS.

Recent researches and experiments upon plants, both in this country and in Europe, would seem to prove that the functions of leaves, or the aerial parts of plants, have not been clearly understood by vegetable physiologists. M. Adolf Mayer, of Wiesbaden, has lately been making a series of experiments on plants, which were grown in such a manner that access of ammonia through the roots was prevented, while the leaves were subjected to the influence of this substance in either a gaseous or dissolved condition. He found that a variety of plants subjected to these conditions all had the power of absorbing carbonate of ammonia by their aerial parts, both in the gaseous and the dissolved state, and of employing it in the building up of their tissues. The plants, however, did not appear to thrive when all access of ammonia through the roots was prevented. The experiments did not indicate that plants belonging to the order *Leguminosæ* have any special aptitude for absorbing ammonia through their aerial organs, nor for assimulating the combined nitrogen of the atmosphere.

It is a fact now well known, that a considerable number of plants have the power of absorbing through the leaves deleterious gases, and that malarious districts are rendered healthy through the presence of these plants. Thistles had rendered some parts of the campagna near Rome healthy, and on the plants being cut down, those districts became again "malarious." Sunflowers appear to have been first planted for a similar purpose in this country, and they are said to have been successful. Baron von Alsten, whose property was situated on the banks of the Scheldt, and liable to be flooded by that river, planted several patches of the sunflower (*Helianthus*) near his house, and with the result that for ten years his family continued exempt from fever, while on other estates, where no similar precaution was taken, this disease continued to prevail. The plant has of late years been sown in the Mauritius for a similar purpose, and in further recommendation of its good qualities, the observation has been made that it yields 40 per cent. of good oil; that the leaves from it are excellent fodder, and the stems, being rich in saltpetre, make good fuel. Marshes may also be rendered healthy by the presence of other plants. Among those that conduce to this happy result is the *Pistia stratiotes*. In India, the West Indies, and Africa, the power exerted by this plant in absorbing the deleterious gases of muddy marshes is well known, and probably it is on this account that in the latter country the plant is held sacred. The *Pistia* is believed to possess this power in a greater degree than any other plant, being capable in a few days of rendering stagnant water sufficiently pure for fish to live in; although it by no means follows that the water is thus rendered suitable for use by man. The contrary is indeed the case. In Jamaica, water in which this plant grows acquires so acrid a character as to give rise to intestinal fluxes in those who use it.

Some trees and tree-like plants have, with greater or less reason, the reputation of themselves evolving malaria, and consequently the natives of the countries where they grow avoid sleeping or resting under them at night. Those that give off their branches at an inconsiderable distance from the ground, or the foliage of which is dense, have this reputation in the highest degree, and among them the Tamarind and *Neem* trees (*Melia azedarachta*). A similar in-

fluence is said to arise from the Papaw-tree (*Carica papaya*), and Dr. Livingstone states that in East Africa, near the Zambesi River, tracts are covered with the plant *Pœderia fetida*, a member of the *Guettarda* group of the *Rubiaceæ*. Many of the people suffer inconvenience in various ways from odors arising from certain plants, although the effects are not in the nature of disease of recognized malarial origin. In these cases the matter evolved, so far from being an invisible *aura*, is a substantial exhalation. Thus, besides the well-known effects of ipecacuanha in inducing sickness in certain persons, even when brought no nearer to them than an adjoining room, and of flowering plants in producing "hay-asthma," nausea, sickness, and even death, has been attributed to the odors of some, as the *Narcissus*, and the *Cheiranthus* or Wallflower, not to mention the fraction of truth there no doubt is in the story of the Upas-tree (*Antiaris toxicaria*). The Manchineel-tree (*Hippomane mancinella*, N. O. *Euphorbiaceæ*) of the West Indies, and certain American and Chinese species of *Rhus* (N. O. *Anacardiaceæ*) not only produce severe irritant effects upon the skin, but affect very severely such persons as are predisposed to suffer from malaria. The flowers of the *Daphne mezereum* also evolve odors which are more or less injurious to particular persons, and a similar property is attributed to the Oleander (*Nerium oleander*). The mangrove, or *Rhizophora*, has ever had an unenviable notoriety, on account of the malaria-producing properties assigned to it. As a rule, probably without exception, localities where this plant flourishes, being for the most part marshes and low-lying tracts liable to inundation, are notoriously unhealthy, but in all probability this reputation arises altogether from paludal causes rather than from the plant itself.—*Boston Journal of Chemistry.*

Neglected Culture.—The annual report of the New Jersey State Agricultural Society gives neglected culture as having the strongest retarding influence in that State on fruit culture and orchard planting. The old orchards, we are told, "are sorry sights to look at," simply for want of proper culture and manure. We know many such, that, to our knowledge, have not had a shovelful of manure in fifteen years, removing during this time not only what Apples the trees bore, but also a cutting of hay once a year. This, too, by excellent grain farmers, men who would not think of planting a crop of Corn or Potatoes without a full dose of manure for each. This has been the great difficulty everywhere; but few of those who plant orchards, whether large or small, being willing to give them the care they bestow on annual crops. No good farmer would think for a moment of planting his Corn in a grass sod, and giving no cultivation—a treatment which has been very common for young fruit-trees. We are glad, however, to see of late years a great improvement in the management of newly transplanted orchards as well as of bearing ones, and landowners are learning that trees kept in vigorous and healthy condition bring finer and higher fruit, and more of it, than such as are allowed to become enveloped in weeds, grass, and brush.—*New England Homestead.*

Shade Trees for Streets in the Southwest.—A correspondent writes that in St. Louis he finds Elms, Planes, and Maples generally the most vigorous and valuable varieties for street planting.

MATTERS IN TRINITY COUNTY.

BY DR. HENRY DEGROOT.

WEAVERVILLE, TRINITY CO., July, 1874.

In my last communication to the HORTICULTURIST, it was remarked that the late-lying snow upon the mountains in this section of country had the effect to preserve a rather low and even temperature throughout the spring months, thereby preventing a premature putting forth of the fruit and rendering it hardy. In the severe frost that prevailed here on the night of June 22d, this remark has found verification; none of the fruit, not even the Grapes, then about setting, having received any injury. The frost of April 4th and 5th, 1873, which so greatly damaged the Grape crop in most of the large valleys throughout California, did no harm here, nor, so far as I can learn, in any of the northern counties, all of which consist, like Trinity, of deep valleys, open foot-hills, and timbered mountains.

Throughout all this part of the State, the fruit crop will this year be very abundant, and, as it always is, of excellent quality, no insect nor any form of disease having ever been known to cause it serious injury. This is true not only of the fruit, but also of the cereal crops, and, I believe, of every other product of the vegetable kingdom.

Strawberries, Cherries, and Currants have already matured here, the crop of each being very prolific. Many of the Cherry-trees have borne with such profusion that they have required artificial supports to keep the limbs from breaking. The early varieties, which commenced to ripen about the middle of June, sold at the rate of $1 a gallon. At present, they will not sell for half that price; and, were it not that many will be dried, there would not in a short time be any market for them at all, the crop being so very abundant. Early Apples begin to make their appearance here, but Peaches and Apricots are not yet quite ripe. For all the earlier varieties of fruits there is a limited market, but, as the season advances, all kinds become so plentiful, three-fourths of the inhabitants raising more than they want, that there is no longer any sale for them whatever; even the Chinamen being allowed to go into the orchards and pick what Apples and Pears they like.

If only we had railroad communication the entire distance, we could send many kinds of fruit to the San Francisco market with profit, as its superior quality would always command for it a good price. With wagon transportation for fifty miles over a high range of mountains this is impossible. Some of our orchardists have tried the experiment of sending Apples to your city, but they were too much bruised on the journey from here to Redding—northern terminus of the railroad—to warrant offering them for sale. These lots were sent over in freight-wagons, which, of course, subjected them to a good deal of jolting. If carried on springs, they would, no doubt, reach Redding in good condition, as the road during the dry season is not a rough one. In view of the fact that really good Apples are not over-abundant in the San Francisco market, it is very probable that this fruit will before long be shipped thither in quantities from this county, as the high prices ruling there in the winter would make this a paying business. The Apples raised here, besides their superiority in other respects, keep well the year round. The very best you get toward the end of the season no one would think of using here; in fact, none so poor are ever to be seen.

It would be thought, that, with all this superabundance of the raw material, a good deal of fruit would be dried or otherwise preserved for future use, and large quantities of wine be made. Such, however, is not the case—first, because much of the green fruit keeps so well that there is no great need for subjecting it to any preserving process; to dry or can it for exportation would hardly pay—that is, not sufficiently well to meet the ideas of our ease-loving and not over-thrifty population. As for wine-making, while we have several small vineyards and many vines scattered about over the country, not more than half a dozen parties pretend to utilize the Grape to this end at all. What wine is made is excellent, and there is no doubt but this branch of business will yet be greatly extended here, as the vine thrives exceedingly throughout this entire north country.

We have here, almost to the tops of our mountains, the same generous red soil that covers the foot-hills of the Sierra Nevada and is everywhere so common on the mountains and upland districts of California. The vine planted almost anywhere will grow without irrigation, as the rain-fall here extends further into the summer than in the more southerly counties. For the same reason fruit-trees, cultivated grasses, and the cereal crops can be raised here without this aid—at least, in most places.

The region devoted here to fruit and grain culture has an altitude ranging from 2,000 to 4,000 feet above sea-level—mean altitude, about 3,000 feet. This, with the influences of the adjacent mountains, and the sea-air, and the fogs (which reach this far inland,) have an excellent effect upon the fruit during the season of its flowering and setting. The air-currents alternate through these deep valleys in regular land and ocean breezes during much of the summer, the latter bringing with them a certain amount of mist and dampness. The dry north winds that sometimes so rapidly desiccate the ground and blight the growing wheat farther south are unknown here. The cereal crops here, and also in the counties adjacent on the north, are good this year—much above an average. Hay, much of which is made from the grain cut while green, is therefore plentiful and cheap, and some flour will be made both in Scott's Valley, Siskiyou County, and also over on the Hay Fork, where is located the only flour-mill now running in Trinity. As the mines are turning out unusually well, the present will be a very prosperous season throughout this north end of the State.

The wild Flax, indigenous in many parts of California, grows quite profusely in some localities up this way. Having pulled and dressed some stalks of this plant lately, I find it to possess a long, soft, and glossy fibre. It is exceedingly strong, and I do not see why it might not be cultivated to advantage, as it would grow well without irrigation, and on almost any sort of soil. It was from the fibre of this plant the Indians made their bow-strings, nets, fishing-lines, etc., all noted for their durability and strength, and there is no question but it would prove a very valuable textile where cloth or cordage of unusual strength were required. Some portions of it are also nearly as flossy as silk, and might be wrought into wares of extreme delicacy and softness

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Care of Cions.—A writer who is a grafter by profession says the most successful method he has found to keep cions in a fresh healthy state is, to layer them down in good clean sawdust, slightly damp. He says they do far better than in earth or sand.

MEANS OF IMPROVING LANDS.

Rotation of crops is one of the means of improving land. Deep and deeper plowing every year, and incorporation of vegetable mold, even if you have to resort to two vegetable crops on the same land the same year; returning the whole proceeds of the cotton plant to the soil, except the cotton lint; making as much manure under the shelter as possible; and using as much litter to absorb the whole of the urine and excrements of the stock and no more. These methods comprise my system of improving land.

All the scrapings from the low lands and fence-corners, swamp mud, muck out of the ponds and bottoms, use to the full extent you have teams and labor to do, spreading it over the land.

Use commercial manures on all crops planted, from 100 up to 800 pounds to the acre of "Dickson's Compound." All land should be subsoiled, at least once in three or four years, and if you have the means, it will pay to subsoil every year. You should never run more than one course without subsoiling. I do not consider soil up to its full capacity, until you have twelve inches of soil, and six inches of subsoil. The greatest of all the means of improving land is to use the commercial manures every year, because you not only improve the land, but it will also pay you to use them, out of the crops grown. I consider this the philosopher's stone in all farming. You may talk of machinery, but there is no such thing as labor-saving, if you neglect manures. These are the greatest labor-saving machinery that can be adapted to the planter's use. While other machinery might exhaust the land, these will draw greater crops and still improve the lands. But at the same time, while I consider them the greatest means of saving labor, they give you the capital to increase your labor-saving machinery in the same proportion that they increase your crops. I would not deter the farmer from all labor-saving machinery. I look upon manures and machinery as the best means that can add to our present labor.

In all instances, before you commence improving land, the land should be well drained or hill-side ditched. There is no such thing as improving land without draining it where it needs it, or using the means to prevent the fertilizers from being washed off after they have been placed in the soils.

There is another means of improving land, by turning in vegetable matter. Poor land will not produce vegetable matter sufficient to improve the land materially, without the use of commercial or other fertilizers, to increase the quantity of the green crops to be turned in. By the use of fertilizers, you can get two green crops a year to turn in, either of grass, weeds, Peas, or Clover, and cultivated grasses where they would succeed, where, otherwise, you could get but one. The object of turning in these green crops is to gain all the crops need from the atmosphere, besides what they get from the subsoil. The carbon from the decaying green crops is a retainer of the ammonia until the crop draws it out, either from the rain or snow, or its own decomposition. We have already stated that rest is one of the means of improving land. While the land is at rest decomposition goes on all the time as though the crops were there, and the rest helps to make the decomposition of the vegetable mold ready for the crop that follows the year afterward. Rest gives you a year's supply of vegetable mold to make another crop with.

PRESERVING BARN-YARD MANURE.

A striking illustration of the value of manure made in the barn-yard, by preserving it from the influence of the weather, is presented in the experiment lately made by Lord Kinnard, a Scotch land-owner and farmer. Four acres of good soil well measured; two of them were manured with ordinary barn-yard manure, and two with an equal quantity of manure from the covered sheds. The whole was planted with potatoes. The product of each acre was as follows:

Potatoes treated with barn-yard manure.—One acre produced 272 bushels; one, 298 bushels.

Potatoes manured from the covered sheds.—One acre produced 443 bushels; one, 471 bushels.

The next year the land was sown with wheat, when the crop was as follows:

Wheat on land treated with barn-yard manure.—One acre produced 41 bushels 19 pounds (of 61 pounds per bushel); one, 42 bushels 38 pounds (of 61 pounds per bushel).

Wheat on land manured from the covered sheds.—One acre produced 55 bushels 5 pounds (of 61 pounds per bushel); one, 53 bushels 47 pounds (of 61 pounds per bushel).

The straw also yielded one-third more upon the land fertilized with the manure from the covered stalls than upon that to which the ordinary manure was applied.

In view of these facts, we hope that our farmers will give this subject their full attention for their own benefit, and in making shelter or stalls for stock, it might be done with a view to the increase of manure under the cattle, as it is not removed before it is intended for use, if it is likely to remain there for months.

AGAVE XALAPENSIS.

The Agave family has not received the attention from lovers of plants that it deserves. It contains hundreds of species and varieties, some of which, for symmetrical habit and beauty of foliage, are excelled by but very few ornamental and easily cultivated plants.

Agave Xalapensis, when well grown, is one of the prettiest. Its leaves grow about two feet long, of a dark green color, terminating with a large brown spine, with small ones thickly set along the edges. It is a native of Mexico, and requires a soil composed of turfy loam and cow manure—about two parts loam and one part manure. When potting, give plenty of drainage, as it requires plenty of water when growing, but when at rest should be kept moderately dry. If it gets saturated with water when at rest, it soon shows the evil effects by the leaves getting pale in color, and the bases of them shrivel.

For filling vases this plant is well adapted, enduring the burning sun and severe drouths admirably; the erect growing habit of the young leaves, which droop with age, giving it that graceful outline necessary for plants used for this purpose. During winter the leaves should be kept dry; at least no water should be allowed to lie on them, as it rots the parts covered, quickly destroying the injured leaf.

When removing the plants, great care should be taken to prevent the leaves from rubbing on each other, as the spines on the edges puncture the fleshy part, leaving marks which, although not visible at the time, make their appearance afterward, greatly disfiguring the plants.—*Country Gentleman.*

To a gentleman every woman is a lady in right of her sex.

FRUITS ADAPTED TO CALIFORNIA.

Following is a list of fruits adapted to California, taken from the catalogue of the American Pomological Society:

Apples.—Alexander, American Summer Pearmain, Autumn Bough, Autumnal Swaar, Beauty of Kent, Ben Davis, Blue Pearmain, Broadwell, Buckingham, Bullock's Pippin, Cannon Pearmain, Carolina Red June, Dutch Mignonne, Duchess of Oldenburgh, Dyer or Pomme Royal, Early Harvest, Early Pennock, Early Strawberry, Fall Jennetting, Fall Orange, Fall Pippin or Holland Pippin (erroneously), Fall Wine, Fameuse, Golden Russet of Western New York, Golden Sweet, Gravenstein, Hawthornden, Hewes' Virginia Crab, Hightop Sweet, Hubbardston Nonsuch, Jersey Sweet, Jonathan, Keswick Codlin, King of Tompkins County, Lady's Sweet, Large Yellow Bough, Lowell, Maiden's Blush, McAfee's Nonsuch, Mother, Newtown Pippin or Albemarle Pippin, Newtown Spitzenberg (Vandevere, of New York), Peck's Pheasant, Porter, Primate, Rambo, Rawle's Genet, Red Astrachan, Rhode Island Greening, Rome Beauty, Roxbury Russet, Smith's Cider, Summer Rose, Swaar, Talman's Sweet, Twenty-ounce Apple (Cayuga Red-streak), Wagener, Westfield Seek-no-further, White Winter Pearmain, William's Favorite, Wine, Winesap, Yellow Bellefleur.

Apricots.—Breda, Large Early, Moorpark, Red Masculine.

Blackberries. — Dorchester, Kittatinny, New Rochelle or Lawton, Wilson's Early.

Cherries. — Arch Duke, Belle de Choisy, Belle d'Orleans, Bigarreau (Graffion, Yellow Spanish), Bigarreau of Mezel, Black Eagle, Black Tartarian, Carnation, Coe's Transparent, Donna Maria (new), Downer's Late, Early Purple Guigne, Early Richmond, Governor Wood, Hovey, May Duke, Napoleon, Red Jacket, Reine Hortense, Rockport, Tradescant's Black Heart (Elkhorn, Large Black Bigarreau).

Currants. — Black Naples, Cherry, Common Black (Black English), Fertile de Paluan, La Versailleuse, Red Dutch, Red Grape, White Grape, Victoria (Ruby Castle).

Gooseberries.—Houghton, Big English (occasionally).

Grapes (Native).—Croton (lately introduced). Nearly all the foreign.

Peaches. — Cole's Early Red, Cooledge's Favorite, Crawford's Late, Early York, George the Fourth, Grosse Mignonne, Hale's Early, La Grange, Large Early York, Lemon Cling, Malta, Old Mixon Free, Old Mixon Cling, Smock, Stump the World, Troth's Early, Ward's Late Free, White Imperial, Yellow Rareripe.

Pears. — Bartlett, Belle Lucrative, Beurre Clairgeau, Beurre d'Anjou, Beurre Diel, Beurre Giffard, Beurre Hardy, Beurre Superfin, Bloodgood, Brandywine, Buffum, Catillac, Clapp's Favorite (new), Dearborn's Seedling, Doyenne Boussock, Doyenne d'Alencon, Doyenne de Comice, Doyenne d'Ete, Duchesse d'Angouleme, Easter Beurre, Flemish Beauty, Glout Morceau, Henkel, Hosenschenk, Howell, Josephine de Malines, Lawrence, Louise Bonne de Jersey, Nouveau Poiteau, Onondaga (Swan's Orange), Osband's Summer, Passe Colmar, Pound, Rostiezer, Seckel, Sheldon, Stevens' Genesee, Tyson, Urbaniste, Vicar of Wakefield or Le Cure, White Doyenne, or Virgalie, Winter Nelis.

Plums. — Bavay's Green Gage, or Reine Claude de Bavay, Bradshaw, Coe's Golden Drop, Columbia, Damson, German Prune, General Hand, Huling's Superb, Imperial Gage, Italian Prune,

(or Fellenberg), Jefferson, Lawrence's Favorite, Lombard, McLaughlin, Prune d'Agen, Royale Hative, Smith's Orleans.

Quinces.—Apple or Orange, Portugal.

Strawberries.—Large Early Scarlet, Longworth's Prolific, Triomphe de Gand, Wilson's Albany.

CLIMBING ANNUALS.

BY F. A. MILLER.

(See Frontispiece.)

In presenting a group of annuals we have selected two of a climbing habit. The others rank among the most meritorious and least known on this coast.

Tropæolum peregrinum (Canary-bird vine), is a most graceful variety of the Tropæolum or Nasturtium. Flowers, sulphur yellow; the petals fringed and well reflexed, resembling the wings of a bird. The blooms are produced in great abundance from June to November, and have the peculiarity of changing their color to a much darker tint toward autumn. The branches recurve in a most graceful manner, and the bearing of the whole plant is elegant. The seed can be sown here in April; or, if planted in pots with protection of glass, it may be sown earlier, and the plants can be transferred after a month or so to their proper places.

Convolvulus minor, with its numerous varieties, is one of that hardy and free flowering class of plants which should be more extensively cultivated here. Most of them assume the character of trailing plants, and produce a most charming effect when fairly developed. The flowers of the various sorts vary in color from white to a rich violet, some kinds producing double flowers. The seed germinates freely, and should be sown where the plants are expected to remain.

Scyphantus elegans is with us a perennial climber, and is rarely met with. The flowers are of a bright yellow color, and the habit of the entire plant is most elegant and interesting. The culture of the Scyphantus is not attended with any difficulties, but it is advisable to start the seed in pots under some slight protection, and transfer the plants, with soil attached to the roots, to their respective places in the months of April or May. In the greenhouse the Scyphantus may be cultivated successfully as a perennial, and forms a pretty ornament.

Digitalis (Foxglove), a hardy perennial with us, is very little known here, although as a herbaceous border plant it has but few superiors. It does not bloom until the second year from seed, when its Gloxinia-shaped flowers, produced on long spikes, form a highly decorative object in the garden. The various colors of its numerous varieties are white, purple, rose, and yellowish brown, more or less spotted with darker colors. The best varieties are *D. lanata*, *D. purpurea*, *D. gloxinioides*, *D. maculata*, and *D. grandiflora*. The seed of the Digitalis is very fine, and should not be covered more than a sixteenth of an inch deep, with partial shading until the plants are strong enough to be transplanted or thinned out. Sow in autumn, or early (not later than April) in spring.

Mending Watering-Pots.—Tin watering-pots much used in the garden often become rusted at the lower corners, and begin to leak. It is not necessary yet to throw them aside, as the holes may be effectually stopped without going to the tinker's, by covering them inside with a small piece of linen dipped in copal varnish, the tin being previously thoroughly dried.

Editorial Portfolio.

HORTICULTURAL EXHIBITION.

We are happy to announce that arrangements have been perfected between the Mechanics' Institute and the Bay District Horticultural Society of California for a horticultural and floral display, in conjunction with the Mechanics' Fair. The large and elegant pavilion now under construction on Market, Eighth, and Mission Streets, will be completed by the 1st of August, and the exhibition will open on Tuesday, August 18th. This will be the Fourth Annual Exhibition of the Horticultural Society, and it is believed will not be inferior to any former display, while the decoration will probably be on a grander scale than heretofore. The horticultural department will occupy about one-sixth of the entire building, a space fifty feet wide by 250 feet long, being a portion of the main building, which is provided with extra lights and ventilation.

The arrangement of the horticultural department will be in the style of a modern flower-garden, while the outskirts will be planted in grass.

The most objectionable feature to the exhibition is, that it is to remain open for four weeks; but this difficulty has been removed by dividing the time into four weekly exhibitions, so that plants and articles of perishable nature can be removed at the end of every week, and be replaced by others. To accomplish this, the horticultural department will be closed every Monday, and until Tuesday noon, for the purpose of removing and entering articles.

About $850 in premiums are offered for the various floricultural, horticultural, and agricultural products of the State, all of which, we hope, will meet a lively competition.

There is little doubt but that floral displays have now become indispensable entertainments to this community; and it is with great pleasure we perceive the very encouraging progress in the interest felt for this healthful and recreative pursuit, and for which we have been working earnestly during the past four years.

We also hope that the horticultural display will be more general than heretofore. All of our nurserymen and florists should combine to make this a most complete success. All are invited to do their share. Competition is open to all. If amateurs would consent to bring some of their pets, a most pleasing feature could be added to the exhibition.

FAVORS RECEIVED.

The Overland Monthly for August.—We always enjoy the perusal of this magazine, from the fact that it comes from such a new and peculiarly rich field of literature. It may not be inappropriate to mention that the *Overland* is certainly entitled to no small degree of credit to have produced such popular American authors as Bret Harte, Charles W. Stoddard, Joaquin Miller, Stephen Powers, John Muir, Prentice Mulford, Benjamin P. Avery, and Miss Ina D. Coolbrith, and also that it is apparently advancing a number of its other contributors to an enviable position in literature. Some of the contents of the present number are very instructive, as follows: "Glimpses of the Court of China," by Bishop Kip; "Pioneers of Oregon;" "Mythological Zoology of Japan;" conclusion of Dr. Stillman's Argonautic papers; "Legislation on Railway Freight Charges;" the fourth paper on "Studies in the Sierra," by John Muir. The "Etc." department contains a very elaborate translation, by

the editor, of a criticism on the French Art Exhibition of 1874. $4 per annum. John H. Carmany and Co., publishers, San Francisco.

We are again indebted to James Vick, of Rochester, New York, for the handsome frontispiece of the present issue of this journal.

A copy of the *Pacific Coast Educational Journal* has been placed on our table. This is the first number of this quarterly publication, and is a very creditable production. It is alike instructive to the teacher, the pupil, and the home circle. $1.50 per annum. John H. Carmany & Co., publishers, San Francisco.

Everlasting Flowers.—The Immortelle of the East (*Helichrysum orientale*), a native of Asia, has been known in Europe since 1620, but was only first cultivated in gardens about 1815. Its flowers, the symbols of friendship, or tribute to talent and genius, serve to make the garlands of Immortelles which ornament the tombs of the dead in Roman Catholic countries. It is cultivated in France, in the communes of Lower Provence, where the soil slopes toward the Mediterranean Sea. It succeeds very well on the slopes of Bandols and Cioto, which are exposed to the south and inclosed by walls of stone. It blossoms about the month of June. It suffers from heavy and continuous rains and strong dews, and only vegetates well on light, stony and permeable soils. It is propagated by offsets, which are separated from the old stocks. The gathering of the flowers is made in the first days of June, before the bursting of the buds. As the flowers which are insufficiently formed or too full blown are rejected by the trade, it is important not to cut either too soon or too late. The collection is made by women, who tie them in small bundles, which are ordinarily dried on the walls of the inclosure. Finally, young girls are employed to remove the down which covers the ramifications. A kilogramme ($2\frac{1}{2}$ lbs.) by weight of those plants contains about 400 stems, each containing about 20 flowers. Each growing tuft of Immortelles produces 60 or 70 stems. A hectare ($2\frac{1}{2}$ acres) will contain 40,000 tufts, producing annually 2,400,000 to 2,800,000 stems, yielding 16,000 to 20,000 bundles, or five and a half to six and a half tons in weight of Immortelles.—*Gustave Henge.*

Mice in Hotbeds.—When mice get into frames, as they often do, they produce a fearful amount of mischief in a few days, if not destroyed. This may easily be done by mixing sugar and butter or lard smoothly together, in which a little strychnine is incorporated; spread this on thin slices of bread, and cut in small cubes and distribute them among the plants, and at the same time place vessels of water in some convenient place, where they may drink. Or, if preferred, the phosphorus compound sold by druggists for this purpose may be used, but we have always had the best success with the first-named mixture. In either case, care must be taken that the children do not have access to the prepared bits of bread.—*Canada Farmer.*

The New Japan Primrose has already been broken by English florists into as many varieties as the old Chinese Primrose has been. We do not hear of any double ones yet; but the production of these flowers is now so much better understood, that it will probably not be long before we see them.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

There are now at work in this State some of the wisest and best cultivators of fruits and vegetables. Progress in this respect is now being rapidly made. Knowledge, through experience, is effecting very valuable results. Even in this section of country, naturally so very highly favored in its different climates and soils, there are many things to contend with, and intelligence, judgment, energy, and continual vigilance, are necessary. Insects injurious to vegetation and fruit are becoming every season more numerous. With respect to varieties, both of fruits and vegetables, we are beginning to reject those which are unworthy, to treasure the best information, and to publish, for the benefit of our whole population, the conclusions arrived at in our researches.

In another place in this number of the HORTICULTURIST will be found a list of fruits best adapted for California, published in the excellent and carefully formed catalogue of the American Pomological Society. In this catalogue they have mainly relied on those fruits which have originated on American soil. The clear skies and warm summers of our American climate, especially in California, are far more favorable for successful productions than the lands of Van Mons, Knight, Esperen, and others. There will occur now, as of old, decay and deterioration of certain sorts of fruits, and the causes which lead to these evils will still exist. The Pear and Apple have been more subject than any other fruit to degeneracy. All the other fruits are, fortunately, almost entirely exempt from these troubles; and even the Pear and Apple on this coast have suffered but little, if at all, as yet, from this deterioration. We can certainly do as much, if not more, here, in originating excellent fruits from seed, than in any other country. Indeed, it appears that some fruitists have already been successful in this process. We may, probably, in time, and with patient industry, produce a better earlier or later Strawberry than the Wilson, or even the Longworth Prolific, or an Apple much earlier and better than the Early Harvest or Early Strawberry. Perfection, or very near it, may be obtained in this, as in many other things. We must plant the seeds of our best varieties; this may lead to vast improvement. Some cultivators, it is to be hoped, will be found, who, from their wealth and leisure, will be able to accomplish something lastingly beneficial to the community in this regard. Mr. Fox, of this State, has already made, in sowing Pear seeds from the improved kinds, a notable step in this matter, and the success he has met with demonstrates how favorable our climate is for such undertakings. That highly intelligent and noble authority, Col. Marshall P. Wilder, President of the American Pomological Society, in his late excellent address, stated: "Were I never to address you again, I would repeat the counsel I have so often given in regard to the production of new and fine fruits, namely: To plant the most mature and perfect seeds of the most hardy, vigorous and valuable varieties; and as a shorter process, insuring more certain and happy results, cross or hybridize your best fruits."

With regard to our markets: About the first week in July, Peaches were received in considerable quantity, but they were rather green and hard; price 15 to 25 cents per pound. Apricots were moderately plentiful, at 6c. to 15c.

Strawberries were rather poor and seedy, retailing at 15c. Gooseberries continued to sell at 6c. per lb. Blackberries were offered at 20c. Currants were very abundant, and retailed at 8c. Raspberries, 15c. to 20c. per lb. Eating Apples, of somewhat improved quality, retailed at 15c. per lb. Cooking Apples were quoted at 5c. to 8c.; Pears being 6c. to 8c. per lb.

As to vegetables, Okra, Chile Peppers, and Egg Plants were quoted at 50c. per lb. Green Corn was improving, and receipts were rapidly increasing. It could be bought at 15c. to 25c. Tomatoes were ripening rapidly, and retailed at 10c. to 15c. per lb.

The first Watermelons of the season were received on the 5th of this month (July), from the Sacramento River and Putah Creek. The consignment from the river consisted of 235, and the retail price was 75c. to $1.25 each. Cool weather for the most part of the spring kept back the supply of Tomatoes, and prices were high.

No variety of fruit had disappeared up to the 15th of this month, and the list in market up to that time was probably greater than it will be at any other time during the year. About the 6th of this month, the display of some kinds, including Gooseberries and Cherries, was getting to be poor in quality and small in quantity. Peaches began to arrive from the Sacramento River, and the supply afterward soon became large. In the middle of this month, Apples were plentiful, and ripe Red Astrachan Apples could be obtained at 40c. to 50c. per basket.

The Panama steamer brought, on the 7th, Limes, Alligator Pears, and Oranges from Acapulco, and a few Bananas and Pine-apples from Panama. Bananas sold at 50c.; Mangoes and Alligator Pears, $1 and $1.25 per doz.

The first Figs of the season were received on the 6th of the month, from I. R. Wolfskill, Putah Creek, Solano County. The whole consignment brought $1 per lb. On the 5th, the first box of June Plums was received from Tehama, and the first Hale's Early Peaches this season from Solano County. The supply of Currants far exceeded the requirements of the market, and prices were ruinously low to the producer. Families could obtain the best at 35c. per drawer of 10 to 11 lbs. Apricots are very plentiful still, and the prices have been very low.

During the writer's visit to Napa Soda Springs, on the side of a mountain 600 feet above Napa Valley, Blackberries were only fit to pick for market on the 14th of this month, being nearly four weeks later than last year. The bushes were laden down with the fruit, and they would certainly average more than forty pounds to the bush. From one acre and a half the owner expected to realize $1,000, clear of all expenses. A few Early Harvest and Red Astrachan Apples were ripe there about the 15th of this month (July).

Fruit Preserving in London.—In answer to inquiries from the editor of the *Gardener's Chronicle*, Messrs. Crosse & Blackwell state that in 1873 they preserved 1,100 tons of fruits; namely, 300 tons of Raspberries, 200 of Strawberries, 100 of Red Currants, 100 of Black Currants, and 400 of other kinds. These fruits are mostly grown within twenty miles of London, chiefly about Bexley Heath and its neighborhood. Although this is the largest quantity put up by any single manufactory, it forms only a small fraction of the whole amount preserved in London and other parts of the country.

NEW AND RARE PLANTS.

Verbena Glory of America is considered by the Floral Committee of the Massachusetts Horticultural Society as one of the best blue Verbenas ever raised.

New Double Zonale Pelargoniums.—Jean Sisley, who sent out last year Asa Gray, Aline Sisley, and other good kinds, this season announces a new set. George Sand, flowers white in the house, but tinted with flesh color in the open air; Francois Pertusati, color "aurora," bordered with white; Carl Vogt, salmon-orange, a "new shade of color;" Talabot, amaranth; Louis Blanc, a cherry lilac.

White Pansies.—*White Bedder* (William Deans).—This is a very useful variety; it is a very showy grower, thriving where others would die; it is a free, early bloomer, and is in good bloom in April when planted in autumn. It is profuse-flowering, the flowers rather small, but it makes a fine display in a mass.

Mrs. Felton (Hooper).—The largest and finest white in existence, having a very large, quite peculiar, bluish-violet blotch. It is unequaled as a show variety of this class, and as a bedder produces an effect which at once places it at the head of the bedding whites, while its blotch renders it quite original and distinct. It is of very vigorous habit.

Foam (Ware).—This is one of the very best whites. I have compared it for three years with all the rest, and believe this statement correct. It is of compact habit, has large, pale, showy, green foliage, and is a profuse bloomer. The flowers are of good shape, pure white, and of fine substance. It blooms well in May, This flower I have lately seen snubbed; but anyone who likes to view it here in May may judge for himself. It has a blotch of violet blue, free from stars.—*Gardener's Magazine.*

The White Everlasting Pea.—This fine old plant is not nearly so much planted as the colored form, though the white one is really the better plant of the two. It grows as freely as the old form, often attaining eight or nine feet in height, and it is just now one mass of snowy blossoms. The flowers being borne on long, slender stalks, are well adapted for cutting, and they may be used along with the choicest exotics. It figures largely at present in some of the Covent Garden bouquets. When once planted, in good loam, it grows like a weed.—*Garden.*

Early Flowering Chrysanthemums.—*Large Flowering:* Empress of India, Golden Queen, Alma, Lilac. Beverly, Christine, Aurea multiflora. *Pompones:* Andromedia, Drin-Drin, La Vouge, General Canrobert, Rose Trevenna, Rose Marguerite.—*Gardener's Magazine.*

New Variety of Christmas Rose.—Many of our readers are familiar with the *Helleborus niger*, or old Christmas Rose, which, in protected places, has been seen in bloom in winter, as it stood in the snow. A correspondent of the *Garden* describes a larger and earlier variety, known as *Helleborus niger major*, which produces larger blooms and flowers a month earlier, to which the old sort is a suitable successor.

Pelargonium, Queen Victoria.—This new Pelargonium is now being sent out for the first time. To say that it is handsome conveys but an inadequate idea of it, for it is the most marvellously beautiful and novel variety ever offered. The flowers have peculiarly crispy petals; they are not really double, but from their fullness of form and extra number of petals, have the

appearance of being so. The color is a rich vermilion; all the petals broadly margined with pure white, and the upper ones blotched with maroon. The contrast of the broad white margin with the vermilion ground-color makes the flower extremely pleasing and attractive.

A New Shrub.—That superb, new, hardy flowering shrub, *Xanthoceras sorbifolia*, hitherto found to be so difficult to increase, has at last been successfully propagated by Messrs. Thibaut & Keteleer, of Sceaux, near Paris. It will be "sent out" by that firm in 1875.—*Garden.*

Planera Richardi pendula.—This is the weeping variety of the Zelkona-tree. It produces long, pendent, slender branches, which are pretty well clothed with leaves. It is grafted several feet above the ground, on the erect growing variety. It forms a handsome ornament either for lawns, pleasure-grounds, or parks.—*The Garden.*

Chamæpeuce diacantha. — This beautiful plant is known as the Fish-bone Thistle. It has glossy, dark leaves, with white nerves and brown spines. It is covered with white silky down, and is very beautiful.

Primula Verticillata.—The flowers are sweet-scented, and the corolla has a very long tube before throwing out its spreading limb. The leaves are powdery, somewhat similar in this respect to the *P. farinosa.*

New Double-flowered Pelargonium (Captain Raikes).—This variety will be found at once the most beautiful and useful Pelargonium ever sent out, more especially for bouquet makers and market purposes. In fact, its blooming properties, at all times of the year, both early and late, are so extraordinary, that it may, with all justice, be termed a perpetual bloomer. This Pelargonium belongs to the French type of flower, and on account of the blooms being double, the petals do not readily fall when cut for bouquet-making. This fact alone will render it simply invaluable, whenever cut blooms are required, at all seasons of the year. It is of a vigorous, free-branching habit, producing large and ample dark green leaves. The trusses of bloom are borne well up above the foliage, and are both numerous and large, whilst the individual flowers are large and full, upper petals deep fiery crimson, flaked with purplish black and bordered with carmine; lower petals clear, bright, fiery crimson. It has been awarded a first-class certificate by the committee of the Royal Horticultural Society, and also a special prize at the great horticultural exhibition at Manchester, where the blooms retained their full beauty, and without any petals dropping, for a whole week.—*Garden.*

Pentstemon Palmeri.—Mr. Thompson, of Ipswich, states that the inflorescence of this plant is of a delicate peach color, and occupies quite two feet in length of the main stem. It comes from Arizona, and probably also occurs in other Western American States. The foliage, which on the flower-stems is connate, is of a glaucous hue, and petiolate on the side branches. It is evidently a robust-growing plant, reaching, when in flower, to a very considerable height; therefore, when the large number of flowers it produces is taken into account, it cannot fail to be a showy plant, either in the herbaceous garden or shrubbery border.—*Garden.*

Vernonia noveboracensis. — This vigorous-growing perennial is now producing rosy-purple flowers in abundance at Kew. Although the stems are somewhat naked, it might be used with

good effect in shrubberies along with such Asters as *Novæ Angliæ*, or among vigorous perennials in semi-wild situations.—*Garden.*

A New Hardy Bamboo.—Under the name of *Bambusa sulphurea*, M. Carriere describes a perfectly hardy species of Bamboo now growing in the Jardin d'Acclimitation, in Paris. In general appearance, it resembles *B. viridiglaucescens*, but it is not so vigorous; the stems are somewhat spreading, and of a fine sulphur-yellow color; the leaves are of a light green on the upper surface, and glaucescent underneath. M. Carriere states that he has never known this species to vary. Unlike the other yellow-stemmed kinds, which are very tender, it requires no shelter in winter. It was first introduced about 1865.—*Garden.*

NEW AND RARE FRUITS.

Pilot Apple.—In the *Gardener's Monthly* for March, a correspondent inquired for information about this Apple. In the "appendix" to Downing's *Fruits*, page 27, there is a figure, and the following history and description: An accidental seedling, found upon the premises of John Robbins, at the foot of Pilot Mountain, in Nelson County, Va. Tree hardy, of moderate growth, forming a round head, rather slow coming into bearing, but when established produces large crops alternate years, and a few the intervening ones, and is considered a valuable variety in its locality. Young shoots reddish-brown. Fruit large, roundish oblate, slightly angular; skin pale yellowish-green, shaded, splashed and striped with pale dull red nearly over the surface, and thickly sprinkled with large areole dots; stalk short, small; cavity rather large; calyx half closed; basin large, deep, smooth; flesh yellowish-white, fine, rather firm, tender, juicy, rich subacid, slightly aromatic; very good; core small. December, January.

Cambridge Grape.—This is a new Grape, which has just been offered in Massachusetts. It is strongly recommended by Mr. Hovey, who says it resembles the Concord in many of the characters which give so much value to that popular variety. Mr. Hovey was the introducer of the Hovey Seedling Strawberry, which held a high place in public estimation for so many years; and also brought out the Concord Grape raised by Mr. Bull. These facts are worth remembering in connection with any fruit which they strongly recommend.

Roots Adapting Themselves to Proper Depth.—Observing farmers have seen the effects of deep planting in wheat fields, where the mass of roots first thrown out at the grain, several inches below the surface, is superseded by another mass much nearer the surface. A writer in the *Pharmaceutical Journal* gives some other examples of a more striking character. Snowdrop bulbs were planted twelve inches beneath the surface. Several of them succeeded in sending up leaves to the surface, and produced flowers. When the foliage began to decay, they were taken up, when the old bulbs a foot down were found to have decayed and perished, and new ones formed four inches beneath the surface of the soil. On another occasion some Tulip roots had been left nearly uncovered, or almost on the top of the earth. After a year's growth, these were found to be only a skin or shell, but a tap-root had struck down and formed healthy bulbs four or five inches below. Thus roots instruct us how they ought to be planted.

Editorial Gleanings.

Acalypha Tricolor.—Few plants excel this for stove decoration all through the year, and yet it is very seldom one meets with a good specimen. Its dark fine foliage has a very pleasing effect among other foliage plants in the stove. Perhaps a few remarks on the culture of this plant may prove useful to some of our readers.

The beginning of March is, I find, a very good time for striking cuttings. The compost we use for the purpose is fine peat, leaf-mold, and silver-sand. The pots we use for striking are the four-inch; they are half-filled with crocks to insure good drainage, filled within half an inch of the top with the above compost, and the remaining part filled up with silver-sand. The cuttings when put in are well watered, and are not watered again until they are rooted. The pots are plunged in a bottom-heat of 85°, with a top-heat of about 75°. When rooted they should be potted off singly into three-inch pots, and again plunged in bottom-heat, when in about three weeks they will again require shifting into five-inch pots. The compost we use in this stage consists of good turfy peat, loam, a little leaf-mold, and silver-sand, to which is added a few potsherds broken up to the size of peas. As soon as they begin to take hold of the new soil, the necessary steps should be taken to obtain bushy plants by pinching out the leading shoots.

We find bottom-heat very beneficial to this plant, more especially in the growing state. If larger plants are required, I strongly recommend employing bottom-heat, and they require potting as they advance, never allowing them to become pot-bound. This plant is very subject to green-fly and mealy-bug. These little pests must be kept under, the former by fumigating, the latter by using a little Gishurst Compound and plying the syringe freely.

In the winter months they should be carefully watered, as drought is peculiarly injurious; but on the other hand, excessive moisture is equally injurious. With the above treatment, we find the Acalypha to give every satisfaction, and I may state, when well grown, it will prove a great acquisition for exhibiting purposes as well as indoor decoration. —*Gardener's Monthly.*

How Flowers become Naturally Double.—At the May meeting of the Philadelphia Academy of Natural Sciences, Mr. Thomas Meehan observed, that on several occasions during the past few years it had been noticed, among the variations in nature, that the tendency to produce double flowers was by no means the special prerogative of the florist to originate. Many of our commonest wild flowers, which no one would think of cultivating, had double forms in cultivation which were, no doubt, originally found wild. Thus we had a double *Ranunculus acris*, *R. bulbosus*, *R. Ficaria*, *R. repens*, and some others. There were, in plants, two methods by which a double flower was produced. The axis of a flower was simply a branch very much retarded in its development, and generally there were, on this arrested branch, many nodes between the series forming the calyx or corolla and the regular stamens and carpels, which were entirely suppressed. But when a double flower was produced, sometimes these usually suppressed nodes would become developed, in which case there was a great increase in the number of petals, without any disturbance in the staminal characters. But at other times there was no disturbance in the normal character of the axis. The stamens

themselves merely became petaloid. This was the case in the *Epigœa* recently found by Dr. Darrach.—*The Garden.*

Mushroom Power.—We have referred before to the remarkable power that delicate rootlets have of penetrating the hardest soil. A correspondent of the *Gardener's Chronicle*, of London, gives an interesting account of the force exerted by the mycelium of the Mushroom in making its way through apparently impenetrable materials. He says: "I observed a few days ago in our Mushroom-house, with considerable interest, and I may say with surprise, the penetrating power of Mushroom spawn. One side of the bed is brick four and a half inches thick, firmly set in hard lime, so close in the texture that it is impossible to introduce the point of a nail without considerable force. Nevertheless, the mycelium found admission, and produced Mushrooms of a considerable size on the outer side. The wall in several places contains porous bricks, and there, too, the mycelium found its way right through."

Flowers among the Ancients.—The custom of using flowers on occasions of mourning and festival is of high antiquity. Roses were especial favorites of the Romans; their floors and couches were strewn with them at feasts; sometimes the ceiling was arranged to shower Roses on those below, occasionally almost to suffocation. Among the Greeks,

"It was the custom then to bring away
The blushing bride from home at close of day,
Borne in a chariot, heralded along
With strewn flowers, torches, and a marriage song."

The classic fables concerning them are innumerable. Daphne transformed to the Laurel; Syrinx to the Reed; Narcissus, emblem of self-love; Hyacinth, sprung from the blood of Apollo's murdered favorite, and Anemone from the earth where lay dead Adonis—are but few of those that might be mentioned. —*Canada Farmer.*

The natives of Java are said to possess a fatal poison, which acts in a purely mechanical way, and yet, when administered to any animal, is said to produce certain death. It consists of the small, black filaments obtained from the stalk of the bamboo. These filaments, or minute needle-shaped spines, are covered with an imperceptible furze, which acts as a propelling medium, so that when the needles are swallowed they catch in the victim's throat, from which they work their way into the respiratory organs, and there produce irritation, followed by a violent inflammation, and eventually death. The needles are so fine that they may be mixed with any form of solid food, and thus be administered to the victim.

Sulphate of Iron and Vegetation.—M. Eusebe Gris has been making experiments on the influence of sulphate of iron on vegetation, and comes to these conclusions: That the salt is a stimulating manure; that it presents no danger when intelligently applied; that its action is evident upon the coloring principle of leaves; that from its cheapness a few cents' worth is sufficient to treat hundreds of plants; that it might be applied to cultivation on a large scale, and especially to the cultivation of fruit. His manner of applying the sulphate is as follows: A solution of two drachms to one quart of water is made, and with this the plants, previously placed in the shade, are watered. It is presumed that the earth surrounding the plant is moist; if this is not the case, a more dilute solution must be

used. The solution may be applied daily for five or six days; about two and a half ounces are sufficient for each watering of an ordinary-sized plant, as a Calceolaria. Plants which have become sickly, colorless, etiolated, will, under this treatment, quickly recover a full green color, give finer flowers, send forth more vigorous shoots, and generally show the good effects of the tonic.

Vegetation Inside an Egg.—A foreign journal states that "Professor Panceri made an interesting communication to the Institut Egyptien, at its meeting in December, on the cryptogamic vegetation which he had found within the egg of an ostrich. This egg had been given him at Cairo, and was still fresh, the air space having not even been formed. He soon, however, noticed the appearance of dark blotches within the shell, and having broken it open to ascertain the cause, he found that they were produced by the growth of minute fungi. Instances of a similar kind had already been studied by him, and he had communicated the results to the Botanical Congress held at Lugano in 1859. The believers in the reality of the spontaneous generation of living organisms have not been slow to seize on these cases as an argument in their favor, since, *a priori*, it would seem that the shell of an egg would be quite impermeable to germs derived from without. Panceri has succeeded in satisfying himself, however, that the unbroken shell of an egg is permeable to liquids, and that these may introduce germs into its interior. He has, in fact, actually succeeded in inoculating other eggs with a fungus which he had obtained from the interior of one in which it had made its appearance in a way apparently so mysterious. He cultivated the fungus in egg albumen, and thus conveyed it to the uncontaminated eggs."

The Vitality of Seeds.—A correspondent of the *Revue Horticole*, in sending the following notes to that journal, states that they were communicated to him by a friend who had ample opportunity for making trustworthy observations on the subject. The figures indicate the number of years in which the seeds may be depended upon as preserving their vitality or power of growth. They represent the periods of time after which the various seeds mentioned have been found perfectly good, and may be of some use as a guide to those who are uncertain whether to throw away or sow old packets of seeds: Seeds of Artichoke (globe) lasts good for 5 years; Asparagus, 4; Beans (garden), 6; Beans (French), 2 to 3; Beet, 5; Cabbage, 5; Carrot, 4; Cauliflower, 5; Celery, 7; Cress (garden), 5; Cress (water), 4; Cucumber, 5; Dandelion, 1; Egg-plant, 7; Fennel, 6; Gourds, 5; Leeks, 2; Lettuce, 5; Maize, 2; Melon, 5; Mustard, 5; Nasturtium, 5; Onions, 2 to 3; Parsnip, 1; Parsley, 3; Peas, 4 to 5; Pepper (long) 4; Potatoes, 3; Radish, 5; Rhubarb, 3; Salsify, 2; Spinach, 5; Strawberry, 8; Thyme, 2 to 3; Tomato, 5; and Turnip, 5.

Sewage and Peppermint.—According to the *Bulletin Thérapeutique*, an attempt made by a Paris merchant to utilize the sewage of that city in the cultivation of labiate plants in the plain of Genevillers has been so successful, that at the present time three hectares of land (7½ acres) are devoted to the raising of Peppermint alone. The plant is said to grow with such vigor that three collections are made in each year, whilst the essential oil obtained from it by

distillation is asserted to be superior in delicacy of aroma and flavor to that imported from England. So satisfied are the directors of the Pharmacie Centrale with the results, that they express their readiness, should any pharmacian be sufficiently enterprising to extend the experiment to the neighborhood of the manufactory at St. Denis, to undertake to use all the produce.

The Best Geraniums.—In the Report for 1873 of the Massachusetts Horticultural Society, is given the following list of the best Geraniums for general bedding purposes:

"The best golden tricolor is Mrs. Pollock; the silver tricolors are of little value. The Albion Cliff is the best silver-edged for bedding. In the bronze class, Moor, Harold, and Reine Victoria, dwarf, are the best. The best scarlets are Orbiculatum, Coleshill, Gen. Grant, Kingcraft, Leonidas, and Sir John Moore. For darker shades of scarlet, Douglass Pearson and Wellington are good. Crystal Palace Gem is the best golden-leaved. The best pink Geraniums are May Queen and Master Christine.

Ether Glue.—An excellent liquid glue is made by dissolving glue in nitric ether. The ether will dissolve only a certain amount of glue, consequently the solution cannot be made too thick. The glue thus made is about the consistency of molasses, and has double the tenacity of that made with hot water. If a few bits of India-rubber, cut into scraps the size of buckshot, be added, and the solution be allowed to stand a few days, being stirred frequently, it will be all the better, and will resist the dampness twice as well as glue made with water.

Roses for Persia.—Sending Roses to Persia seems much like sending coals to Newcastle, but our English cousins have been doing this. *The Gardener* says that the floral decorations at Buckingham Palace, during the Shah's temporary residence there consisted almost wholly of Roses, selected with a view to recall to his mind his own Persian "gardens of Gul in their bloom;" and so struck was his majesty by the splendid display of these flowers which daily met his eyes, that he has sent an order to London for an extensive assortment of the same kinds to be dispatched immediately to Persia.

Thirty-one years ago, Corn sold at Mansfield, Ohio, for 12½ cents, Oats at 10 cents, Wheat at 40 cents, per bushel, and dressed hogs at one cent per pound.

METEOROLOGICAL RECORD,

For the Month ending June 30th, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.08	in.
do 12 M.	30.08	
do 3 P. M.	30.07	
do 6 P. M.	30.06	
Highest point on the 5th at 9 A.M.	30.19	
Lowest point, on the 30th at 6 P. M.	29.99	

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	62°	
do 12 M.	67°	
do 3 P. M.	66°	
do 6 P. M.	62°	
Highest point, on the 13th, at 3 P.M.	82°	
Lowest point on the 22d, at 6 P.M.	55°	

SELF-REGISTERING THERMOMETER.

Mean height during the night	50°
Highest point at sunrise on the 10th	59°
Lowest point at sunrise on the 17th	46°

WINDS.

North and north-west on 13 days; south-west on 2 days; west on 15 days.

WEATHER.

Clear on 12 days; cloudy on 2 days; variable on 16 days; rainy on 2 days.

RAIN GAUGE.

June	6th	0.04	inches.
"	21st	0.04	"
Total		0.08	"
Previously reported		23.90	"
Total rain of the season up to date		23.98	"

ARISTOLOCHIA SEPHO.

(Dutchman's Pipe.)

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. IV. AUGUST, 1874. No. 8.

ALPINE PLANTS.

BY F. A. MILLER.

[Continued from the July number.]

The AURICULA (*Primula auricula*) is one of the oldest and prettiest Alpine plants under cultivation, yet it is rarely met with here; in fact, very few of our amateur gardeners seem to know of its existence. In Europe we find the Auricula in every collection; in fact, wherever there is room for a flower-pot we generally meet with it. There is no reason why we can not grow the Auricula here in its full glory, our climate being exceedingly well adapted for it. During the last two years I have paid special attention to a collection of about 200 plants, and find that, without any care except watering them occasionally, they continue to flower through nearly all the year. Our rainless and cool summer favors its cultivation.

The varieties of the Auricula are almost endless; but the green-edged varieties are nowadays considered most desirable. Since making their cultivation a special point, I have had the pleasure of seeing them admired by many visitors, and I have good reason to believe they will yet become favorites in our gardens. The Auricula is a native of the European Alps.

PENTSTEMONS are another much-neglected class of herbaceous Alpines, and so well adapted to our mild climate that they may be had in bloom during winter as well as summer. They are easily raised from seed, and bloom with us in autumn and during the following winter, if the seed is sown in April or May. There are a number of distinct and good varieties, the leading colors of which are violet, rose, carmine, lilac, yellow, and blue. The Pentstemons are natives of America, mostly of Mexico. A very pretty variety, *P. confertus*, of a sulphur-yellow color, is found in Oregon; the best and most remarkable blue varieties, *P. Gordoni* and *P. cœrulea*, are indigenous to California; and the prettiest of all, *P. spectabilis*, is also a native of California, and found in the mountain range back of San Diego. This variety produces large and brilliant flowers of a reddish purple, grows five to six feet high, and is a very prolific bloomer.

Although our Californian varieties of Pentstemons are taken under cultivation with much eagerness in Europe, no one seems to care for them here. I am con-

tinually at a loss to account for the indifference with which so many beautiful native plants are treated at home, while imported plants of much less merit are eagerly purchased at a high price. This must be attributed, however, more to the producer than to the purchaser. It is true the nurseryman is compelled to cultivate that which is most in demand; but he should also make it his business to create a demand for anything which he considers meritorious, although its natural habitat may be within a stone's throw of his nursery. A little less of prejudice against "wild flowers" would perhaps give us a higher opinion of the country we live in.

In concluding this second article on Alpine plants, I would mention the Phloxes, and particularly the *Phlox hybrida*. An endless number of varieties of these are now presented annually in the catalogues of our eastern nurserymen. Nearly all the varieties are worth having, and it is difficult to select from the long list of exquisite colors and shades. Some of them grow from four to five feet high, while others assume a more dwarfish habit. They flower here from July until late in autumn. The flowers also vary much in the arrangement of colors. We have the pure, the striped, the light centered, the star-shape centered, etc. The colors are bright, pure, and pleasing, varying from the clearest white to a dark red, shaded rose, violet, lilac, and blue.

Nowhere can Phloxes be grown to greater perfection than in California, and no class of plants will thrive with so little care. They may be raised from seed, and are easily propagated by dividing the roots in autumn or spring. They may also be propagated from cuttings of the young wood during spring and early summer; but this mode of propagating requires to be done under glass. Few Phloxes are cultivated here now, but the day is not distant when they will be seen in every garden.

[To be Continued.]

CALIFORNIA FRUITS.

The following article on the fruit crop of California will have some interest for all classes of the community, as it exhibits faithfully the resources of our State in this department of profitable industry. If some of our wealthy capitalists are at a loss where to invest judiciously, the facts and figures there stated may give them an idea of a field for safe speculation which is widening every year.

California Fruits.—Any intelligent observer who will take the trouble to walk through the fruit market at this season of the year, can not fail to be favorably impressed with the great resources of California in this respect, and her claim to be considered foremost among the fruit-growing countries of the world. For size and beauty of coloring, her fruit bears away the palm, not only for that which is grown in temperate regions, but for many products of the tropics as well. In Grapes, for instance, he will find the Purple Isabella, the White Muscatel, the firm-meat Hamburg, and the rosy Tokay and Catawba. To an artistic eye, æsthetically cultivated, these are among the most beautiful productions of nature. The rich glow seems as if just transferred from the sunset sky to the glossy skin of these delicious fruits, which appear to be bursting with the imprisoned sweets within—just as if a miniature summer, with rosy-tinted clouds, was incorporated into the ripened seed-bearer, giving it a soul of priceless and inimitable colors. The display of Raspberries, Strawberries,

Plums, and Cherries, is very tempting, the latter especially being of large size, and in flavor far superior to those of the Eastern and Southern States.

Small Fruits.—Up to the 16th of June, 1,120,000 pounds of Strawberries were shipped to this city—a very large consignment. At present they are very scarce. It has been remarked that the Raspberries of this year have a richer flavor than usual; but no increase in the yield has been noticed. This circumstance may arise from the fact that in 1871 this fruit was much injured by the ravages of a small bug about the size of two lines, which can only be detected by careful scrutiny. When the existence of this diminutive animal was made known to the Raspberry-eating public, many persons conceived a violent prejudice against the fruit, and looked upon it ever after with distrustful and suspicious glances. The objection has not been removed this season, in spite of all assertions to the contrary: for the writer of this article, after having eaten half a pound last week, displayed considerable chagrin and stomachic anxiety upon discovering a dozen of the little bugs trotting a race against time up the sides of the saucer. They can do no harm, however, when taken into the stomach, because the chemical juices of the body instantly deprive them of life, and no alarm need be felt should anyone swallow them and ascertain the disagreeable fact afterward. They are selling (the Raspberries—not the bugs), wholesale, at 5c. to 6c. per pound, and, when properly cleansed, make a palatable addition to the dessert.

The number of Strawberry-vines and Blackberry, Raspberry, Currant, and Gooseberry bushes, has been estimated at 40,000,000, and the value of the yearly crop at nearly $2,000,000.

The Gooseberries are considered inferior to those of other countries, but they are rapidly improving. Mr. W. N. Steuben, of Gilroy, has grown some of the English variety this season, which measure three inches in circumference and an inch and a half long.

Larger Fruits.—The Apricot is a healthier tree than the Peach, and has an advantage over it in the fact that the fruit of some varieties ripens earlier. The Apricot looks well this year, and is slightly improved in flavor. There are about 100,000 trees in the State in good condition. But few Peaches are in market. Hale's Early variety, from Briggs' orchard, Marysville, may be seen for sale. They are about three times the ordinary size, and weigh about fourteen ounces each. The Nectarine ripens later than the Apricot, but has not so sweet a flavor. It labors, also, under the disadvantage of not being so prolific, although it is a hardy fruit. There are about 60,000 trees in the State, and they appear to be thriving. There are about the same number of Quince-trees. The Quince is hardy and prolific—not so much esteemed here as in the Eastern States, because the supply of fresh fruit is more varied and abundant here throughout the greater part of the year, and also for the reason that Quince jelly is not so much in demand as it is in colder climates, where the snows lie upon the ground for three or four months every winter. Cutting & Co., C. James King of William & Co., and other firms, are putting up large quantities of this jelly and fruit in hermetically-sealed cans and boxes, and thus far have found it to be a very profitable branch of business.

Plums and Cherries.—The different varieties of the Plum are represented by about 530,000 trees, of which num-

ber Santa Clara claims 120,000. The fruit, as far as can be ascertained, has never been troubled by the curculio or plum-weevil, so destructive to this fruit in the Eastern States and in Europe. Lately vast quantities of this excellent fruit have been pitted and dried by the Alden process, in which shape they are sold in bulk at 25c. per pound, and in caddies at 40c. The California Cherries are the finest in the world, unquestionably, as regards size and flavor. A great deal of damage is done to them by the birds, who appreciate very much this luscious globule; but the loss is much less than would be sustained by the depredations of the curculio and other pests to vegetation which are destroyed by the winged messengers of the air. The crop this season is large and excellent. In Nevada County, two tons of Cherries will be sent this year to Colfax Station, at 10c. per pound. The Cherry culture is a very profitable one. One hundred trees will stand on an acre of ground, at twenty-one feet apart, and an acre of the red land of the foot-hills will yield a crop worth $1,000. The German Prune is represented by 7,000 trees. Several companies have gone into the business of drying this popular article of dessert, with great success, the dried fruit being equal to the best imported, and, in fact, some of it is palmed off and sold as the German Prune.

The Fig.—The broad-leaved, green, and shady Fig-tree, with its clusters of pear-shaped, juicy, purple, and green fruit—next to the vine the historic production of biblical times, the favorite of the tropics, and the beautiful viand of all nations—is represented in California by nearly 90,000 trees. Frost is its great climatic enemy, and the genial warmth of the Sacramento basin and the southern counties are its greatest helps to prolific development. In the coast valleys, where not troubled with fog, it produces one good crop annually; but in the southern part of the State, and in other favorable localities, it yields two, three, and even four crops per year. As an instance of the remarkably prolific power of this tree, it is related that Mr. Knight, by continued high temperature, produced in England as many as eight crops in twelve months. This hint may be taken by our Californian fruit-growers, who can more easily achieve the same result. A Fig-tree on the estate of Mr. Clarken, in Folsom, Sacramento County, a few years ago, produced four crops of excellent fruit in one year, although no care whatever was taken of it. In the colder countries of Europe it is kept dwarfed, in order that it may receive the benefit of the heat of the sun reflected from the earth. The most common varieties in California are the Old Mission Brown and the White Smyrna. The former is more prolific, but the latter yields larger Figs, with a better flavor. The dried Fig is equal in flavor, but does not present so fine an appearance as the imported article.

The two varieties of the Almond (the Hard-shell and Paper-shell) are represented by about 40,000 trees. This tree resembles the Peach very closely, and is subject to the curl. It is not so hardy as the Peach, being more easily injured by frost, but is a favorite in the market.

The English Walnut, represented by 25,000 trees, is a very profitable nut. It falls from the trees when ripe, and can be left on the ground several months without danger of loss. It is extensively cultivated in Los Angeles, Sonoma, Santa Barbara, Sacramento, and Solano counties.

The Olive.—The consumption of

Olive oil on this coast is very great—so much so that the Olives raised in Los Angeles will not be sufficient to supply the demand for many years to come. Olives have never been extensively cultivated here, for the reason that there is no home market for the crude oil; but there is now a sufficient quantity grown to manufacture the oil for the local market. Speaking upon this subject, the Los Angeles *Herald* says:

"The same process by which Mr. Carreras, of the Los Angeles Petroleum Refining Company, reduces the heaviest crude oil to a first-class illumining fluid, at a cost of two cents per gallon, and within twenty minutes' time, will also refine Olive oil, and make it equal to the best article manufactured in Europe. This is an important discovery to the people of this valley. The cultivation of the Olive is very profitable where there is a demand for the crude oil; and the fact that we can, through Mr. Carreras' method, produce an article superior to that imported from Europe, for less money, will give an impetus to Olive culture not anticipated a few months ago. The fruit may be successfully grown in almost any part of the valley. This discovery develops another important industry, which will enable us to retain at home many thousands of dollars now sent abroad; to export an article of commerce instead of importing it, and will also enhance the value of real estate."

The San Diego *Union* remarks: "The prevailing impression has been that the Olive will not bear until ten years old, this being the ordinary time of bearing in other portions of the world with most of the varieties cultivated; but in California, with the varieties here planted, the case is different. Hollister's extensive orchard, four miles back from the coast at Santa Barbara, was in bearing three years after planting. The Kimball brothers also have two-year-old trees full of fruit, on their lands at National City, upon the Bay of San Diego. Higgins' place is farther off from the coast, being about eight miles inland, where the air is less saline, and the winds from the ocean very much moderated. At these three places the trees are not planted in valley land, but on the *mesa* or table-land. At the Mission of San Diego, the old trees planted by the missionaries, a hundred years ago, are in valley land, and they probably never were irrigated. Their present flourishing condition, after many years of neglect, and the vigorous growth and healthy appearance of the trees at the Hollister, Higgins, and Kimball places, show that from Santa Barbara down to the Mexican boundary, all along the coast, and for at least ten miles back, the soil and climate, on upland and in valley, are peculiarly adapted to the growth of the Olive."

Pears. — The different varieties of Pears most popular here are the Dearborn Seedling, Bonne Gifford, Bartlett, White Doyenne, Seckel, Winter Nelis, and Easter Beurre. These mature in the order they are named—one coming in as the other goes out. The Bartlett Pear, for size and richness of flavor, is unequaled, and is held in high estimation in the East. The Pear-trees in Santa Clara this season have been very much injured by pests in the shape of small worms and spiders. In some instances these little worms, which are so small that they can hardly be seen by the naked eye, strip the trees nearly bare of foliage. Mr. J. Q. A. Ballou, an experienced horticulturist, has ascertained that they appear in greater numbers, and do greater damage, when the trees are close together, and where the land is wet and undrained.

There are several hundred varieties of the Apple, as well as of the Pear, grown in the State. At our agricultural exhibitions the display of this fruit can not be matched by any other display in the New or Old Worlds. A large export trade of Apples and Pears is carried on with the East. The California Apple is not equal to that from Oregon (although it possesses many points of excellence, maturing earlier and holding out later), but surpasses the European and Eastern Apple in size. Indeed, there are some varieties which more resemble Turnips in size than Apples.

The Grape.—"Nowhere else in the world does the vine yield a more bounteous or certain crop, and nowhere is the quality of the fruit surpassed. Though the production of wine, owing to carelessness in selecting the varieties, ignorance of proper modes of manufacture, and unfriendly legislation, has not on the whole been profitable, the business is emerging from the clouds which encompassed it, and will soon take rank as one of the most reliable and profitable industries of the Pacific Coast. When this is the case, millions of acres in the foot-hills will be covered with vines, and the products of our vineyards will be famous throughout the world. For years the production of table Grapes, and the manufacture of raisins, will be more profitable than the making of wine. The finest varieties of foreign Grapes grow on our hillsides without irrigation, and produce bountifully such Grapes as can not be grown elsewhere on the continent. The demand for them, both at home and abroad, is every year growing larger, and as soon as we are able to do so, the teeming valley of the Mississippi, and even the Atlantic States, will be supplied from our gardens."

The Grape crop in Los Angeles this fall will be larger than that of any previous year. One of the largest vineyards in Sacramento County is that of John Miller, located on the celebrated Florin wine-belt, which extends from the American River to within a short distance of the Cosumnes, and spreads out east and west fully ten miles. Mr. B. Bernhardt, of Auburn, Placer County, has thirty acres of land, on which are 19,000 Grape-vines, ranging from two to twelve years of age. The vineyards this season have been attacked by two pests—one a green worm (the "tobacco worm"), and the other dark on the back, with yellow lines, called the Columbia worm. Each has a horn about one-fourth or one-half of an inch long on the posterior part of the back. In tobacco plantations they were destroyed by taking them by the horn, and dashing them on the ground, their size making it easy to find them.

The making of raisins is destined to become one of the most important objects of horticulture. Millions of pounds are annually imported by the people of the United States, and it will not be long before all the money we are sending abroad for this article will be kept at home, and poured into the pocket of California fruit-growers. The Malaga and Muscat have both been thoroughly tested, and produce a Grape that can profitably be made into raisins excelled in quality by none in the world. The ease and rapidity with which they can be produced is a great inducement for every family to engage in their culture. One does not, as with the Orange, have to invest large sums, and wait a long term of years for a return. In three years from planting the cutting, or two years after setting the rooted vine, a good crop can be counted on with certainty, and as the years go on it increases. With rapid communica-

tion with the vast mining region lying between here and the Missouri River, and the agricultural districts in the West, there is no such thing as over-production.

Many of the vines are very profitable, paying as much as $500 net per acre, and some even as much as $2,000. The Flame Tokay vines bear occasionally 12,000 pounds to the acre, making the gross yield equal to $2,400, at an expense of less than $200. The White Tokay, the Muscat of Alexandria, the Black Malvoisie, the Golden Chasselas, the Rose of Peru, the Black Hamburg, and the White Hamburg, in places near San Francisco, have yielded more than $200 net per acre. The average crop in California is 8,000 pounds to the acre, in France 3,000, and in Ohio 5,000. Thirteen pounds of Grapes make a gallon of wine. This gives nearly 600 gallons per acre. There are many vineyards of more than 100,000 vines each in the State. The great wine as well as Grape region of California are the valleys of Sonoma and Napa. Some of the vineyards cover hundreds of acres, and much of the soil on which they thrive best is useless for other productions.

Lemons and Oranges.—The California Lemon is not equal to the Malaga Lemon. It is too thick-skinned, and deficient in juice. From December last until June, there were received at San Francisco from Los Angeles 4,544,140 Oranges, 490,280 Lemons, and 22,000 Limes.

We can not better conclude this article than by quoting Hittell, in writing of the fruits of California. He says:

"As a fruit-growing State, California takes a high position. In this particular, as in so many others, her climate gives her great advantages. In no part of the world do fruit-trees grow so rapidly, bear so early, so regularly, and so abundantly, and produce fruit of so large a size. Nor is there any country where so great a variety of fruit can be produced in high excellence."—*S. F. Call.*

THE PAULOWNIA IMPERIALIS.

BY E. J. HOOPER.

Paulownia, Siebold (Natural Order, *Scrophulariaceæ didynamia angiospermia* Linn). Calyx five-cleft; segments equal, coriaceous, covered with a rusty down; corolla two-lipped; imbricated in its œstivatiæ; the two upper lobes external; fruit ovate, with a sharp point.

I have often been surprised to observe so very few of these handsome shade and truly ornamental trees cultivated and raised in California. This climate will undoubtedly suit it. It is rather too tender for the Eastern States, although I have seen some fine specimens there flourishing healthily in sheltered situations, with the exception of a few branches in some winters killed by severe frost. It does better in the milder climate of England, and parts of the continent of Europe. When quite young, its leaves are of gigantic size, often six or seven feet in diameter. In shape, the leaves are similar to the Catalpa (*Catalpa bignonoides*). It is a native of Japan, and is the only known species. It is as rapid a grower as the Ailanthus, the wood and trunk of the tree also resembling it. The leaves are rather coarse, looking like very large melon leaves; but the beauty of the large clusters of sky-blue flowers, shaped like the Gloxinia, and which make their appearance all over the tree early in the spring, before the leaves come out, covers all blemishes. It will thrive in any good loam, and may be easily cultivated by cuttings of the roots. It was named

in honor of Paulownia, Empress of Russia, having been first discovered in Japan by a Russian traveler and botanist. This rare and handsome tree sometimes reaches the height of forty or fifty feet. Its head is round and regular, though its branches are generally like the Catalpa — somewhat curled and twisted. Its highly ornamental flowers, and thick, large foliage, will always insure it a place in every collection.

THE VANILLA.

The Vanilla is remarkable for its climbing habit, which is not common among Orchids. There are several species, most of which are natives of the hot and damp regions of South and Central America; the genus is also represented in tropical Asia and Africa. The stems climb to the height of 20 or 30 feet, twining round the trunks of trees, and throwing out a profusion of aerial roots, some of which eventually reach the ground, as is the case with the Banyan, while others float in the air. The leaves are thick and fleshy, as also are the greenish-white flowers. The important part of the plant, however, is the pod, which, in some of the species, is an article of commerce, and yields the delicious flavoring which is so well known. Some little uncertainty exists as to which of the species produces the most valuable fruit. It appears, however, that *V. planifolia* and *V. aromatica* are the most important, although *V. guianensis*, *V. palmarum*, and *V. pompona* also yield some of the Vanilla of commerce. The pods as imported are narrow and flattened, from five to ten inches long, and of a dark brown color; they are pulpy within, and contain a great number of very small dark seeds.

A great part of the Vanilla of commerce is brought from Mexico and Venezuela, and principally from Vera Cruz, whence, according to Humboldt, the value of the annual export in his time was $40,000. The cultivation is mainly carried on at Misantla, twenty-four leagues north-west of Vera Cruz, the inhabitants of which are the only people in Venezuela who cultivate the plant. The growth is, indeed, extremely easy, as the ground requires no tilling; slips of the Vanilla plant are set at the foot of a tree on the approach of the rainy season, and soon begin to spread up the trunk. The plantations are cleared once a year from weeds and undergrowth, and in the third year the plants bear fruit.

Five varieties are recognized by the Vanilla-growers. One—the Vanille de Cochon—is so-called from emitting an offensive smell while drying. The harvest begins about December, when the fruit becomes yellowish-green. There are two ways of preparing it for the market. In one method the fruit is allowed to dry until the pod loses its green color. Straw mats, covered with woolen blankets, are spread on the ground, and when these are warmed through, the fruits are spread on them, and exposed to the sun. After a time they are wrapped in blankets, and placed in boxes covered with cloths, after which they are again exposed. In about twelve hours the fruits should become of a coffee color; but if they do not, the process is repeated. After about two months' daily exposure, they are tied up in bundles of fifty, and packed in tin boxes. Five qualities of Vanilla pods are known. The best is the *Primiera*, the pods of which are twenty-four centimetres long, and proportionately thick. The second quality is called *Chica prima*, the pods of which are shorter, and two count as one; the

third, *Sacate*, and the fourth, *Vesacate*, are still smaller, four of the latter being reckoned for one; they are gathered before they are ripe. The fifth and poorest quality is called *Basura;* the fruit is very small, spotted, and much cut or broken about.

The following is another method of preparing Vanilla for the market: About 12,000 of the pods are strung together by their lower end, as near as possible to the footstalk; "the whole are plunged for an instant into boiling water, to blanch them; they are then hung up in the open air, and exposed to the sun for a few hours. By some they are wrapped in woolen cloths to sweat. Next day they are lightly smeared with oil by means of a feather or the fingers, and are surrounded with oiled cotton to prevent the valves from opening. As they become dry, on inverting their upper end they discharge a viscid liquor from it, and they are pressed several times with oiled fingers to promote its flow. The dried pods, like the berries of Pepper, change color under the drying operation, grow brown, wrinkled, soft, and shrink to one-fourth of their original size. In this state they are touched a second time with oil, but very sparingly, because with too much oil they would lose some of their delicious perfume."

It appears somewhat remarkable that the cultivation of Vanilla in the West Indies has not been largely undertaken, as it would be attended with but little difficulty, and would be a source of much profit to the inhabitants. But even in Caraccas and Guiana, where the plant grows profusely in a wild state, it is almost entirely neglected. In the Isle of Bourbon, however, it has been cultivated with considerable success, and seventeen and one-half tons were exported from Réunion in 1871. At Liége it is grown on a small scale, to the value of 600 francs per annum; and a plant cultivated at Paris, in 1840, attained the height of three yards, and yielded 117 pods, which ripened in twelve months. In England, it has been in cultivation since 1759; fine examples may be seen in the tropical and economic houses at Kew. Mr. Ewing, and Mr. E. Bennett, grew the Vanilla with considerable success at Osberton; the latter gathered no less than 300 ripe pods off a single plant in one season. He considers a temperature of from 50° to 70° to be most suitable for it. He found it necessary to effect fertilization by artificial means, the stigma being prevented from receiving the pollen of its own flower by the interposition of an organ called the retinaculum.

As the English-grown pods are very highly flavored, it is possible that it might be practicable to grow it for economic purposes. The annual import of Vanilla amounts to about five or six hundredweight; its price varies very greatly, being sometimes as high as 125s. per pound, and at other times as low as 26s.

The chief use of the Vanilla is in flavoring perfumery and confectionery, and especially chocolate. One pod is sufficient to flavor one and one-half pounds of Chocolate, being ground with sugar for that purpose. The fragrance is said to act upon the system as an aromatic stimulant, exhilarating the mind, and increasing the energy of the animal system. It is occasionally employed on the continent in cases of hysteria; and is used by the Spanish physicians in America as an antidote to poison, and to the bite of venomous animals, as well as in other cases. A liquid used in Peru, where it is known as Baume de Vanille, exudes from the open pods at perfect maturity. The

fruits in time become covered with an efflorescence of fine, needle-like crystals, which possess properties similar to those of benzoic acid; when viewed through a microscope with polarized light, they are very beautiful objects.

De Menonville, who traveled to Guaxaca in 1777, thus describes his discovery of Vanilla in that district. After various hindrances and disappointments, he says: "At length an Indian, with a hoe in his hand, made his appearance. 'Brother,' said I, holding out a dollar, 'show me some Vanilla, and this is yours.' He coolly bade me follow him, and advanced a few steps through the underwood into a thicket, in which were a number of trees. He immediately climbed up one, threw down to me two pods of Vanilla perfectly ripe, and pointed out to me a branch on which several others were hanging yet green, together with two faded flowers. The form of the leaves, the fruit, the peculiar smell of the plant—everything convinced me it was the real Vanilla, in everything corresponding with such as I had seen at Vera Cruz. All the trees of this little copse were covered with it. I saw a quantity of green fruit, but collected no more than six specimens of these, and four large pods which were ripe. I caused the Indian afterwards to part from the root some of the cions which had sprung up. These I tied well together, wrapping up the whole in the leaves of an Arum, which at their base are three feet wide. After thus packing a fagot, which weighed upward of thirty pounds, I placed it in my large sack, which I fastened on my horse. I was so well satisfied with my Indian, that, besides what I promised him, I gave him two *reals* in addition. For his part, unwilling to be outdone in generosity, he ran to his hut, and brought me three other pods of Vanilla."

The Chica Vanilla of Panama is yielded by another Orchid, a species of Sobralia. The expressed juice of *V. claviculata*, a native of mountainous woods in the West Indies, is applied to recent wounds, and is hence called by the French in San Domingo *Liane a blessures*. There is a species known as *Zizpic*, in Yucatan, which is a great ornament of the *cenotes* or subterranean water-caverns of the country. These singular caverns are sometimes entirely subterranean, and are then of course without vegetation; frequently, however, they are more or less open at the top, when they are often of surpassing beauty on account of the luxuriant development of vegetable life which they contain. To these *cenotes* the few Ferns of Yucatan are almost confined, and it is here that this Vanilla attains perfection. The pods are occasionally taken to market at Valladolid, where they may be bought at an almost nominal price.—*Gardener's Chronicle.*

COLOR IN FLOWERS.

BY "AMATEUR."

To cultivate the taste, to educate the mind to perceive and appreciate the beautiful in nature, is a duty which we owe both to ourselves and to the fair world in which we are placed. To attain to this refinement of taste may certainly not be so indispensably necessary to us as to the poet and the painter, but it is eminently desirable that so pure and refined a pleasure should be ours, which may assist to wean us from inferior pursuits, to elevate our groveling minds above the low level of passion and care, and help us to feel more reverence and love for Him who has decked the earth with such numberless and diversified beauties.

In accordance with the invariable

simplicity of nature, from the three primitive colors—blue, red, and yellow—are produced all the varied tints we behold. These, compounded in the wondrous kaleidoscope of nature, are amply sufficient to produce the varied beauties of flowers, as well as the splendor of the rainbow.

In no objects in nature have we such brilliant coloring as in flowers. In them we have colors in the most delightful combination, and tints, modified by difference of surface and texture, in endless variety. Perhaps yellow is the commonest color in flowers, and blue the rarest; red occupying the middle station. Of these, the tints of the red flowers are more diversified than those of either yellow or blue. The many shades of color between the Nasturtium and the Sweet-william could not, we think, be paralleled by either of the other colors. It is interesting to observe how the flower of a plant invariably harmonizes in color with its green leaves, some by similarity and others by contrast. How finely does the snowy blossom of the Convolvulus of the roadside harmonize with its large, well-defined, empurpled leaves. How beautifully do the rich warm orange flowers of the Nasturtium contrast with the light-green leaves on which they repose! How becoming are the cold green leaves of the double Poppy to its blossom! How admirably do the little white stars of the Jasmine, or the elaborate Passion-flower, contrast with the dark leaves behind them! But if the blossom of the Marigold were viewed in connection with the green leaf of the Passion-flower, even an unpracticed eye would quickly detect the want of harmony between the flower and the leaf. Some few plants, as the Marvel of Peru, strangely produce flowers of different colors from the same root, but this is of rare occurrence in the vegetable world. It is also interesting to observe how exquisitely the various tints are blended in the individual petals, and how symmetrically these in their turn are arranged so as to form a complete flower, as, for instance, in a well-developed Dahlia. How inimitably, in the delicate tints of the Rose, does the blue or purple in some kinds blend with the warm blushing red of the centre of the flower! In other flowers, the colors are so softly blended, as the Nasturtium, in which the red is dashed, as it were, on the orange, yet without the least harshness. In some the petals are striped and variegated, with a different color from the ground, as the Tulip and Geranium; and in others each petal is of a different color at the inner part, as the Coreopsis. But, however fantastically the colors may be disposed, or however strangely they may contrast, there is always a harmony of coloring and softness of effect which must be pronounced faultless even by the most fastidious.

ACTION OF CAMPHOR ON PLANT LIFE.

In the year 1798, Benjamin Smith Barton described two experiments as to the stimulant action of camphor on plants. One was made on a Tulip, which, placed in a solution of camphor, showed vigorous growth, and was longer in withering than other Tulip slips, of the same kind, placed in ordinary water. The other experiment was made on a withering yellow Iris; through treatment with camphor it seemed, for some hours, endowed with new life. Barton came to the conclusion that camphor has a greater action on plants than any other known substance; and he compared its action to that of spirituous liquors, or of opium, on the human body, when taken in certain quantities.

These almost forgotten experiments of Barton's have been repeated, in new forms, by M. Vogel of Munich; and they have a considerable theoretic interest. This author, who has recently communicated his results to the Munich Academy, obtained a homogeneous solution by rubbing camphor with water, and shaking camphor powder in a flask with distilled water. Two branches (alike in size, and similarly conditioned) of a flowering Syringa were then introduced—one into ordinary water, the other into the camphor-water. Considerable difference soon appeared: in twelve hours the branch standing in pure water drooped, and was near withering; the other branch in camphor-water stood upright, and without any sign of withering—some of its buds were even developed; it was not till three days after that this branch began to wither.

In another experiment, a flowering branch of Syringa, which was nearly dead, was placed in the camphor-water, and a marked renewal and recovery was ere long observed, which lasted some time. Frequent repetition of the experiment with branches of Syringa showed the same result in varying degree. The camphor-water seemed to have less effect on vine shoots, and almost none on *Sambucus nigra*.

The action of camphor on cut branches of living and fully developed plants having thus been established, at least for some species, the idea naturally occurred that camphor must also have an influence on the process of germination of seeds. With this view, several seeds of *Lepidium sativum*, and various other plants, were taken for treatment, and they were mostly old, as the germinative force in such appears to be weaker than in fresh seeds. The seeds were spread out on some moistened blotting-paper covering a porcelain plate, and a second moist paper was put over them. In all cases the seeds thus treated with ordinary water and with camphor-water were exactly in similar conditions, as regards temperature and access of air.

For the first experiments, seeds of *Lepidium sativum*, of the years 1869 and 1871, were taken. The entire duration of the germinative force of *Lepidium sativum* is known to be three years. The seeds of both the years mentioned, treated with ordinary water, showed a very imperfect, retarded germination, while the seeds moistened with camphor-water germinated very soon: those of the year 1869 in twenty-four hours, those of 1871 in seven hours. A similar acceleration of the germinative process has previously been observed in treatment of seeds with chlorine and saline.

A further experiment was made with different kinds of *Raphanus sativus major*, the seeds being of the year 1866. As the duration of germinative force of this seed is three years, or four at the most, the sowing of these specimens in a garden would, of course, have been thought useless. Treated with camphor-water, however, the seeds germinated in four days, and thus some days earlier than fresh seeds under favorable circumstances.

Seeds of *Pisum sativum* of the season of 1865 showed in forty hours, under treatment with camphor-water, all the phenomena of the germinative process. Apart from the fact that *Pisum sativum*, even under the most favorable conditions, first begins to germinate after four or five days, the duration of germination of the seed is two, or at the most three, years; so that seeds of the year 1865 could no longer be sown with advantage.

With like rapidity germinated seeds of *Cucumis sativus* under action of camphor-water. In ordinary cultivation of this species of seed in garden ground, not a single grain, out of a large number sown, showed the slightest germinative movement after a long time. The example is thus a striking evidence of the peculiar action of camphor in revival of the germinative force of some species of seeds.

The following flower-seeds were examined in their relation to camphor-water: *Schizanthus pinnatus*, of the year 1869; *Maurandia Barclayana, Coreopsis, Ipomopsis, Senecio elegans*, of the year 1860; *Silene pendula, Silene amœna*, of 1867; *Basilicum, Myosotis alpestris*, of 1866; Aster species, of 1868; *Celosia cristata*, of 1867. In all of them a remarkable influence of camphor on the germinative force was perceived. The after development of some of the seeds that were treated with camphor was observed by Dr. Raob, the seeds having been put into the ground. It is interesting to know that the traces of the camphor treatment were here also visible, the young plants showing greater vigor and freshness.

From all these facts, M. Vogel draws the inference that we have in camphor a kind of stimulant for vegetation, capable both of strengthening the force and accelerating the time of vegetation.

There are cases, however, it appears, in which the favorable action of camphor is not observed. Thus, M. Vogel found that Clover-seeds, which in garden soil germinated in twenty-four hours, showed no signs of germination after a longer time, when the earth had previously been mixed with camphor-powder.

As oil of turpentine acts like camphor on the animal organism, M. Vogel made some experiments as to the action of water containing oil of turpentine on plants. The general result was, that this solution also accelerated the germinative process. But there was here, as evidently, an injurious action on the after development of the plants. Even in a few days the progress of the quickly developed seed ceased, and the plant deteriorated.

M. Vogel remarks, in conclusion, that the process of germination, receiving of oxygen, and giving up of carbonic acid, is identical with animal respiration. From the agreement of the vegetable process in the early period of germination with the animal processes, the thought arises that, precisely in reference to this, stimulants are possible whose action resembles the known stimulants of animal life.—*Gardener's Chronicle.*

NATIVE FERNS.

BY J. WARREN MERRILL.

[We copy the following from *The Gardener's Monthly* for May, believing it will be of interest to many of our readers.—Ed.]

In your number for December I asked if any of your numerous readers could put me in the way of procuring four Ferns, which I named. The kind response which I received from many persons, to me unknown, has convinced me of a wide-spread interest in the "flowerless plants;" and although the communication was made at an unfavorable time of year, it resulted in procuring for me two of the four kinds which I had all summer tried in vain to secure. This induces me to say that I have for some time been making a collection of *native Ferns*—not of the fronds in an herbarium, but the live plants—and have, I think, sixty-nine varieties this spring in fine growing order. There

are, however, according to a list recently published, one hundred and thirty-eight varieties in the United States and the British Provinces; so that I have but one-half of them. I can think of no way to secure any considerable number of others, but by proposing an exchange with persons who live in the South and West, and who are lovers of Ferns, that if they will send me, by mail, roots of the varieties growing in their vicinity, I will exchange for those peculiar to the Eastern States, or will cheerfully pay all expenses. I have, in my collection, some three hundred kinds of exotic Ferns, and some may desire to exchange for them or for dry fronds for their herbariums.

I want particularly to get hold of *Phegopteris alpestris*, California and Oregon; *Acrostichum aureum*, Florida; *Gymnogramma pedata*, *Notholœna ferruginea*, *N. candida*, *N. Fendleri*, *Cheilanthes Alabamensis*, *C. Fendleri*, *C. gracillima*, *C. argentea*, *C. Eatoni*, *Adiantum pilosum*, *Asplenium septentrionale*, *A. dentatum*, *A. montanum*. And if you have subscribers in southern Texas, I want to know if *Adiantum Æthiopicum* grows there.

Plants can now be sent across the continent for two cents per ounce, if there is no other writing than the directions. And I have just received in perfect order a lot of Ferns from San Francisco, each root being wrapped in damp moss, with plenty of twine, and all packed in a cigar-box.

A New Blackberry.—The Aughinbaugh seedling Blackberry promises to become an important addition to the fruits of this State. It matures about two weeks earlier than other varieties, which is a great advantage. The fruit is large and the flavor is excellent.

COLORING OF FRUITS.

BY W. B. WILKES.

This is a subject which has not received the attention its importance deserves.

We find in some orchards that red Apples color very finely, present a fine waxen appearance, the fruit is crisp, and the flavor is excellent. In others, the same variety is of a dull, dingy brown, skin rough, almost russet, the flavor rather insipid. It is known in market that the deeper the color, the more the fruit is sought after, and the higher the price. Natural laws control this, as in everything else.

This subject was forcibly presented in my orchard fifteen years ago. On one ridge the fruits colored finely; on another much less. There was a great diversity in comparing the fruits from other orchards in and around Aberdeen.

In seeking the cause, that coloring most deeply was found to have a very red clay subsoil; the other was underlaid with a much lighter subsoil. If one contained more oxide of iron than the other, it was susceptible of proof, by applying iron, so the feeders could appropriate it.

Anvil dust, cinders, and scraps of iron, were scattered under and around a few trees, extending just beyond the limbs, and incorporated with the soil. It was astonishing what effect was produced on the first crop, and for several years after. The fruit on these trees was not only more richly colored, but the delicate tints were as distinctly brought out as if laid on with a camel-hair pencil in a lady's hand. This was not all: there was a peculiar, glossy, waxen appearance, the flavor much improved, and the fruit rendered decidedly crispy.

As the subsoil varies so much in im-

mediate neighborhoods, these hints are presented that those not aware of this law, who contemplate putting out orchards, may select the site with reference to it; and also, where fruits do not color brilliantly, they may, at so little cost or trouble, remedy it.

A few years ago we had a very unusual season. Early in the spring the necessary amount of moisture was in the soil, Apples grew finely; then followed a few weeks of severe drought, the trees evidently drew most of their sustenance from the air, the ground much parched; then followed a fine season of rain. The red Apples that year had a russet band around them; the stem end colored during the early seasonable weather; that near the bloom with the latter. No coloring matter was extracted from the soil during the drought, while the russet band was growing; this was not only russet in appearance, but decidedly rough; the flavor of the crop was very indifferent. —*Illustrated Journal of Agriculture.*

VEGETABLE MANURES.

Dr. Pendleton, of the Agricultural University of Georgia, has made a report of certain experiments with manures to the Georgia Agricultural Convention, which contains some facts that are of interest to farmers. In regard to vegetable manures he says:

"The importance of vegetable mold to be used in conjunction with fertilizers was tested as follows: One row with enough mold from the woods to half fill the furrow, with ammoniated phosphate at the rate of 200 lbs. per acre, made 990 lbs. of seed Cotton. The fertilizer without the mold made 742 lbs.; the natural soil 432 lbs. The fertilizer with the vegetable mold made 128 per cent. on production; without it only 71 per cent.; showing that the presence of organic matter in a soil adds much to its production when fertilizers are used.

"The importance of husbanding the vegetable matter of the soil can not be impressed too often or too deeply on the cultivators of the soil. Where a good crop of grass, weeds, or pea-vines, or other plants have decayed in a soil, there is enough of all the mineral substances left in an available condition, except phosphoric acid, to make a fair crop of any of the farm products. One thousand pounds of grass decomposed in the soil will furnish four times as much potash as will be required to make one thousand pounds of Corn or Wheat, and half enough phosphoric acid, with quite an overplus of all the other mineral substances. The straw of the cereals will furnish more than enough of every one of them except magnesia and phosphoric acid; nearly enough of the former, and one-fourth enough of the latter. To make peas there are enough of all the minerals in grass, with quite an overplus, except phosphoric acid; just half enough of this, and double enough of potash. Pea-vines furnish a superabundance of potash and lime to make both Corn and Peas; in fact of every mineral substance except phosphoric acid. There is about half enough of this to supply the demand. There is a sufficiency in grass to make the seed and fibre of Cotton, of all these substances except magnesia and phosphoric acid. The stalks of Cotton will also furnish enough of all the mineral food except potash, magnesia and phosphoric acid. These three are quite deficient. Thus allowing that the stalks of Cotton left in a field weigh as much as the seed taken from them, for every thousand pounds there will be taken away eight pounds of phosphoric acid

in the seed, more than is left in the stalk; ten pounds of potash and six pounds of magnesia. And when it is remembered that under our system of culture, the cotton stalk is about all the organic matter left in the field, and the cattle take off a good portion of this during the winter, it is not wonderful that our lands deteriorate, our crops rust, and purses remain empty. The inference is clear from the above facts; that a good crop of grass and weeds, or other vegetable matter, covered in the soil and properly decomposed, will furnish a sufficiency of all the mineral substances, to make a good crop of Corn, Cotton or Peas, except phosphoric acid: That a piece of land run in Cotton for a number of years, will rapidly be deprived, not only of its nitrogen but its phosphoric acid, and gradually of its potash and its magnesia: That in a system of rational agriculture, it is quite as important to husband the organic matter of the soil as it is to apply fertilizers of any kind: That one of the most important processes for obtaining soluble mineral food for plants, is to furnish the land with vegetable matter by a proper rotation of crops: That the mineral substances of plants become, in the very process which dissolves them, available for a succeeding generation of vegetable growth, by the extreme mechanical fineness to which they are reduced, and the action upon them of the ammonia and carbonic acid, escaping from their albuminoids during the process of decay."

Training Petunias.—A writer in the London *Garden* says that a fine effect is obtained by this method of training Petunias: He procures a number of Hazel-rods, each about two feet long, bends them like hoops, and drives both ends into the bed, placing them at suitable intervals all over it. On these he ties and trains his Petunias, which blossom more abundantly than usual under this treatment. Petunias have been successfully treated as if Sweet Pea vines, and trained on a slanting trellis. The trailing habit of this plant, especially late in the season, is not always sufficiently considered.

FLORAL DECORATIONS IN BALL-ROOMS.

These evidences of social refinement are certainly on the increase, and under the direction of our best decorators, are now brought to a high degree of perfection. Bridgewater House, the other night, and also the conservatory and arcades of the Royal Horticultural Society, at South Kensington, as arranged by Mr. Willis, on the occasion of the Prince and Princess of Wales' visit, were marvels of floral beauty. When it is remembered that our largest decorating firms use from 20,000 to 30,000 decorative plants every week during the London season, we can form some idea of the extent to which plant decoration is now carried. One novel feature in modern decorations is the introduction of huge blocks of ice, which, either in the shape of a simple obelisk three or four feet high, or in imitation of massive rock work, have a unique effect when fringed with Ferns, and draped with the slender-growing sprays of different kinds of trailing plants. On every hand are found pleasing groups of rare exotics, judiciously arranged as regards picturesque effect. Here is a bank of fresh Selaginella, forming a carpet, from which little groups of the Umbrella Sedge spring like miniature Palms; while here and there may be seen more massive succulent plants in association with fairy-like Grasses and Maiden-hair Ferns that tremble with

the softest breath of air. Here, too, are masses of Palms and Tree Ferns that spread their bright green feathery fronds over priceless groups of antique sculpture, while soft masses of harmonious colors nestle here and there on cool green banks of Ferns and Mosses. Handsome mirrors, half-concealed by tasteful fringes of trailing plants, increase the effect by apparently augmenting the space. At Bridgewater House, glowing crimson masses of *Spiræa palmata*, admirably set off with fresh green leaves, were highly effective beneath the subdued gaslight; while slender Palms sprung from the cool beds of Club Mosses, on which delicately perfumed sprays of pearly-white Stephanotis and Water Lilies rested in rich profusion. Here climbers drooped from every bracket and ledge, graceful in form and soft in color. Bouquets of choice exotics were here and there suspended beneath the crystal brackets and chandeliers; in short, every lobby, hall, and corridor was tastefully furnished with foliage, plants, and flowers. Stately groups of Dracænas, and noble-foliaged Palms, harmonized well with the massive, cool, gray marble shafts and columns that support the corridors and galleries overlooking the saloon. The saloon itself was likewise tastefully fringed with banks of choice Palms, Ferns, and flowering plants. At South Kensington, the decorations, though essentially similar in many respects to those just noticed, were carried out on a much larger scale. The rockery in the conservatory, formed of several tons of the finest ice, was a novel feature, and the centre of attraction during the evening. It was tastefully ornamented with choice Ferns, Grasses, and succulent plants, and fringed at the base with Maiden-hair Ferns, Lomarias, *Pteris serrulata*, and *Isolepis gracilis*, on a deep crimson ground. The western arcade was tastefully bordered with Palms, Tree Ferns and choice flowering plants, and the introduction of cool obelisks of ice at intervals, considerably heightened the effect. Not the least interesting features of the evening were the magnificent bouquets presented to the Princess of Wales and the Czarevna. These were remarkable for elegant simplicity, being composed of but a few of the choicest flowers, among which were softly-tinted Tea Roses, pure white Gardenias, half hidden amongst the most elegant drapery of fresh green Maiden-hair Fern, sprays of pearly Stephanotis and Tuberoses, the whole forming a charming collection of sweet-scented flowers.—*Garden.*

SCUTELLARIA MOCINIANA.

BY F. A. MILLER.

Of the flowering plants lately introduced into California, *Scutellaria mociniana* is a most desirable acquisition to an already extensive list. When we first received it, in the spring of 1873, we were led to believe that it was a warm-house plant, and cultivated it as such. In the autumn following it expanded its bright orange-red flowers for the first time, and we were much pleased with its charming appearance; though we had great difficulty in keeping the red spider and other insects from devastating its foliage. It became then fully apparent that the plant would do better in a cool house, and we transferred it to a house where we cultivate our hardy plants. There the plant began to improve, the foliage assumed a much healthier color, and from present appearances it will flower with us continually. I am now convinced that this Scutellaria will prove one of our

hardy border-plants, and as such will become of great value. The extremely bright terminal clusters of salvia-shaped flowers remain in bloom for a long time, and attract the attention of every visitor. It deserves general cultivation.

FLESH DIET FOR PLANTS.

The pretty little plant called *Drosera*, or Sundew, says the Providence *Journal*, develops some strange animal instincts. It is a charming plant, with its lovely pink blossoms, while the dew-like substance issuing from its glands gives it a most cool and refreshing appearance on a warm summer's day. But though it looks the very picture of innocence and gentleness, it has a strange taste for seizing, killing, and sucking the blood of insects, and for grasping and eating raw beef. Mrs. Mary Treat has contributed to the *American Naturalist* some very curious observations made upon this remarkable plant. She found the specimens upon which she experimented in New Jersey. The plant was in full bloom, and growing very thickly on either side of an extensive Cranberry plantation. The first experiment was made with the best known species, the *Drosera filiformis*. Some living flies were pinned half an inch from the leaves near the apex, about 10 o'clock in the morning. In forty minutes the leaves had bent perceptibly toward the flies. In two hours the leaves had reached the flies and they were entangled among the bristles of the leaves and held fast. The flies were then removed three-quarters of an inch farther from the leaves. The leaves still remained bent toward the flies, but could not reach them at this distance. The observer thinks that the action of the flies' wings may have created sufficient force to bring the leaves near enough to entangle the flies, for dead flies failed to produce the same results as living ones. On the same day bits of raw beef were placed on some of the most vigorous leaves of another species of the plant, the *Drosera longifolia*. In two hours two of the leaves had folded around the beef, hiding it from sight. Living flies were also placed upon the same species of the plant. In a little more than one hour one of the leaves had folded entirely around its victim; the other leaves had practically folded, and the flies had ceased to struggle. Two hours after, four leaves had each folded around a fly. The *Drosera* manifests a very decided choice in regard to its gustatory fancies. Experiments were made with bits of dry chalk, magnesia, and pebbles, but the plant would have nothing to do with them, and after twenty-four hours neither leaves nor bristles had made the slightest movement toward clasping these articles. A similar result was produced upon the *Drosera rotundifolia*. This variety has longer bristles around the edge of the leaf, and simply curls its bristles around its victims, the glands on the ends of the bristles touching the substance, like so many mouths receiving nourishment. Some bits of raw beef were placed upon the leaves about 10 o'clock in the morning. In two hours the inner bristles were curving about it, and the longest bristles at the edge of the leaf were curving upward. At 9 o'clock in the evening, the bristles of the three most vigorous leaves were clasping the beef, almost concealing it from sight. Nor is this ferocious plant contented with small insects. Flies of the largest size, moths without number, and butterflies, many of them measuring two inches across, were held captive till they died, the treacherous flowers and shining dew luring them to de-

struction. The larger insects, after death, fell around the roots of the plants, as if to fertilize them, while the smaller flies remained adhering to the leaves. These curious plants thus seem to manifest a decided preference for meat diet, absorbing the animal substance through their leaves. Mr. Darwin says that by pricking a point in the leaf of the *Drosera*, he can paralyze half of it, and this indicates the existence of nerves.

TROPICAL VEGETATION IN CALIFORNIA.

The capacity of California for the production of tropical and semi-tropical fruits and plants is by no means yet fully understood. The frequency of the announcement, however, that some new and useful fruit has been introduced by our enterprising orchardists, shows that this branch of business is receiving the attention that its importance deserves. Among those who have faith in the success in this State of many heretofore untried tropical fruits, is Mr. D. B. Clark, of Santa Barbara. His catalogue contains several varieties of recent introduction that are likely to prove successful in this State, among which are the Banana, Guava, Date Palm, Tamarind, Chiramoya or Custard Apple, Licorice and Indigo plants. The Banana and the Guava are successfully grown in the Gulf States, with slight winter protection, where the frosts are much more severe than here. The Strawberry Guava was introduced into this State several years since, and now ripens its crop perfectly each year in Sonoma Valley. The larger varieties, however, are less hardy, and will probably require some slight protection during the winter in the central and northern parts of the State. The Chiramoya-tree, producing one of the most delicious fruits of the tropics, has endured the frosts of the past winter with but slight injury, and will be likely to prove hardy in the southern part of the State, and in the middle portion with slight protection. The Date Palm is as hardy as the Orange, and will succeed in any of the interior valleys where that fruit can be grown. It may not bear fruit north of Point Conception; but a few trees for ornament will amply repay the cultivator for the little trouble they require. This Palm, though ornamental when small, grows to a height of sixty feet, and with its upright trunk and ever-verdant feathery branches is peculiarly picturesque and attractive. It delights in a rich moist soil and hot dry climate, and, as the Orientals say, plunges its foot into the water and its head into the fires of heaven. The climate of the San Joaquin Valley is almost like that of some portions of Asia Minor, where the Date flourishes, and it is believed it would there produce fruit. Licorice is an important product of Spain and Italy, and would undoubtedly succeed equally as well here. Indigo was extensively grown in Florida during the English occupation, and is well worth a trial in this State. Agriculture presents no more attractive field than that of experimenting with new trees and plants, and though the cultivator fails with a dozen varieties, if he succeeds with one and proves its adaptability to the climate, he will be remembered as a public benefactor.—*S. F. Call.*

Farmers in the vicinity of Anaheim have set out a large quantity of foreign grape-cuttings this season, while newcomers generally ignore the Mission Grape.

SCOTCH FARE.

Oat-meal is principally used in two ways—for the making of porridge and oat-cakes. Porridge is a principal article of food of the Scottish peasantry, generally accompanied with milk, when milk can be obtained, although when milk is scarce, butter is sometimes used, sometimes sugar, and sometimes treacle-beer. For most people in a sound condition of health there is no more wholesome article of food than porridge and milk; none contains a larger proportion of flesh-forming and heat-producing substances; while to almost all who have ever been accustomed to its use it is extremely palatable. Generally speaking, there is no better article of food for the nursery, none more likely to maintain a healthy condition of the stomach or to give vigor to the frame, although there are exceptional cases, both among the young and among the adult, in which the use of porridge is unsuitable, producing painful distentions of the stomach and indigestion. While the caprices of children ought not to be heeded in such a matter, the actual conditions of their constitution ought to be carefully observed and regarded. Porridge is in general made by simply boiling oat-meal in water, stirring all the while to prevent singeing, and to secure the thorough mixture of the oat-meal and water into a homogeneous mass without knots. The quality of porridge very much depends on the amount of boiling it receives. It can not be too thoroughly boiled. Imperfectly boiled oat-meal porridge is a very coarse article of food; and, unfortunately, much of the porridge eaten by the poorer classes in Scotland and elsewhere is of this character, and that prepared for the nursery is often no better, through the carelessness of servants, who wish to get through their work with as little trouble as possible. It is not nearly so digestible, and therefore not so nutritious, as porridge really well made. A common mistake in the making of porridge must also here be noticed, as tending much to the deterioration of its quality—the adding of meal by degrees, while the boiling goes on, until the proper thickness is acquired, the result being that part of the meal is imperfectly boiled. The cook ought to know the proportions of meal and water—knowledge not very difficult to acquire—and mix them at once, so that all the meal may be equally boiled. But it is to be observed that the water must be boiling before the meal is put in, which is not to be introduced in a mass, but, as it were, strained through the fingers handful by handful, as quickly as possible. —*The Food Journal.*

FRUIT-DRYING.

A PROCESS SIMILAR TO THE ALDEN PATENT IN USE TWENTY YEARS AGO.

I have before me a bound volume of the *Horticulturist*, edited by P. Barry, and published at Rochester by James Vick, Jr., comprising series from January to December, 1854. On page 411 is an article headed "Drying Fruit," from the *Country Gentleman*. After speaking of the disadvantages of ordinary fruit-drying, it says: "In order to make a beginning in this matter, and to assist in the erection of good, cheap, rapidly operating and perfect fruit-drying establishments, we present to our readers a figure and description of an apparatus for this purpose, which, *although never patented*, we believe to be far more valuable than any machines not thus thrown open to the public. Its peculiar advantages will be obvious as

soon as the description is examined." [Alongside of the following description is a cut representing the apparatus, which, if we can not print, can be easily conceived from the description.] "It consists of a tall, upright shaft, *a b*, represented in the annexed section of the apparatus, through which passes an endless chain, made of a number of strong frames securely hinged together at their corners. This chain should be strong enough to bear several hundred pounds without breaking. At every joint it is furnished with a braced shelf, each consisting simply of a square frame furnished with coarse twine netting—like a sieve. This endless chain, with its series of sieves, runs over an angular wheel above, another below, precisely like those of a common chain-pump, but wide enough to receive the full breadth of the chain. Its motion is quite slow, descending from *a* to *b* on one side, and rising on the other, and is accurately regulated by means of the pendulum *d*, connected to the notched wheel *c*, by means of an escapement like that of a common clock, but made very strong. A strong and broad India-rubber band connects the axle of this wheel to the drum *e*, on which the chain runs. As the chain is loaded with the drying fruit, and is therefore quite heavy, it must not, and indeed can not, be subjected to the successive vibrations of the clock-work, these vibrations being broken and destroyed by the India-rubber band.

The fruit is dried by heated air. The fruit is spread upon the sieves at the top, and descends as it is being dried.

This description and process have been shown to many here, who have seen the Alden apparatus, and they allege it is almost the same in principle, the advantage, if any, being in favor of the former.

This machine, twenty years ago, was thrown open to the public, without a patent. No doubt many have used it during that time. It is just as good as the Alden patent. Now come parties, who patent the process, and it can be used by the public at large no longer.

Those interested here now wish to propound two questions: First, is this process about the same in principle as the Alden process? Secondly, could parties be enjoined from using this apparatus under the Alden patent? If they can, we would like to know how long a thing could be in use before anyone can go and secure the right of it by patent.

The Alden proprietors ask $15,000 for the patent for this county. It woul require the profit of many pounds of fruit to cover that. No one here is willing to risk so much. But if we are allowed to use the process above described, nearly every fruit-raiser can afford to build a machine.—*Call.*

Fumigation for Plants.—Mr. J. C. Niven, of the Hull Botanical Garden, recommends tobacco fumigation (in London *Garden*) for cleaning green flies from certain house-plants infested by them. His plan is to lay the plant on its side in a wash-tub, throw over it a damp towel, or better, "a bit of glazed calico lining," and then, through an opening at the bottom have your husband insert the end of a pipe, and through it let him blow tobacco smoke until the plant gets a good fumigation. The flies will be found at the bottom of the tub when the operation is finished. The plants should be perfectly dry when the operation is performed, but, if a towel is used, it should be freely washed and wrung out before using, and be without holes. The pipe-stem should reach to the bottom of the tub.

Editorial Portfolio.

ARISTOLOCHIA SIPHO.

(SEE FRONTISPIECE.)

In our frontispiece we give our readers a representation of the *Aristolochia Sipho* (Dutchman's Pipe), so rarely met with on this coast, and well deserving cultivation. Most of the Aristolochias are fast-growing climbers with curious shaped flowers. The one referred to here is a native of the Alleghany Mountains, and is one of the most desirable on account of its large heart-shaped leaves, and of the peculiar formed flower, which is curved like a siphon, hence its name. The flower resembles also the common tobacco-pipe, owing to which it is popularly known as the Dutchman's Pipe. The flowers are produced singly and are of a brownish color. The Aristolochia is a hardy vine, and although it does not seem to make much growth during the first year after planting, it develops much more rapidly in the second and third year. Its most proper place is lattice-work of large dimensions, to cover pillars, or to let it run into the branches of trees. The Aristolochias are readily propagated from cuttings or suckers, which old and established plants produce in abundance.

Our Frontispiece.—We are under obligations to James Hutchinson, proprietor of the Bay Nursery, Oakland, Cal., for the beautiful illustration of *Aristolochia sipho* (Dutchman's Pipe) appearing in the present issue of the Horticulturist. The Pansy plate published with the June number was also obtained from this gentleman.

Every weed should be destroyed as soon as it appears.

OUR EXCHANGES.

The following are some of our best exchanges: *The Technologist*, monthly, $1.50; New York. *Country Gentleman*, weekly, $2.50; Albany, N. Y. *American Agriculturist*, monthly, $1.50; New York. *Pen and Plow*, monthly, $1; New York. *Prairie Farmer*, weekly, $2.50; Chicago, Ill. *Indiana Farmer*, weekly, $2; Indianapolis. *Rural New Yorker*, weekly, $2.50; New York. *The Gardener's Monthly*, $2; Philadelphia. *Floral Cabinet*, monthly, $1.25; New York. *American Farmer*, monthly, $1.50; Baltimore. *Gardener's Chronicle*, weekly, £1 6s; London, England.

The Overland Monthly for September.—This number appears with an unusually varied table of contents, combining a host of popular writers, who give us fact and fiction in well-proportioned quantities. Bishop Kip concludes his interesting "Glimpses of the Court of China;" J. Ross Browne, after a long absence from its pages, contributes a matterful paper on "Santa Rosa Island;" and the other Browne—Junius Henri—a pen-picture of "Spinoza." In stories and sketches this number is stronger than the preceding issue, for "Don't Tell Kate!" by Dr. Ver Mehr, "Trust and Mistrust;" by Mrs. Deas, and "Laird Gawain," by the Editor, are equal to any published in the best periodicals of our time. The geographical papers are a strong feature; and in addition to those above mentioned, we would call especial attention to John Muir's article on the "By-ways of Yosemite Travel," which, for picturesque description, will rank with many of the world's best thinkers. Other papers of this class are "Timber Belts of the Pacific Coast," and "In the Twilight." The humorous portion is allotted to Prentice Mulford in his "Sag Harbor

Aborigine," and to Henry Degroot in "Diving for Gold in '49." The most striking poem in this issue is "Molokai," a remarkably vivid description of the lepers' settlement on the Hawaiian Islands. The "Etc." is exceedingly varied, and the book reviews are full and free. John H. Carmany & Co., publishers, San Francisco. $4 per annum.

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

A walk through the fruit and vegetable market at this time will convince any intelligent observer that California in her resources of fruits and vegetables is the foremost country in the world for these important productions. The fruits especially are remarkable, not only for size, but for beauty, brilliancy, and richness of coloring. Nor are the vegetables much behind them in these respects. All are, compared with most other regions, gigantic, and glowing with many tints. In the early part of the season the display of Strawberries, Raspberries, Cherries, Apricots, and Plums, was particularly tempting and attractive. Indeed, we can never expect any year to excel this in the quantity and quality of these luscious and priceless offerings of Pomona. This year seems very favorable for the size, quantity, and richness of the Raspberry, it being a plant which always, at all periods of its growth, requires a great deal of moisture, such as we have been favored with during the late winter and spring.

There is one fruit we can not boast of in this country—the Gooseberry. In general, we can only successfully cultivate a native sort—the Houghton. This is very prolific, but is small in size, and can not compare for a moment with the large and splendid English kinds, which are sometimes five inches in circumference, and two a half long. The difficulty with the European Gooseberries in the State is the mildew, and this is surmounted only in a few instances, and, as we understand, in one case, by Mr. W. N. Steuben, of Gilroy, who has grown some of the English variety this season, which measure three inches in circumference, and an inch and a half long.

The Apricot is a very healthy and flourishing tree here, and is very seldom much injured by frosts, as it so often is in the Eastern States. The Royal and Moor Park are nearly as large as medium-sized Peaches. The Apricot has been very finely flavored and juicy this year.

The Nectarine, when in perfection in this State, is a very delicious fruit, but it is not so prolific as the Apricot and Peach.

The Quince bears well, and is very hardy, but other finer fruits for preserving and canning take the lead of it with us. There can be hardly any country in the world that can excel this in Plums and Cherries, there being no curculio to injure or destroy them. When cultivated in small quantities in any spot they are apt to become the prey of the birds, but if there is a large orchard of them, some of the immense crop can be easily spared to the feathered beauties. The German Prune is becoming every season more valuable, as the dried fruit is equal to the best imported. The Fig requires, to produce a succession of crops, a warm climate, but in any part of California it will furnish one or two good crops.

The different varieties of Pears most popular here are the Dearborn Seedling, Beurre Gifford, White Doyenne, Seckel, Winter Nelis, and Easter

Beurre. The Bartlett is held in the highest estimation in nearly every part of the world where the Pear grows, and is no less prized here. Pears and Plums have been sent to the East with full success this year. The Apple also; but the California Apples are not equal to those from Oregon, maturing rather too soon, and not having so much juiciness. As to the Grape, nothing need be said about it here, as its success and profit generally are well established. At any rate, I shall have to defer notices of other fruits till the next number of the *Horticulturist*, for want of space now.

Nutmeg Melons have appeared during the week, and are to-day, August 5th, selling at 8c. to 10c. each; Cantaloupes and Watermelons are very plentiful, the former at 10c. to 25c. each, and the latter at 15c. to 35c. Asparagus is firm at 10c. to 12½c. per lb., but the quality is very inferior. Okra is quoted at 15c. per lb.; Chili Peppers, 15c. to 25c. for the various descriptions; Egg Plant, 5c. to 6c.; Marrowfat Squash, 2c. to 3c.; Summer do. 5c. to 6c. We quote Artichokes at 25c. per doz.; Kale, 50c. per dozen bunches. Green Corn, 10c. to 25c. per dozen—the latter figure for very choice quality.

Peaches hold their own as the leading fruit in the market. We have, however, no later variety on the stalls than Crawford's Early, which sells at the top of the market, the range being from 5c. to 8c. per lb. Cherries are out altogether. Sweetwater Grapes are quoted at 6c. to 8c. per lb.; Rose of Peru and Black Hamburg, the first of the season of these varieties, 15c. to 25c. Greengages are lower to-day, ranging from 4c. to 8c. Currants continue cheap, still retailing at 25c. per box of ten pounds. Egg Plums are selling at 8c.; Peach do. 8c.; Cherry do. 6c. to 8c.; German Prunes, 8c. to 10c.; Blackberries, 5c. to 8c.; Nectarines, 20c.; Apricots, 6c. to 10c.; Pears—Sugar and Madeline, 6c.; Bartlett, 8c. to 10c.; Raspberries, 15c. to 20c.

Very little change is noticeable in vegetables. The market is now (August 7th) entirely supplied with Green Corn from across the Bay, while the shipments of Tomatoes from that quarter are rapidly increasing. Watermelons and Cantaloupes are plentiful and cheaper. Nutmeg Melons can now be had at 8c. to 10c. each. Potatoes are cheaper. Spinach is quotable at 8c.; Lettuce, 20c. to 25c. per doz.; Salsify, 8c. to 10c. per bunch; Potatoes, by the sack, delivered, $1 50 to $1 75 per ctl.

The supply of fruit is immense, and several varieties are worked off with the greatest difficulty. Cherries have finally entirely disappeared. Apricots and Currants come forward in small quantities, but prices are unsatisfactory, and shipments will soon give out. The first Huckleberries arrived during the week, and are now retailing at 25c. per lb. Sweetwater and Chasselas Grapes retail at 5c. to 6c.; Rose of Peru and Black Hamburg, 10c. to 12½c.; Muscat of Alexandria, 20c. to 25c. per lb.; Mangoes and Alligator Pears, $1 to $1 25 per doz.; Smyrna Figs, 35c. per lb.; Apples, by the box, 75c. to $2; Pears, 75c. to $2; Peaches, by the basket, 75c. to $1 25, delivered.

Rafflesia Arnoldii is the name of a curious plant in the Botanic Garden at Buitenzorg, Java, one of which has recently flowered. In fact, the plant is all flower, having neither stems nor leaves. These flowers are sometimes as much as five feet across, springing directly out of the branch of the tree, on which, like the Misletoe, they are parasitic.

Correspondence.

THE CLOTH OF GOLD ROSE.

Editor California Horticulturist:—In the June number of your magazine were published some remarks from an Eastern paper upon the Cloth of Gold Rose, showing how the blooming quality of this beautiful Rose, when grown on its own roots, were affected by age. As this Rose is regarded as a very shy and uncertain bloomer in the vicinity of the Bay of San Francisco, I feel emboldened to record an experience similar to the above.

In the spring of 1871 I purchased a Cloth of Gold Rose just rooted, and set it out in my garden in Oakland. The plant grew finely, but made no buds that year. In the season of 1872, a few buds showed themselves, but perished without maturing. In 1873, after careful pruning and reduction of wood, the result was the same as in the previous year. Two cuttings rooted, however, and grew finely.

Early in the spring of this year (1874) the Cloth of Gold Rose-bush budded, and, despite the cold and backward season, perfected the flowers. These being cut off, the bush made new buds, and perfected them. The shoots were then cut back, and the bush is now (second week in August) making wood preparatory to a third blooming, which I think, from the more favorable weather, will be superior to the others.

The cuttings mentioned, though nearly as large now as the parent bush, have not shown any signs of flowering.

My garden is at one of the most exposed points in Oakland, where the fresh sea-breeze has a fair sweep, making a very trying location for the Cloth of Gold Rose. For this reason, I think persons growing this fine old Rose in the vicinity of the Bay may well have patience, as they will be richly repaid.

C.

Editorial Gleanings.

Destroying Insects by Fire.—Townsend Glover, Entomologist of the Agricultural Department, writes: Fires are said by some planters to be of use in attracting and destroying the moth or miller, and by others to be injurious, as attracting moths from neighboring plantations; and it has been observed that the Cotton has been very much attacked immediately around such fires afterward, as if the moths had been attracted by the fire and deposited their eggs in the vicinity. Torches are of no avail unless generally used by all the planters in a neighborhood, except when placed over pans or dishes containing some adhesive substance, and into which they fall. Great complaints have been made by planters about the indiscriminate destruction of insectivorous birds, which ought to be protected by law, as they are exceedingly useful in destroying the Cotton caterpillar. Some planters use salt-water, in the proportion of a gill to a bucketful, and thought they experienced beneficial results from its use, while others plowed between the rows with pine brush fastened to the swingle-tree, in order to sweep off the caterpillars from the plants on to the ground, where they are either buried under the earth or scorched to death before they are able to re-ascend the plants. Kerosene oil, cresylic soap, and other preparations have been used, but to no great extent, though with some beneficial results. Turkeys driven into the field, as in the case of the Tobacco-worms in Maryland and Virginia, will quickly exterminate many of the caterpillars, and have been

highly spoken of by three of our correspondents. In many cases the correspondents consider that when the Cotton is attacked quite late in the season, and after the last bolls are formed, the caterpillars are rather a benefit than injurious, as by eating off the dense foliage, the air and sunlight being admitted, the bolls that otherwise would not ripen and open are fully matured.

Opium on Sherman Island.—The resources and capabilities of California soil are yet in their infancy. Every year it becomes apparent that some particular locality is especially adapted for the growth of certain products hitherto regarded as incapable of production except in their native soil. It has been demonstrated that Coffee, Cotton, Tea, and Ramie can be successfully grown in California, and it has been proved that Sherman Island soil was designed by the Creator for growing not world-renowned Beets and Squashes of marvelous dimensions, nor yet the finest quality or largest quantity of Wheat, but to compete with oriental Turkey in growing opium. William Oden, our Antioch druggist, has kindly shown us a sample of opium grown the present season on the ranch of Williamson, on Sherman Island, by a gentleman who has had experience in its culture in other lands. Oden tells us that it is equally as good as any he procures in San Francisco markets. The gentleman thinks that he will have two hundred pounds, and the present price in the market is eight dollars per pound. The pods are as large as the two fists of a man, which, we are told, is about the size they grow in Turkey. The seeds are also large and perfectly developed. The gentleman who tried the experiment is greatly pleased with his success, and assures us that he is convinced that the soil of Sherman Island is quite suited to its culture. Millions of dollars are annually expended for this drug, and it is now established that it can be successfully raised at our doors. —*Antioch Ledger.*

Wild Coffee in Tuolumne.—A correspondent of the Stanislaus *News* gives the following account of the so-called Wild Coffee growing in that section: "As the tree or shrub is very abundant along the creek from Montezuma to Flack's place (the old Mound Springs), and below to the mouth of the creek where it empties into the Tuolumne River—some three miles—some little mention of the shrub may be of interest to your readers. It may be that by cultivation and pruning it may make a fine tree for orchard growth or for house-yard ornament—and I believe it is an evergreen in its native place—but as it appears, wild and unpruned, it is in clumps like willows, sending up from one root straight, smooth-bark stalks or shoots, of an inch or two in diameter, and to the height of ten or fifteen feet, and from twenty to fifty stalks in a clump. The bark is a dark, dull green; the leaves are smooth-edged, shaped like and heavy as the oleander, but wider in proportion and about two-thirds the length. The berries, just now, are turning purple, some already the black-purple of ripening. Each berry has its two grains of coffee in it maturing, quite hard already; to the taste a strong coffee bitter. If any fault is to be found I think this bitter will be the trouble. I will watch the progress of the ripening and report the same. Now as to the prospects of the crop: the bushes hang full, the crop is abundant, and will pay for picking. I think 500 pounds might be gathered in the district spoken of. The grain will be small, like the

Java, from the samples examined. At a distance the bush puts you in mind of a choke-cherry, with its dark berries showing through the foliage, though each berry has a single stem and does not cluster like the cherry. It seems to grow best along the creek and about springs, but the traveler can see some in the most arid and dusty spots along the road as he goes down the Mound Spring hill, and the road-side to Chinese Camp."

Agreeable Emotions and Health.—Professor Tyndall while in this country last year visited the Falls of Niagara, and on reaching the Cave of the Winds by descending Biddle's Stairs he conceived the idea of attempting to pass under the blue waters of Horseshoe Falls from that point. He found a guide who was willing to make the attempt with him, and together the next day they passed through the mist and foam of the roaring cataract, reached the desired point, and returned in safety. In describing his emotions at one point in his perilous journey, he remarks as follows:

"Here my guide sheltered me again and desired me to look up; I did so, and could see as before the green gleam of the mighty curve sweeping over the upper ledge, and the fitful plunge of the water as the spray between us and it alternately gathered and disappeared. An eminent friend of mine often speaks to me of the mistake of those physicians who regard man's ailments as purely chemical, to be met by chemical remedies only. He contends for the psychological element of cure. By agreeable emotions nervous currents are liberated which stimulate blood, brain, and viscera. The influence rained from ladies' eyes enables my friend to thrive on dishes which would kill him if eaten alone. A sanative effect of the same order I experienced amid the spray and thunder of Niagara. Quickened by the emotions there aroused, the blood sped healthily through the arteries, abolishing introspection, clearing the heart of all bitterness, and enabling one to think with tolerance, if not with tenderness, of the most relentless and unreasonable foe. Apart from its scientific value and purely as a moral agent, the play, I submit, is worth the candle."

The Profit of Orange-growing.—The *Herald* is in daily receipt of letters from persons in the East, seeking information relative to the profits of Orange-growing. Although we have already given the facts and figures on this business several times, it will not perhaps be amiss to repeat them once more. Oranges may be planted at the rate of from sixty to eighty trees to the acre. They begin to bear when eight years of age, though the crop is not extensive nor very profitable. When fifteen years old the annual yield of each tree will range from 1,500 to 2,000 Oranges. As high as 3,000 may be grown, but when the trees are thus crowded the Oranges are generally small. Our most experienced growers do not let trees of the age named bear more than 2,000 Oranges each year. The value of the crop varies from year to year. At present the product of large trees approximates $20 per year. It is not probable that the profits will ever fall below $10 per tree. This will make an Orange grove worth from $600 to $800 per acre annually. Lime and Lemon trees begin to bear at from six to eight years of age. They may be planted at tha rate of 100 trees to the acre. Some Lime-trees yield $100 each per annum. So far, the profit on Lemons and Limes has been a little in excess of that on Or-

anges, and it is safe to say that they will never become a drug nor sell for less than Oranges. From these figures it will be seen that an acre of ground planted in Oranges, Lemons, and Limes will yield a greater profit than if used for any other purpose.—*Los Angeles Herald.*

Foot-hill Advantages.—Large numbers of emigrants are now daily arriving in California, some looking for lands for farming purposes, and others for employment of any kind. The impression prevails that no land can be obtained at the Government prices, and that there are no public lands open for settlement in this section of the State. There are large tracts open for settlement in the foot-hills of El Dorado, Placer, and Amador counties, under the pre-emption and homestead laws. Here Grapes, Figs, and other semi-tropical fruits can be raised; and for the production of Apples, Pears, and Peaches, no country in the world can equal the hills of El Dorado. Timber abounds, and excellent water. Water, too, for irrigation purposes, when needed, can be obtained from the mining districts, whose ditches are gradually being turned to this purpose as the mines are worked out. Land can be furnished from the railroad company, at a low price in small quantities, that is unsurpassed for fruit-growing purposes. Why men should seek for homes on the arid and comparatively desert wastes of Los Angeles, San Diego, and Ventura counties, far from market, and we may say civilization, is a mystery. In fact, many new-comers spend money enough wandering over distant counties to buy a good farm in this section of the State. Another advantage sure to accrue to the settler in this portion of the State in the near future is the fact that here, when manufacturing is engaged in to any extent, as it is certain to be, on the rivers in the foot-hills will large manufacturing towns and villages be built. Here will be found a home market for all that can be produced; and any man that settles in this part of the State, builds a home, plants a vineyard and orchard, will, before many years, find himself owning a valuable farm.—*Grass Valley Foot-hill Weekly Tidings.*

A short time since, an article on Orange culture, by Dr. Strentzel, of Martinez, was published. In this article, the writer discussed the time and mode of planting, the best means of cultivation, and a number of suggestions relative to the occupation of the land between the rows of Orange-trees, during that period in their growth when they are non-productive—the result of many years' experience in fruit culture and experiment in this kind in particular, and inquiry and observation elsewhere. Col. John J. Warner, of Los Angeles, a veteran Orange culturist in that garden city, takes Dr. Strentzel to task, in a letter to the Los Angeles *Star*, from which we condense: The Doctor's recommendation that Orange-trees should be planted fifteen feet apart he declares suicidal. The breathing-room for the trees would be insufficient. Thirty feet of space is not too much, nor any more than the trees require to fully develop and enjoy the quantity of solar heat they require. The black rust, which Dr. Strentzel says is a compound of volatile oil and dust, he pronounces the secretion of the scale insect, as it is found only upon trees attacked by the same. Unless the insect is destroyed he predicts the same disastrous fate to the Orangeries of this State as befel the Orange groves of Florida years ago. The planting of the Eucalyptus, or Aus-

tralian Gum, in alternate rows with the Orange-trees, Col. Warner maintains, would be exceedingly injurious to the latter, as the former grow to a great height, and would effectually block out the sunlight.

Cotton in Merced.—H. F. Buckley, of the firm of Buckley & Bros., Merced County, have called on us and favored us with some interesting items in connection with their cotton-growing. He informs us that their first crop was grown in 1871. It was planted April 27th, and yielded over 470 pounds per acre. Please note this yield in comparison with returns from the Southern States. Texas is credited with raising 220 pounds per acre; Mississippi with 200 pounds; other Southern States ranging still less.

This is the fourth season of their Cotton-growing, and their present planting covers 100 acres. In 1872-3 they planted later in the spring and became convinced that early planting is correct. This season they planted on the 3d of May, being as early as the condition of the ground would permit. The Buckley Brothers have a Hoadley engine for power for ginning and pressing. They have a 60-saw gin with which they can gin 2,500 pounds per day—the only one run by steam-power in the State. That Cotton is a paying crop in California they are already assured, but they have various improvements in view which will probably render it still more profitable. But even at present they can successfully compete with the South. They represent the process of growing this crop as being as simple and as easy as that of Corn; the two crops being similar in their requirements of soil, cultivation, etc. They plant in rows four feet apart, generally in drills, but in the present season are trying some with "checking" or cross-planting. Two men, with two horses and drillers, will plant seven or eight acres per day. They expect to harvest sometime in September.—*Pacific Rural.*

Melon Culture.—The best soil, says *The Rural Messenger*, is that which admits of ready drainage. Watery as the fruit is, it does not require much rain to produce it. In fact, the vines flourish and bear even on a bank of sand. We would then select the lightest piece of ground available—gray and sandy—and put it in good order, using plenty of rotten manure to each hill. Digging holes of sufficient size, and depositing the manure in them during the winter, is doubtless the method to be preferred; but if this has not already been done, we must resort to some other plan. We would still make an excavation and manure liberally, with a view of retaining moisture in time of drought. Much depends on giving the plants a vigorous start. Force their early growth with a free application of bone phosphate to the hill. Keep the ground clear of grass and well stirred until the vines begin to cover it, but as the roots run to the full length of the vines, and grow as fast, the working should not be more than two or three inches deep. With this treatment, we believe there would be few failures in growing watermelons. As they are a favorite with all classes, it is well worth the trouble, whether for market or private use.

Curing Raisins.—D. C. Feeley, of Santa Clara, furnishes the San José *Mercury* the following directions for curing raisins: First, the Grape wants a good, rich, warm soil in which to grow, so as to insure size and substance; then the largest and best bunches only should be used, and they should be selected

with the greatest care, rejecting all that have the slightest imperfections. The Grape should be allowed to ripen until the saccharine juice has been condensed to some extent; then it should be picked, carefully avoiding friction of the berries, as that destroys the bloom. For drying they should be exposed to hot air of a temperature say from 90° to 110° Fahrenheit. Anything more than this will cook the Grape, and anything less will not accomplish the proper condensation of the saccharine matter. He considers hot air preferable to sunshine for curing raisins, because when exposed to sunshine they are apt to be attacked by insects, which develops vermin after the Grapes are packed. The hot air destroys any germ that may have been deposited while the Grapes were on the vine. He considers a fair shrinkage for No. 1 Grapes in curing would be about one pound in three, and that of the grapes grown on the vines at least 25 per cent. will have to be rejected as unfit for raisins; but still the business is profitable, even with this percentage against the producer."

How to Make Wine from Currants.—It having been stated that there are more currants across the Bay than can be disposed of in the ordinary market, a correspondent furnishes the following recipe for wine-making that may insure the growers from loss: Pick from the stems three quarts of fine ripe red currants, and mix with them three quarts of ripe white currants. Bruise them all. Put nine pounds of loaf sugar to melt in three gallons of very clear soft water. Boil the water and sugar together for half an hour, skimming carefully, and pour the liquid boiling hot over the currants. When it is nearly cold add a small teacupful of excellent strong fresh yeast. Let it ferment for two days, and then strain it into a small cask through a very clean hair sieve. Put into the cask half an ounce of finely-chipped isinglass. Have rather more liquor than will fill the cask at first, and keep it to fill up as it works over. Let it remain in the cask till April. Then transfer it to bottles (putting into each a lump of double-refined sugar), and let them remain one day uncorked. Then cork and wire them. They must stand upright in the cellar; but when likely to be wanted, lay a few of them on their sides for a week.—*Call.*

An Unlucky Experiment.—The garden is the place to test a great many pretty theories. And what if some of them fail? Is not the sum of our knowledge derived from failures greater than all we ever gained by successes? A feminine oracle, not content with her Honeysuckle theory, had said: "You must not pull up a plant nor a vine that springs up spontaneously. Let it grow. There is luck in it." When, therefore, a Melon-vine made its appearance quite in the wrong place, it was spared through the wisdom of that oracle. It went sprawling over the ground, choking more delicate plants, rioting day by day in the warm sun and the rich loam underneath. Nearly all its blossoms fell off without fruitage. One Melon took up all the life of the vine, and grew wonderfully. There had been tape-line measurements without number. When it gave out a satisfactory sound by snapping it with thumb and finger, and the nearest tendril had dried up, it was held to be fully ripe. It was *very* ripe. A gopher had mined under that melon, and, not content with eating out the entire pulp, had, in very wantonness of his deviltry, tamped the shell full of dirt! Where was the luck

in this spontaneous growth?—*W. C. Bartlett, in Overland Monthly for April.*

Irrigation in British India.—The *Statistical Reporter* of Calcutta furnishes a list of irrigation works in progress and projected (not including those already completed) in the different provinces of India, and the estimated expenditure required for each. The total number of these works is 26, and the total estimated cost £20,325,000, or $101,625,000. Of this sum, £18,487,000 is for works having already received government sanction, and the remainder for those as yet only projected. The actual expenditure on these several works up to the first of April, 1872, is placed at £4,589,000. It is represented that, although there are not thus far data sufficiently extended and accurate to establish a positive inference, yet the latest statistics point to the conclusion that past expenditures on irrigating works have been financially profitable. For works in operation in the provinces of Madras, Bombay, Bengal, Punjaub, Sindh, and the north-western provinces, according to the best available information, the account stands thus: Total capital invested up to the year 1871–'72, £10,659,000; interest at 4 per cent., £426,370; net income, £890,000.

Coffee Cultivation in Brazil.—It is said that the cultivation of Coffee in Brazil has so much extended during the past fifteen years, and the quality so much improved by the introduction of machinery and of more perfect processes, that more than half the produce of Brazil is sent to Europe and sold under the names of Java, Ceylon, Martinique, San Domingo, and even Mocha. It is calculated that 530,000,000 Coffee-trees, covering a surface of 574,993 hectares (a hectare is 2,471 acres), exist in the empire.

Soil for Verbena Culture.—Mr. Mundl believes one difficulty connected with the culture of the Verbena is that soil too light for it to flourish in is too often selected—finds that it delights in a rich, substantial clay loam, one possessing considerable body; says the soil composing the Verbena bed should be changed at least every two years.

Color Arrangement.—A few simple rules in the arrangement of flower-beds will materially enhance the effect produced. Among these are:

1. Avoid placing rose-colored next to scarlet, orange, or violet.
2. Do not place orange next to yellow, or blue next to violet.
3. White relieves any color, but do not place it next to yellow.
4. Orange goes well with blue, and yellow with violet.
5. Rose-color and purple always go well together.—*Canada Farmer.*

Drying Grapes.—The Napa *Register* says: "Mr. J. H. Post, of St. Helena, is this year trying the experiment of drying his crop of fifteen tons of Mission Grapes to sell for cooking. It is thought that they will bring about six cents per pound in San Francisco, and as it takes three tons of the undried fruit to make one of dried, the fresh fruit will thus realize some forty dollars a ton, with the trouble of drying, whatever that may be. The Mission Grape for wine is worth, we believe, this year, about fifteen dollars. It may be that an extensive market can be opened up for carefully prepared dry Grapes, and the result of Mr. Post's experiment will be looked forward to with considerable interest."

California Fruits in New York.—B. F. Crane, successor to Warren Briggs, was the pioneer Pear and Plum shipper this season, and we judge was handsomely remunerated for his enterprise. A New York telegram, July 29th, refers as follows to Mr. Crane's shipment: "Two car-loads of California Pears and Plums arrived yesterday. One car of 440 boxes of Bartlett Pears and 49 boxes of Washington Plums arrived from Marysville, and another of 385 boxes of Bartlett Pears and 122 boxes of purple Doyenne Plums came from Sacramento. The Pears are in beautiful order, and the lot of large-sized Plums came through pretty good, except where wrappers were omitted. The Pears sold at $6 to $7 per box, and the Plums in good order at $5 to $6 per box. At retail the Plums are selling at $1 50 per dozen. The Plums from Crane's orchard were put up in twenty-five pound boxes, which paid well per pound. The shipment being the first of the season, it was very remunerative." —*Marysville Appeal, August 1st.*

Drying Figs.—Pick the Figs when thoroughly ripe, dry them on racks, as you would other fruit, in the sun, four or five days, or until the water they contain is thoroughly evaporated. If there is any dew, cover them nights. Then place them in a vessel perforated with holes, like a colander, and dip them into boiling water for about one minute, after which again expose them to the sun until the surface water is evaporated; then lay them in wood, tin, earthen or other vessels, and press closely so as to exclude the air, and cover securely. In this way it is asserted Figs have been preserved equal to the best imported. The scalding answers the double purpose of killing all insect eggs and softening the skin of the fruit so that the sugar will come to the surface, as may be seen on imported Figs. —*Moore's Rural New Yorker.*

The Coffee Plant.—It is believed that if proper localities are selected, Coffee can be successfully cultivated in this State. The Monterey *Herald* says that Mr. Waters has been experimenting on its growth at his farm in Carmello Valley. His plants this year are not looking so well as they have done, owing to their exposure to the sea-breeze; but this fact does not shake his conviction that under more favorable conditions the Coffee-tree can be made to flourish and yield a handsome crop. It would cost but little to make a trial. In this manner alone is it possible to ascertain what altitudes, soils, and climatic temperatures are best adapted to the flourishing growth of the tree.

METEOROLOGICAL RECORD,

For the Month ending July 31st, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.05 in.
do 12 M.	30.06
do 3 P. M.	30.05
do 6 P. M.	30.04
Highest point on the 31st at 9 A.M.	30.18
Lowest point on the 1st at 3 P. M.	29.90

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	61°
do 12 M.	65°
do 3 P. M.	64°
do 6 P. M.	59°
Highest point on the 8th, at 12 M.	75°
Lowest point on the 17th, 18th, 20th, and 22d, at 6 P.M.	55°

SELF-REGISTERING THERMOMETER.

Mean height during the night	52°
Highest point at sunrise on the 26th	61°
Lowest point at sunrise on the 3d	47°

WINDS.

East and north-east on 2 days; west on 29 days.

WEATHER.

Clear on 8 days; cloudy on 3 days; variable on 20 days; light sprinkle of rain early in the morning of 23d.

ABUTILON VEXILLARIUM VARIEGATUM.

THE

California Horticulturist

AND FLORAL MAGAZINE.

Vol. IV. SEPTEMBER, 1874. No. 9.

TROPICAL PLANTS ADAPTED TO CALIFORNIA.

BY F. A. MILLER.

Tropical vegetation has great charms for mankind, and it is not strange that strong efforts are made, wherever practicable, to introduce into our gardens such varieties of Palms, Ferns, Dracænas, and other tropical plants and trees, as may be considered hardy. It is not surprising that these attempts often result in complete failure; partly on account of injudicious selection of plants, which are not adapted to our climate, but mostly perhaps on account of the bad condition in which the plants arrive here from foreign parts.

The conditions of our California climate are peculiar. Every county has a climate of its own, so that the same plant which may thrive well in one locality may not at all be adapted to other districts. In and around San Francisco the temperature rarely exceeds 60° Fahrenheit, and hardly ever falls below 35°, while the atmosphere is rather moist. At a distance of ten miles we find it much warmer during summer and colder during winter; and as we proceed inland we find a steady increase of heat during summer and cold during winter: while up and down the coast, for some considerable distance, the climate is similar to that of San Francisco, a few localities excepted. We may therefore safely cultivate out-of-doors, in this locality, such varieties of Palms, Tree-ferns, etc., as would require protection during winter in other parts of the State. But our local climate is not sufficiently warm to develop young plants, or to establish specimens which suffered in transporting them from distant lands. Those who wish to decorate their grounds with tropical plants should procure strong and well-established specimens, of such varieties as, in the East and Europe, are considered cold-house plants.

I will endeavor to name a few varieties of Palms and other tropical plants, which are most desirable for this particular climate, and which are apt to give general satisfaction. I will omit such as *Dracœna striata*, *Cordyline Australis*, *Phormium tenax*, and others, too well known to require any comments.

Of Palms, we may safely plant out the following:

Corypha Australis (Australian Cabbage-palm), a tree which is destined

to become a popular ornament to our gardens. At first its growth may be slow, but, once established, it will soon make itself conspicuous.

Cycas revoluta, the so-called Sago-palm of Japan, is a superb plant, perfectly hardy here; but only strong plants should be planted out. Its graceful foliage, of a shining dark-green color, is very ornamental.

Chamærops excelsa, *C. humilis*, and *C. Fortuni*, the so-called Fan-palms, are all hardy here, but should be planted in localities partly protected from our usual heavy winds, which are apt to disfigure their foliage. Recently a species of Palm was discovered in the most northern part of California. It is undoubtedly a Chamærops, and will prove hardy here.

Sabæ Adamsoni, *S. Blackburniana*, *S. umbraculifera*, and other varieties of this noble family, will certainly prove hardy here, if slightly protected from strong winds, which are apt to affect their foliage.

Jubæa spectabilis, of Chili, is well adapted to our locality, but unfortunately is rarely met with. I am under the impression that this Palm will prove hardy also in other parts of California, and become one of the most useful trees for general cultivation. The *Treasury of Botany* thus describes its utility: "In Chile, a sweet syrup called *miel de palma*, or Palm honey, is prepared by boiling the sap of this tree to the consistency of treacle, and it forms a considerable article of trade, being much esteemed for domestic use as sugar. The sap is obtained by the very wasteful method of felling the trees and cutting off the crown of leaves, when it immediately begins to flow, and continues for several months, until the tree is exhausted, providing a thin slice is shaved off the top every morning; each tree yielding about ninety gallons. The nuts are used by the Chilean confectioners in the preparation of sweetmeats, and by the boys as marbles. The leaves are used for thatching; and the trunks, being soft inside, and extremely hard toward the outside, are hollowed out and converted into water-pipes.

[To be Continued.]

THE MANIHOT HIBISCUS.

There is found along the banks of the Mississippi, and in other southern localities, a fine large-flowered Hibiscus, which was at one time supposed to be a native, but is now regarded as an introduced plant, the *Hibiscus Manihot*. The plant is a native of the East Indies, and has long been cultivated in Europe as a greenhouse perennial. The stems are four feet or more high, the leaves five to seven, parted with long narrow divisions, which are sometimes nearly a foot in length. The flower is similar in structure to that of the Hollyhock and others of the Mallow family, and is six inches or more across. The petals are of a fine canary-yellow color, each with a dark brownish-purple spot at the base, which forms a fine contrast with the yellow, and makes the flower quite showy. Like many other perennials, this will, if the seeds are sown early, bloom the first year, and it may be treated like an annual, or the roots may be taken up in the fall, and kept over winter in the cellar, if not wanted to bloom in the greenhouse. Of course it is hardy in the warmer States. We had long known this plant from herbarium specimens, and were much pleased to receive, last year, some seeds from Peter Henderson & Co., from which we raised plants which flowered abundantly the same season.—*American Agriculturist.*

SUCCULENTS AS DECORATIVE PLANTS.

BY CHARLES H. HOVEY.

[*Continued.*]

Among the succulents, the Sempervivums, next to the Echeverias, demand our attention as being the most useful —the hardy varieties for the garden, and the tender ones for both greenhouse and garden decoration. As indicated by the name *sempervivum*—"always living"—they are tenacious of life to an extreme degree, appearing to endure equally well the hot and the cold, the wet and the dry weather, and very rapidly increasing. This genus is well known in the old House-leek, which, in Europe, was formerly grown by royal edict on the thatched roofs of houses, on account of its supposed power to avert lightning. The succulent leaves of this common species were formerly supposed to possess curative properties. There are very many species and varieties, hardy and tender; the hardy ones are all stemless, and present a great contrast in habit of growth, as well as in the color of their leaves and flowers. Many are worthy of cultivation from the effectiveness of their flowers alone.

For the edging of flower-beds, or figures, for lettering or rock-work, and for edgings, the Sempervivums are in every way desirable.

The tender species differ greatly from each other in shape and style of growth, and are exceedingly ornamental for the greenhouse, as well as indispensable for the garden in making a bed of succulents; or if scattered among a group of miscellaneous plants, they give a certain novel and striking effect, which we find in no other class of plants. Most of them are very symmetrical in their growth, and form fine single specimens for the greenhouse. They vary in height from six inches to six feet.

Of the tender kinds the following are enumerated as a few of the most desirable:

Sempervivum arboreum.—This is one of the best known; it has a regular tree-like growth, attaining the height of five or six feet. The leaves, of light green, grow in rosettes upon the extremities of the branches.

S. arboreum rubrum is similar to the above in general appearance, except in the color of its leaves, which are deeply tinged with red.

S. arboreum variegatum.—Similar to the two preceding, the leaves being broadly margined with bright yellow, and green in the centre. One of the finest variegated-leaved plants.

S. arboreum medio-luteum.—Another variegated form of *S. arboreum*, having the yellow variegation in the centre of the leaf, upon each side of which is a margin of green.

S. tabulæforme.—This is the most distinct of the Sempervivums; it is called the Table-shaped Sempervivum, on account of its manner of growth. It is of dwarf habit, with its top perfectly flat, the leaves being as close together as if pressed. We have a specimen six inches high and ten inches in diameter, and as flat as a board. A very desirable kind.

S. Canariense.—Somewhat similar to *S. tabulæforme* in growth, but with larger leaves than in that species, and the cluster is slightly concave.

S. Haworthii.—A dwarf, free-branching species, producing small clusters of leaves at the extremities of the branches, the plant forming one large round cluster of small tufts.

S. Youngianum.—A tree-shaped variety, with very wide, flat leaves, somewhat after the style of *S. tabulæforme.* Very distinct.

S. decorum, S. ciliare, S. glutinosum,

S. rubicum, and *S. cholochrysum*, are all very good kinds, and worthy a place in any collection.

Of the hardy Sempervivums, those which are most distinct and desirable are the following:

S. arachnoideum.—This, called the Cobweb Sempervivum, is one of the most curious species; it has the peculiarity of being completely covered and interwoven from tip to tip of the leaves with filaments like a spider's web. It grows in very compact clumps, and gives a very striking effect.

S. tomentosum, and *S. Laggerii* present the same peculiarity as *S. arachnoideum*, though in a less marked degree. The leaves of both are green, but in *S. tomentosum* they change to a dull red in spring; both are desirable.

S. calcaratum, improperly known in collections as *S. Californicum*, is one of the best of all the hardy species. Its leaves are bright green, deeply tipped with red. Fine for bedding.

S. soboliferum is called the "Hen and Chickens," for the reason that the young plants which it produces are as regularly placed around the old rosette as if planted by hand. *S. hirtum*, as also *S. tomentosum*, present the same peculiar growth.

S. tectorum.—This is the regular roof House-leek before alluded to. A large and remarkably robust grower, and a distinct species.

S. umbilicum chrysanthum.—This is very dwarf and branching, producing a number of small round heads, with the leaves incurved. Very distinct. We may here mention

S. acuminatum, *S. Brauni*, *S. globiferum*, *S. heterotrichum*, *S. montanum*, *S. Pittonii*, *S. pilosella*, *S. Reginæ Amaliæ*, and *S. violaceum*, as all distinct and good. There are some fifty more, all different and perfectly hardy, which present their peculiarities of growth and color more fully in the spring. The Sempervivums, as a whole, are very desirable. They are easily taken care of, requiring very little attention, especially the hardy ones, which, when once planted, are quite able to take care of themselves.—*American Agriculturist.*

SUMMER TREATMENT OF GRAPEVINES.

A certain natural equilibrium exists between the roots and upper growth of the vine, which can not be disturbed to any considerable extent, especially during the growing season, without serious injury. To illustrate this, I have planted a young and healthy vine, with smooth and perfect roots, in early spring. When it had made a growth of two or three feet, I have cut it back to a single bud and leaf at its base. After this, the plant remains apparently dormant for ten days or longer, when the bud slowly swells and breaks; and if it is a hardy and vigorous variety, is soon making a new growth, but with less than its former strength. When it has again attained a similar growth, I have again shortened it to one bud and leaf above the former cut. A longer period of rest now ensues, followed usually by a weak and spindling growth of a few inches, with scarcely vigor to ripen a bud or two at its base before the autumn frosts have destroyed its foliage. Now, if we take up this vine, we shall find that all the new roots which had formed previous to the successive cuttings of the top, are dead and rotten. Only the old roots, which the vine had when planted, remain, and these rough, knobby, and diseased; the vine in no respect as good as when it was planted in the spring. The vine will bear, without apparent injury, any reasonable amount of pruning during its dormant

state, in fall or early spring. But I think the above experiment proves that any severe cutting during summer is an unmitigated evil. All the summer pruning I would recommend would be the early rubbing out of superfluous shoots upon their first appearance; leaving only what is required for next year's bearing-wood. This, with the pinching or stopping the ends of such shoots or canes as were disposed to be too rampant in growth, would be all I would ever consider necessary. Some of the most successful Grape-growers within my knowledge carefully prune their vines, in fall or early spring, and then leave them entirely without summer pruning.—*G. W. C., in Horticulturist.*

THE POPLAR.

BY E. J. HOOPER.

The Poplar (*Populus alba*, natural order *Saliaceæ*) is included in this natural order, *Saliaceæ*, because in appearance and many other particulars it is identified with the Willow. Like all the varieties of that extensive species, it thrives best in the neighborhood of water. The blossoms are dicœcious, and each seed is suspended to a long, silky tuft of hairs. The timber, too, like that of all other aquatic trees, is soft, light, and homogeneous. The most essential difference between the two species which compose the above-named order, is in the number of stamens in each flower: those in the Willow rarely exceed five, while in the Poplar there are never less than eight; the margin of the flower-scale or bractea in the former is entire, in the latter serrated; and the leaves of the one are more or less lance-shaped, in the other heart-shaped. The general appearance of the trees, however, is very different, and easily to be distinguished: the majority of the scarcely-to-be-numbered Willow tribe being rather shrubs than trees, and, when cultivated for profit, kept low by continual cuttings, while the Poplars are large and stately timber-trees.

We have many species of the Poplar as natives of America. Many other species have been introduced into this country from Europe, Tartary, and other parts of the north temperate zone, and are easily naturalized to our different climates, and all will flourish in California where the country is not too dry. Of those imported here the two most ornamental and generally known are the Lombardy and Balsam Poplars. As I have observed before, they all require a rather moist and rich soil, and thrive best near running water, but never in a marshy situation.

The Gray Poplar (*Populus canescens*) is a tall, straight tree, growing from eighty to one hundred feet. The leaves are heart-shaped, deeply and irregularly notched, dark green, and covered below with a white cottony down. The young shoots are also covered with this down, but the general color of the bark is gray; hence the name of the species.

The Abele-tree or White Poplar (*P. alba*), differs so slightly from this, that many botanists have considered them as varieties of the same species, and classed them together, being distinguished from all other Poplars by this white down beneath the leaf, which, when the tree is ruffled by the wind, gives it a peculiar appearance.

"The Poplar, that with silver lines his leaf."
—*Cowper.*

——"The White Poplar, from its foliage hoar
Scatters forth gleams like moonlight, with each gale
That sweeps the boughs."
—*Mrs. Hemans.*

From the quick growth of this tree,

and the facility with which, after lopping, it reproduces long and strong shoots, it is invaluable in many places, as in Paris, France, where the wood is almost exclusively used in heating ovens, and known there as *le bois blanc*. It is an astonishingly hardy shade-tree, and free from insects, and is extensively planted on the avenues near Cincinnati and other Eastern cities. It throws up many suckers or root-shoots, which is an advantage for their increase, to form timber for plantations, but is somewhat objectionable on a lawn.

The Black Poplar (*P. nigra*) is also a large and handsome tree. It reaches from fifty to eighty feet in height, and from the rapidity of its growth, the thickness and brilliancy of its foliage, and the vivid hue of its large and early flowering catkins, is one of the most valuable of its species in ornamental plantations. The catkins appear before the leaves. The foliage of this tree, though devoid of the silvery shade which makes the White Poplar so beautiful when agitated by a gentle breeze, is of a brilliant and glossy green, and reflects back the rays of the sun in a peculiar degree, which gives it a particularly joyous and animated appearance. It is sometimes known as the Willow Poplar, and the Water Poplar.

P. tremula is well known as the Aspen, from the trembling of its leaves, which are agitated by the slightest breath of air, and by the rustling noise produced by its incessant quivering. It is a native of every part of Europe. The leaf is small in proportion to the length of the foot-stalk, which, being vertically compressed, and in a contrary direction to that of the leaf, easily accounts for the tremulous motion.

> "With every change his features played,
> As Aspens show the light and shade."
> —*Walter Scott.*

For turnery-ware there is hardly any wood equal to these trees, especially the Abele, for their exceeding whiteness; so that trays, bowls, and many other household utensils, are made of it. The buds of the Black Poplar, like those of the Balsam Poplar, are covered with a gummy balsam, which forms the basis of an ointment for wounds and cuts.

P. fastigiata (the Lombardy Poplar) is more generally known than any other species of this tree. It was brought to England in 1758. Its average height is 100 or 120 to 150 feet. Its wood is inferior to that of the less lofty species, though more abundant. It is generally planted for variety and ornament, and although somewhat fatiguing to the eye when it lines the road for miles, as it does very generally in France, it is often a very beautiful and natural accompaniment to buildings. It is a well-known rule in landscape composition that horizontal lines should be counterbalanced by perpendicular ones. Hence, in the neighborhood of bridges, aqueducts, walls, roofs, etc., or even lengthened masses of buildings, the Lombardy Poplar, introduced with taste and judgment, produces a good and picturesque effect. In this respect our lately so-much-introduced *Eucalyptus globulus* effects much the same object. Among round-headed trees, too, or architectural scenes, both these fine trees, and particularly the more valuable Eucalyptus, vary the monotony of the outline, and give a character to the scene, while their elegant and spiry forms quivering or wavering in every breath of air, embellish the landscape in no ordinary degree. Most trees in this circumstance are partially agitated; one side is at rest while the other is in motion; but the Italian Poplar waves in one simple sweep from the top to the bottom, like

an ostrich feather on a lady's head. All the branches coincide in motion, and the least blast makes an impression on it when other trees are at rest.

——"The Poplar's shoot,
That, like a feather, waves from head to foot.
While those lofty Poplars gently wave
Their tops, between them comes and goes a sky,
Bright as the glimpses of eternity
To saints accorded in their mortal hour."

The trembling vibration which I have just alluded to, as so peculiarly distinguishing the leaves of the Aspen, is, though in a less degree, partaken of by all the other species of Poplar, and is in every case to be attributed to the peculiar conformation of the petiole, or foot-stalk. This is not only large in proportion to the size of the leaf, and compressed in the upper part, but takes a different direction to that of the plane or surface of the leaf. And herein, as in all the works of Nature, we discern the simplicity with which cause and effect are combined. Had it been proposed as a problem to find what should be the nature of a leaf that would quiver in the lightest possible agitation of the air, it could not have been more clearly or nicely or directly solved.

The shade afforded by the foliage of all the Poplars, especially by the Aspen, is considered more wholesome than any other tree, unless it be the Eucalyptus. It thrives in the centre of towns, even among coal smoke, and from the rapidity of its growth is often planted as a screen for concealing any unsightly objects. This last observation applies peculiarly to both the Lombardy Poplar and the Eucalyptus, which are admirably adapted for planting along streets and among houses, in towns and villages, from the little space occupied by their branches, which are compressed about their trunks so as not to interfere with the walks, or to obstruct the access of light to the windows. Many of our broad streets in American towns are thus planted, forming avenues which refresh the passenger with their shade, while they shelter and protect singing-birds and the English sparrow which has lately been introduced here to feed upon the worms which infest or are likely to infest our trees.

A Useful Hint.—When your seeds are planted, unless the day is cloudy and showery, they will require shading from the heat of the sun.

I find old newspapers are the best protection; but, if the patches are small, flower-pots can be inverted over them. The newspapers must be laid over the seeds, after they have been well watered, and fastened at the corners by small stones or a handful of the earth. At night they should be removed to let the dew moisten the ground, and put back before it is dried in the morning. Continue this until the tiny leaflets appear; then remove them entirely. If the ground is dry, the seeds must be thoroughly wet every night. Moisture is very needful to germinate seeds; without its aid they can not sprout. You often hear it said, "I planted fifty to sixty varieties of annuals, and not half a dozen sprouted. I have no faith in the seedsmen; they send out old seeds." "Did you water them well, and shade them from the noontide heat?" is asked. "Why, no, I never thought of that. I planted them, and supposed that was enough." My fair friends, unless the clouds favor you and drop rain, or hide the sun for three or four days, your seeds will become baked, and shriveled, and you can not expect them to grow.—*Every Woman her own Flower Gardener.*

BOUQUETS—HOW TO ARRANGE THEM.

Silvered wire is better for this purpose than copper, but either will do; though, as it takes but little of the former, and the latter is not so easily handled, the silver has the preference. The circumference of a circle being three times the diameter, if the frame is to be six inches in diameter, the piece of wire for the outside circle should be eighteen inches long, and each succeeding length should be three inches shorter, until the last one makes a circle not much larger than a ten-cent piece, making in all six rows. An inch should be allowed for fastening the ends, so the wire can be cut into lengths of nineteen, sixteen, thirteen, ten, seven, and four inches. Each of these lengths of wire must be twisted neatly together, forming various-sized circles.

These wires should then be attached to the smallest circle in the same way that they are fastened in parasol frames, or by twisting them closely over the circle at respective distances, and they should be each four inches in length. Lay the circles in order on the table, and pass the three frame-wires in and out of them, twisting them securely around the outer circle, and fastening the wires to each circle with coarse sewing-silk. The desired curve is easily given afterward by gently bending the upper circles. Then attach two or three strong wires, at least eight inches long, to the centre circle, and the frame will look like a parasol frame widely extended. It would be well to have the wire cut in the desired lengths at the store where they are purchased, and they can be found at most jewelers' shops or at wiremakers' establishments.

Such a frame can be enlarged at any time by adding another circle, and supporting it by two or three pieces of wire fastened backward and forward, and then hooked to the smallest circle. It is not a disadvantage when the frame, though otherwise nearly flat, rises seemingly a little too abruptly in the middle. A large flower is best for that position, and it is always better to have its petals rest on the outer wire. If very delicate flowers are to be used in making the bouquet, it is well to lay a small piece of cape lace or netting over the frame and fasten it all around the outer edge; and where wires are not to be obtained, the frame can be made entirely of netting, drawn over an osier or whalebone shape.

Similar frames of wire can be made to cover over round, square, or oval glass dishes or cups. Zinc wire should be used for these, as it bends very easily to the fingers. The coverings for square or oval dishes can be arranged in the same manner as advised for bouquets, and a circular frame is more easily made, and the corners can be filled in with interlaced wires.

Bouquets in Patterns.—Flowers are often arranged in a mere succession of bunches, but they look very stiff and unmeaning. Again, they are shaped in stars, but excepting the starry self-shaped flowers of the Stephanotis, Jasmine, Myrtles, etc., I have no pleasure in astronomical designs. Shaded bouquets are far prettier, unless artistic patterns are adopted. In many cases, if exceedingly small flowers are used the pattern can be very elaborate and perfect in taste and execution. A wreath of tiny bright flowers and leaves, arranged on a white ground, is specially lovely, and a wreath of Forget-me-nots, grouped on a white ground, is exceedingly charming and sentimental; also a wreath of pink Rosebuds and Hyacinths. Surely, such floral designs are far prettier than stiff, concentric

circles of one color following another!

The groundwork can be varied—pale pink and porcelain blue can be substituted for white, but a groundwork of white Sweet Violets, double Chinese Primrose, or *Deutzia gracilis*, with scarlet, blue, pink or purple wreaths, is doubtless the most beautiful. One kind of flowers should form the groundwork, as it is more difficult to keep the surface level if different kinds of flowers are used. It is very essential to keep the shape exact, and the curve should be very slight, and the flowers kept carefully down to their proper level. In fastening them to the wires soft thread is the best. If the stems are long enough each one can be tied to the centre wires, and it is well to wind wet moss or cotton-wool along them to keep the flowers from withering by the warmth of the hands. An outer border of leaves, feathery, variegated, of velvety texture, will add to the beauty of the design; scarlet Geranium leaves, unless their perfume renders them objectionable, the Fair Helen and the Oak-leaved being very unpleasant to many persons from their strong odor. Myrtle also makes a pretty strong edging, as its fragrance is so delicate.

It is a vexed question whether it is best to commence the arrangement of flowers from the top or from the outer edge. For vases or dishes it is best to begin at the outer edge and work toward the centre, always laying a frill of foliage about the outside; but for the bouquets, it is better, at least in my opinion, to commence at the centre, for no other way would secure the stalks in their proper position. In making a bouquet with a white groundwork and a scarlet wreath, a red Camellia could commence the bouquet and double white Primroses fill up the centre, with a wreath of white Heath and scarlet Begonias or Poinsettias. After the wreath must come a band of the groundwork, and then a fringe of green and white.

For a bridal bouquet, take a white Camellia for the centre; five or more Camellias at intervals, with a few Orange flowers interspersed, then white Heath or Lilies of the Valley. A very little green tells well with such a snowy-white group, and the pale green fronds of Maiden-hair Fern can hardly fail to add grace and beauty to such flowers.

A mixed bouquet of Roses and Geraniums is very lovely. Commence with one half-blown white Rose, and surround it with five or six clusters of scarlet Geranium a little below the level of the Rose. Add Geranium or Rose leaves with some feathery white flower, and encircle with pale pink Roses closely grouped; then a border of pure white Roses filled up with fresh bright green, and then a close border of scarlet Geraniums mingled with their own velvety leaves. Such a bouquet is a miracle of loveliness! Try it, fair friends, and see for yourselves how brilliant and charming it is.

Tropical Vegetation.—A Panama paper gives a striking illustration of the vigor and rapidity of vegetation in the tropics, by referring to the bushes and trees growing in the ruins of the burnt Aspinwall Hotel, at Panama. It is little more than two years since this conflagration occurred, and yet there are now growing within the walls trees at least thirty feet in height. They belong to what are called Trumpet-trees (*Cecropia*), and the branches are said to be crowding out of the highest doors and windows.

Never allow flowers to be watered or sprinkled with cold water. Tepid water is always better, even in summer.

FRUIT GROWING AND CURING IN CALIFORNIA.

BY DR. HENRY DEGROOT.

The wonderful adaptability of California for the growing of almost every kind of fruit is now a fact of world-wide recognition. Few countries equal and none surpass it in this respect. Both the soil and the climate are admirably suited for this industry. Fruit-trees of nearly every variety, as well as berry-bearing bushes, and the vine, thrive here with the least possible care. They will grow well in this State, covering nearly ten degrees of latitude, and at almost any altitude from sea-level to the tops of the mountains. They begin to produce early, yield abundantly, and enjoy almost entire exemption from disease. Fruits with us are apt to grow large, keep long, and are generally fair, sound, and well flavored.

In all the more elevated portions of the State, Apples, Plums, Cherries, and the more hardy fruits, as well as all kinds of berries, are now successfully cultivated. Even in Alpine, Mono, and Inyo counties, lying at an altitude of from 5,000 to 7,000 feet, and crossed and inclosed by rugged mountains, enough of these comestibles are raised for home consumption, their production in nearly every other county being vastly in excess of that limit. Apple, Peach, Pear, and Plum trees begin to bear here within two years from the time they are set out, and the vine within one year; other fruit-bearing trees and plants being equally precocious.

In most countries, fruit-trees are apt to bear only at a much later period, and then only in alternate seasons, or after other longer periods of sterility. Here, with the exception of the Apple, and perhaps some few other fruits, the yield of which is slightly abated in alternate years, these seasons of barrenness occur with no regularity, and, except through the intervention of accidental causes, can hardly be said to occur at all. That these products are generally sound and healthful is evinced by the fact that most of them can be left unpicked until early winter, and sometimes much later, without suffering decay; many varieties of Apples and Pears keeping the year through in a good state of preservation.

Encouraged by the facility with which fruits of all kinds could be raised in California, our people have planted extensively. Immense Pear, Peach, and Apple orchards are to be found in all parts of the State. Plum, Cherry, Apricot, Quince, Prune, Fig, and other varieties of fruit-trees, have been set out in great number. Our vineyards are now measured by the acre rather than by the number of vines set out, though of these there must be nearly 50,000,000 growing in the State, with a still larger number of small fruits, such as Strawberries, Currants, Raspberries, etc. With these millions of trees, and a fecundity so unexampled, the annual production of fruit in this State is enormous; so great, in fact, that in many localities destitute of facilities for shipping it away, it possesses no market value whatever—the orchardist feeding it to his stock, and in some instances giving it away to whoever chooses to come and get it. There is no estimating the quantity of fruit, mostly of fine quality, that is allowed in this manner to go to waste annually. It literally amounts to thousands of tons, the waste this season, owing to an unusually abundant crop, being greater than ever before.

Now, as our climate is exceedingly favorable for the curing of fruit—great

quantities of which in its dried state are every year consumed on the coast, creating a ready market and good prices for the same—strangers would naturally infer that this branch of business had been largely engaged in by the pomologists, vintagers, and gardeners of California; that with so many inducements for entering upon the business, and so many advantages for its successful prosecution, it would long since have attained to no secondary position among our domestic industries, and that we were shipping this sort of produce extensively to other and less favored countries. This, in view of the premises, is the conclusion at which almost any rational mind would be forced to arrive.

Dried fruit has not, however, figured prominently among our articles of export, nor have our orchardists as yet greatly enriched themselves by the sale of these toothsome commodities. On the contrary, they have not produced near enough to meet home requirements. We have been importers of these staples not only during early years, when labor was scarce and dear and little or no fruit was grown here, but latterly, since it has become so superabundant and the State has been swarming with women and children who, had they been disposed to make themselves useful, might have found in this business of fruit-curing a pleasant and profitable employment. Last year our importations of dried Apples amounted to nearly 4,000 half-barrels, and our raisins to 27,692 boxes, besides more than 100,000 barrels, kegs, and boxes of these and other kinds of dried fruits, to say nothing of large quantities of fruits and vegetables preserved in other forms; last year's importations, though showing an increase on those of the preceding year, representing the average of those made for many years past.

These facts and figures are not at all creditable to California industry or thrift, nor are they any more creditable to the good judgment and taste of our people. When it is remembered how the most of these fruits have been cured in the countries whence we have in so large part derived our supplies, one is astonished that anybody should use them at all. That they should ever have been preferred to those of California production can be explained only on the hypothesis that the consumer was ignorant of the processes to which they had been subjected in the course of preparation for market.

In the Eastern States, from which most of our importations in this line have been drawn, much of the fruit continues to be prepared after the old-fashioned way—that is, by exposure to the out-door air, or by being strung on threads and hung up in the house to dry; this last method being adopted when the weather is damp or the work is being carried on in the winter. It is, moreover, the favorite plan with many families in the country, as these garlands, when suspended thickly about the house, serve the several purposes of fly-roosts, dust-catchers, and ornamentation. Hence they are often suffered to adorn the kitchens and bedrooms of these rural dwellings for weeks and months in succession. When taken down they present, of course, a much bespeckled and dingy appearance, and are not apt to smell well, either.

This unsightly and ill-savored stuff is next sent to the country store, whence, after being forced into half-barrels by the aid of a stogy boot, it finds its way to the nearest port of shipment, and is there dispatched for San Francisco. During its long voyage in the ship's hold it imbibes largely the odor of bilge-water and other depraved smells;

this discoloring matter, meantime, becoming released and coating the mass with a sort of syrup, which to the consumer seems to have exuded from the fruit itself.

Such has been much of the dried fruit eaten by Californians in years past, and for which, if they had not been the most indolent and shiftless people under the sun, they might easily have substituted a home-cured article of superior quality and at far less cost. It is in practices of this kind that we are to look for the causes of that money tightness, hard times, and general unthrift of which we have ever heard so much complaint; and what of mishap and misery might we not reasonably predict for a people who, with such an abundance of green fruits, with our long and rainless summers, our cloudless days and dewless nights, will yet import their dried fruit from abroad rather than cure it for themselves! If anything more shiftless than this was ever practiced among the primitive settlers of Arkansas, the fact has not been brought to public notice.

Happily, we seem to be on the eve of a change as regards this shamefully neglected branch of industry. For the first time our people are this year beginning to turn their attention largely to the business of fruit-drying. Discarding the former slow and imperfect processes, they seem disposed to avail themselves of the several machines recently invented for effecting this purpose, and through the aid of which a much improved article can be turned out at a greatly reduced cost. Among these devices the Alden machine, perhaps because it was the first invented and brought into use, seems to have a general preference. Those who have tried the Cassidy drier, operating in the neighborhood of Petaluma, like it better than any other; the fact being, that these patent driers, or evaporators, possess such advantages over the old methods, that a person using either style is sure to be pleased with it. Of the Alden pattern, about twenty have already been put up in California; five of these being at San Lorenzo, three at Centreville, both in Alameda County; two at Vacaville, Solano County; two at Napa City, and several in various other localities. A number of the Cassidy machines, with a few of other patterns, have also been constructed and set to work in this State. In Oregon these evaporators are also being employed, and there is no doubt but they will be rapidly multiplied throughout the entire fruit-growing region of the coast.

These machines, when started, are usually kept running day and night. They employ from twenty to forty hands each, and have capacity to cure from one thousand to two thousand pounds every twenty-four hours. There will be cured in California three or four times as much fruit this season as in any preceding year. What shall have been accomplished the present year may, however, be looked upon as a mere inauguration of the business, now that the attention of our pomologists has been aroused, and the means been provided for making it a great success.

Asparagus Culture in Germany.—It is asserted that near Brauneschweig, Germany, 25,000 acres are cultivated in Asparagus, most of which is canned. The variety cultivated is called "Rose Hollande." We have received and eaten samples of this German canned Asparagus, and it is most excellent.—*Ex.*

Do not use fresh manure for bulbs; old, thoroughly decayed compost is far preferable.

TAN MULCH FOR FLOWER-BEDS.

The color of fresh tan, and in particular that of Hemlock, is just the tint to contrast favorably with the colors of grass and flowers, and to make them bright and conspicuous. A warm brick red, that of a well-burned and new flower-pot, or of the reddish clay—the common (Venetian) red of the painters—is the color found preferable in horticultural exhibitions as a background on flower-pot stages. But almost any color resembling that of a wet soil will do, provided that it is uniform over the whole ground; for this prevents the eye from being distracted by a medley of tints, and thus the plants being seen with the full power of vision, both outlines and colors are appreciated.

When a bed of flowers or shrubbery is cut out of the grass-plat of a yard or lawn, a mulch of fresh, fine Hemlock tan, applied after planting, is equivalent to a painting of the surface, for it gives the whole one even and distinct shade. It has the great advantage, too, of saving nearly all of the often-recurring trouble of weeding and watering. Then it is so easily applied—so very easily surfaced smoothly with the back of a rake—and so pleasant to the feet as well as to the eyes. Dark-colored sand may be used in the same way, on heavy soils, with great advantage and effect.

Knowing very well from trials how deleterious tan may become to the roots, if dug into the ground, we have been pleasantly surprised to find that even tender annuals, so far as we have applied tan around them, are not injured by it, although just fresh from the vat, if it is applied only upon the surface.

The edging round a twelve-by-fifteen-feet bed of shrubs here is formed by a row of *Tagetes signata pumila*, set a foot apart. These plants were almost inconspicuous on the rather parti-colored earth of the bed, but when this was covered all over with an inch or two deep of fresh tan, everything growing in the bed seemed to be illuminated, and the long row of Tagetes stood out as distinct as a row of showy buttons on a new dress, or a row of the neatly matched Plane-trees on a Paris boulevard. They began to grow more rapidly; and are now tipped and gilded with their golden blossoms, and more than ever like a pretty curving row of shining border buttons.

Behind these are pæonies and other perennials, not over eighteen inches high, and further back are lilies, etc., among shrubs of three or four feet of stature. All are hardy perennials, excepting the one row of edging, so that the really beautiful bed requires only a little pruning in the spring, and a refreshing of tan to be a continual feast to the eye. Of course the grass is kept short all around. If a hardy weed dares to appear here or there, a scrape of the foot in the tan, or a spud with a chisel-like push-hoe, puts it out of existence before it becomes large enough to spot and mar the even-colored carpet of the bed. The centre plant in this bed is a *Spiræa aurea* about seven feet high, and from it the growth tapers in height down to the low border or edge of the bed. There are no evergreens in it, excepting that one front is edged with *Euonymus radicans variegatus*. Back of this are mounds of golden-veined Japan Honeysuckles, and farther back are taller mounds of the Belgian Monthly and Trumpet Honeysuckles between low, erect shrubs, such as *Deutzia carnea*, *Hydrangia paniculata*, *Spiræa callosa* and *prunifolia*, Japan Quince, Flowering Almond, etc. A variety of the red-berried Elder—*Sambucus pubens laciniatus*,

with very finely cut leaves, extends its feathery spray from under the branches of a Josikea Lilac, with a peculiarly graceful elegance. It is an interesting and beautiful shrub, thrives in the shade, and does not sucker from the roots like other Elders. It was found a few years ago on Tussy Mountain by a botanical party from the Pennsylvania Agricultural College, and is unique. It has a profusion of bright red berries.

When it is desired to plant anything new in this bed (as to renew the Tagetes edging in the last of May), the tan is scraped away before digging, so that it may not be mingled with the soil, nor any of it covered out of reach of the oxidizing power of free air.—*Country Gentleman.*

The Tamarix.—Of this pretty shrub, which in this part of the country is not often seen, the *Flower Garden* says: "These very elegant and hardy shrubs should be more extensively used in our gardens and lawns. The flowers and foliage both are ornamental; the latter remaining till quite late in the season. Its numerous branches are profusely covered with very delicate, slender, thread-like leaves, which give them a feathery effect; somewhat like, but more elegant, than those of the graceful Pines. The flowers are very minute, appearing in the spring before the foliage, and covering the plant with long terminal spikes of pinkish blossoms. The shrubs bloom a second time in autumn, but not so profusely. They require a deep sandy soil, and present the best effect when planted singly in the grass. When once established, no further attention is necessary except an annual pruning. But this is of great importance. Cut them back, half-way down, every spring, as otherwise the branches will grow scraggy and awkward.—*American Farmer.*

TRAINING THE GRAPE.

Following are some hints on Grape culture offered by the *Home Journal*, of New Orleans, which may prove of service to our California readers, although given in view of the special peculiarities of Louisiana:

"Perhaps the most essential element to success in Grape culture is the proper mode of pruning and training the vine. The soil, location, and aspect may be all right; the varieties may be such as are exactly adapted to our peculiar climatic conditions, and yet, if some intelligent system of training is not adopted, and the pruning not done in accordance with the requirements of such system, we need not expect permanently healthy vines or remunerative crops. It is of the very first importance to know, therefore, when we plant a vine, how we are going to manage it.

"Our first lessons in Grape culture came from the Old World, where they cultivate an entirely distinct species of Grape, and one which, from long culture under a universal *procrustean* system of pruning and training, has become pretty well reconciled to its stubbing-in treatment. It was very natural that our early cultivators should follow the examples and instructions given to them by the great lights of European Grape culture, without investigating too critically the difference in species, habits, soils, and climates, that existed between the two countries.

"Our native species of the great *Vitis* family—great in importance, if not in numbers—prove refractory under the severe pruning to which the European Grape patiently submits, and fail when thus treated to yield the cultivator that

permanent income which is the legitimate expectation of every commercial fruit-grower. Our grapes require longer training and more room, and with this condition must be coupled that other one of frequent renewals. Good strong vines, one or at most two years old, should alone be planted, and these should be set four feet apart in six-feet rows. This distance will fulfill all the conditions of both systems, and will give a greater amount of crop than can be secured by setting the vines in wider rows or farther apart in the row.

"We will suppose that strong one-year-old vines are to be planted. These should be cut back to two or three stout eyes, so that when planted about six inches of the cane shall be above the ground. Suffer two eyes to push, generally the two upper ones, rubbing out all growth below them as soon as it manifests itself, and pinching the end of the weakest of the two shoots as soon as it has reached six or eight inches in length. Train the other shoot to a six-feet stake driven one foot in the ground, and when this growing cane has reached the top of the stake, pinch it also, and cut out entirely the weak cane that was pinched before. The vine will need no further care as to pruning or training the first year. In January, before the sap begins to circulate, cut the cane down to within two or three good eyes of the last cutting, and train up this year two canes, rubbing off all other growth and pinching out any laterals that may appear on the growing canes. When these canes have reached the top of the stake, pinch them as before directed. If properly managed, these canes will be of nearly equal strength, and will correspond laterally with the direction of the rows. At the pruning in January, cut back the left-hand cane, as you face the row, to two strong eyes, leaving about four to six inches of spur according to the growth or variety. The other cane should be cut back from three to five feet, according to its strength. This is to be the bearing-cane for the ensuing or third year. A stake two and a half or three feet long should be driven firmly into the ground, one foot to the right of the vine; the middle of the long cane should be tied to it loosely in two places some six inches apart, and then the top brought over and tied *with the top down* to the long stake, forming almost a complete circle. From the spur two new canes are to be trained up the long stake, to be treated next year precisely as directed for the two third-year canes, except that the fourth year the new bearing-cane is to be trained to a short stake upon the left of the vine. The bearing-cane of the third year is to remain another year, having its bearing side-shoots cut back to three eyes. This will give for each year after the third two bearing-canes, one a year old and one two years old, and two growing canes for future training as 'spur' and 'bow.' In January the two-years-old bearing-cane is to be cut entirely away."

A True Variegated Rose.—The Hudson (N. Y.) *Republican* notices the production of a new variegated Rose by a florist of that city, and says that this is the second one allowed to come into bloom of the cuttings from which he is propagating this rare novelty. It has been named the "Cora Macy," after one of his daughters, and promises to become a flower of great beauty and value. This Rose originated as a sport from an ordinary Monthly Rose, of deep red color, in Mr. Macy's dooryard last season. It was transferred to his greenhouse and judiciously forced until

several healthy plants have been obtained and found true to color. The form and fragrance of the parent Rose are fully preserved, while the leaves are all beautifully variegated in red and white, blending in the most perfect manner.

THE VEGETABLE MARKET OF SAN FRANCISCO.

If one hundred tons of vegetables were massed in one pile, and the beholder were told that this is San Francisco's regular daily ration in the vegetable line, he would probably be somewhat amazed. Yet such is supposed to be the case by those who have taken the dimensions of our daily vegetable market.

This vast quantity, however, is not exhibited in one stack, but is placed on the sidewalks of Sansome Street in goodly sized mounds, or piled up on the wagons ranged along the sides of the street. This grand vegetable display commences on the south a little below Commercial Street, extending thence northward to the length of five or six blocks. In order to condense this business as much as possible, the greatest economy in space is used. Many of the wagons stand closely backed up to the curbstone, while those that stand lengthwise of the street are not allowed space for their poles, but are placed body against body as closely as possible. On a recent early visit to this market we counted eighty-eight of these wagons. Many of them bring to market fully three tons, while scarcely any of them bring less than one ton. And be it remembered that the "market days" here are six to the week, throughout the year. And it should be borne in mind that San Francisco does not obtain here its tons of Potatoes for its daily consumption, for these are not included in the vegetables sold here. The smaller garden vegetables—Radishes, Celery, etc.—are grown at the Mission; while the coarser grades—Cabbages, Turnips, etc.—are brought from a greater distance, some of them fifteen miles. Many of these immense loads are brought to the city at night and placed in position, ready for the earliest morning customers. It is about daybreak that this trade is most active; for the great number of local markets and groceries scattered through all parts of the city get their supply of vegetables here, and they must be in time for their early customers. It is almost exclusively to dealers that the sales at this great market are made. Neither party has any spare time to waste in haggling, one being as impatient to buy as the other is to sell; consequently quick sales and a rapid transfer of stock follow.

Later in the morning, a few men and women, smaller purchasers, appear and procure their daily supply for families, boarding-houses, etc. And from the opening to the close of the market, scores of boys and girls are going about amid the scene with sacks and baskets, into which they thrust all the refuse vegetable material, such as cabbage leaves, turnip tops, etc. The owners cut and trim freely; much of this refuse is undoubtedly available for table uses, though it is mostly gathered for feeding to cows, goats, and fowls. When it has been closely picked over, and as the wagons disappear, the sidewalk, gutter, and street are swept, and even these sweepings are bagged; and by half past eight or nine o'clock, when the mercantile business of the locality commences, these stirring Italian vegetable-growers are returning to their distant ranches, and of those mountains of vegetables there is not left enough to "keep their memory green."

These vegetables are grown by those who sell them, and who are almost exclusively Italians. Any person will, we think, at once admit that they deserve commendation, both as producers and as business men. They have done justice to the horticultural resources of the country, and present the valuable products in a very attractive condition; and it will be difficult to find in any department of trade the same amount of business done in so short a time and in so business-like a manner.

There is evidently an idea prevailing in the little world outside of San Francisco that we are given over to extravagance and waste. But we have abundant evidence wherewith to refute this charge, and may find one available point in this vegetable market. As we stated above, there is plenty of refuse here, but no waste. Men and women, boys and girls (not the representatives of squalid want and misery, by any means), come here regularly with their baskets and bags, and carry off to their homes what would otherwise become a nuisance. Every leaf is utilized.

There are several gratifying points brought out by a visit to this market. The display of vegetables there is fully up to the idea that has gone abroad concerning Californian Horticulture. We are not so "green" as to claim that there is anything really practical in the sight of even such mounds of mammoth Cabbages and other vegetables, yet we do claim that they are decidedly refreshing to behold, and while they are appealing to a wholesome appetite, they gratify other tastes and feelings.

Regarding the eating habits of the people and their consequent healthiness, it is a satisfaction to know that they consume daily a hundred tons of vegetables, exclusive of Potatoes (and this is too low an estimate), seven days in a week throughout the year; but they ought to consume still more. About the only complaint against our popular eating-houses is, that they do not furnish vegetables in sufficient quantity and variety. This is a want that should not remain unsatisfied in our great vegetable abundance.—*Pacific Rural Press.*

SUN-DRIED FRUIT A FAILURE.

Owing to the peculiarity of our climate, a climate in which fruit may be dried as rapidly and with as little expense as in any other country, the system of drying fruit in the sun is practically a failure. It may strike those who have had no experience, as a strange proposition; but, to the practical man, the man who has dried fruit in the sun and kept the same any length of time before disposing of it, and to the merchant who has been dealing in sun-dried fruits and had box after box returned to him, it is very plain and easily understood. In whatever country you dry fruit in the sun, exposed to insects, they will deposit more or less eggs upon it. If that country be a cold one, like the Atlantic States, for instance, the cold weather generally sets in so early that these eggs are not hatched out in the fall, and the fruit is consumed before the warm weather of the following spring, and the consumers are none the wiser for having consumed with the fruit millions of insect eggs. In this State, however, these eggs hatch out in the fall, and very generally destroy the fruit before it is required for consumption. Our dealers generally understand the danger of dealing in sun-dried fruit, for many of them have suffered by so doing; and we, in the line of our business, have also had a little experience, which we will relate. While Secretary

of the State Agricultural Society, we made an exhibition of some of the products of our State, at the International Exposition at Paris. At the State Fair of 1866, Briggs Bros., the extensive orchardists of Marysville, exhibited a number of boxes of dried fruits of various kinds, put up in a good shape for commerce. The fruit itself was in splendid order, and attracted general attention at the fair, and we solicited and obtained the whole to send, among other articles, to Paris. After the fair, some two months elapsed before it was time to forward the goods to New York, and the boxes remained in a safe place, undisturbed. When ready to ship, we opened one of the boxes, and found the fruit had turned to a mass of worms. Not one box was found but was in the same condition.

The peculiarity of our climate, therefore, requires that our fruit be dried by artificial means, or that all sun-dried fruit, to keep or to ship, be put through some process by which the insects' eggs may be killed. Unless subjected to some process that will effect this, it is neither safe to the individual, or good policy to ship it out of the State, or to sell it to those who desire to keep it for winter use.—*Sacramento Record.*

Many persons fail with the Apricot on account of the situation selected. If we give it a southern exposure, the blossoms will likely enough expand before the danger from late spring frost is past, and the consequence is a blasting of the prospective crop. A specimen in a neighbor's collection planted on the north side of the house, and where it can only enjoy a little sunshine late in the afternoon, has given good results. Place it in such exposures; attend to the "borer" at the root; wage a war of extermination against the curculio; and gather Apricots almost as fine as do the Mormon horticulturists at Salt Lake City.

BEAUTIFY YOUR HOMES.

It should be our constant object and aim to render our homes and farm life attractive. A false idea seems to prevail among all classes that they can devote five, ten, fifteen, or twenty years to the accumulation of capital, wherewith to purchase enjoyment, and then sit down and enjoy it. He who builds upon such a basis founds his superstructure upon sand. It is a delusive hope, an ignis fatuus, that tempts us to sacrifice health and, it may be, that fine perception of the beautiful, which can only be strengthened and cultivated by its daily use and enjoyment. How often do we see farm-houses mere boarding-houses, not surrounded by a single ornamental tree, or shrub, or flower, when they might easily and cheaply have been made beautiful homes?

If we have no regard for ourselves, and no ambition but to accumulate capital, we should, at least for the sake of our children, build up a pleasant home, whether it be a villa, a cottage, or even a log-house. The saddest thing of all is to hear it said of any man or woman, that he or she never had a pleasant home. The importance of a pleasant home, where love reigns supreme, and where the external adornments ever minister to the gratification of the nascent perception of the beautiful, the good, and the true, can never be overestimated, when we consider their influence upon the æsthetical and moral culture of our children. It is only by degrees that the young, hungry soul, born and bred in a hard, unlovely

home, accepts the coarse fate to which, not the poverty, but the indifference, of parents condemn it. A meagre, joyless home often makes of the spirited boy a shrewd, narrow-minded, and selfish man; and as the years pass by, these influences culminate in a covetous and unloving disposition, and he eventually disappears from the earth, uncared for and unloved. The home should be made so beautiful that the children would love it above all other places. It is by improving and beautifying our homes that we become contented with farm life, and contentment in this respect is great gain. Then let each child plant a tree, shrub, or flower, that it can call its own, something upon which they can bestow some care, something that in after years will call up some pleasant association connected with its planting—for it is such things as these that attract us in after years to the home around which so many fond associations will ever cluster. The habit which we as a people have acquired, of roving hither and thither over the face of the earth in search of happiness, should be checked. Happiness of the purest kind is not to be found in this way. It is to be found in making our earthly homes as near as possible like the ideal one which we are ever cherishing, ever hoping to create. All things must have a beginning; then why should we not begin at once, and without delay, to make every earnest longing for a beautiful home at no distant day an accomplished fact?

California Woods for England.—The superior character of California wood is attracting the attention of people living abroad, and visitors, who are fairly delighted with the fine grain and the high polish of the material used in the manufacture of furniture and the ornamentation of apartments in this State. A few months since Lord Skelmersdale, while visiting this city, was struck with the fine finish of the Lick House, and also with the rich paneling of Laurel and Redwood in the Capitol at Sacramento. He remembered his admiration of the woods after his return to London, and finally concluded to send for a collection for the adornment of his palatial residence in the great British metropolis. The order was received by Jacob Strahle & Co., who will forward by the bark *Cuba* some of the finest specimens of California woods the market affords. The same firm recently supplied fine woods for the re-arrangement of the cabin of the clipper ship *Carrollton*, of New York.

Fertilizing Plants.—A process invented by Hooibrenk, facilitating the fertilization of plants, has lately been successfully tried, according to *Les Mondes*, in the Botanical Gardens of Vienna. This consists in simply touching the extremity of the stigma of a flower about to bloom with a brush dipped in honey, or still better, in honey mixed with the pollen of the plant to be operated upon. This, in the case of *Hibiscus Mexicanus*, which had never borne fruit, resulted in the production of perfect seeds. The operation has succeeded very well with certain fruit-trees, some of which have thus been caused to produce fruit for the first time. As an explanation of this result it is suggested that the honey keeps the grains of pollen upon the stigma, and thus favors the development of the pollen-tube, which is indispensable to fertilization. The substitution of glycerine for honey in the experiment has been suggested.

ABUTILON VEXILLARIUM VARIEGATUM.

(SEE FRONTISPIECE.)

We take pleasure in bringing this handsome foliage shrub to the notice of our readers. Although this Abutilon has been introduced several years since, it is not so frequently met with as it really deserves. Its golden-blotched leaves make it a conspicuous ornamental foliage plant, while its bell-shaped flowers, consisting of a bright red calyx and golden corolla, are most pleasing.

The *A. vexillarium var.* should be treated as a greenhouse plant, and as such it is adapted to various purposes. Its climbing nature is well calculated to decorate a wall or trellis; its graceful habit makes it an exquisite basket-plant, and if frequently cut back and pinched off, it will make an admirably compact pot-plant. The foliage may be much improved in color by keeping the roots rather dry and exposing the plant to the sun or light. It can be most effectively used to ornament a rustic flower-stand.

All the Abutilons are readily grown from cuttings at any season of the year, and no particular treatment is required in their cultivation. They may be had in nearly all of our nurseries at a small cost.

FLOWER CULTURE.

As your flower seeds ripen, gather them, and after you have dried them good, clean all the seed-pods, trash, etc., out of them. Put them in neat paper or cloth bags, labeled with the name and color of the flowers. Put the small bags in a large bag or box, that you must have on purpose. Then next spring, when you want your seed to plant, you will know where to find them. So many folks put their seed in an old rag or paper, stick them in or on the top of the cupboard, or in some drawer, and never think anything more about them until the next spring, when they can't find them. So when you can save plenty of all varieties of flower seeds, you can make many a heart glad by giving them a few packages. I always take the largest and prettiest, mark them, and save the seed. By doing this each year, my flowers get larger and nicer. The Dahlias and Gladioli tie securely to strong stakes, to prevent them being broken by winds that are so destructive at times. Now is a good time to bud Roses. I have budded them quite late in August, but I would rather bud in July. I have a red running Rose at one of my bedroom windows that I budded one bud of a white in, and it does look beautiful when in bloom. Try budding different colors together once. Now is a good time to strike Rose-cuttings in any convenient place. Trim out all decayed blossoms and superfluous wood; prune Monthly Roses and they will bloom much nicer. Guard the Verbenas and Carnations. If they are too much in the sun, shade them. Hyacinths, Tulips, etc., should be taken up and the beds planted with annuals. Many plants can be transplanted, and by good care and watering, can be grown with success. All creepers require constant care. Keep them tied and trained up their trellis; they grow so fast that they require constant care. Don't forget the potted plants; keep them well watered, they will need water every day this warm, dry weather. Give them a good watering of liquid manure once a week. If you water them out of the well or cistern, draw the water in the morning or at noon, and set it in the sunshine so it will be warm by evening. It chills the plants to put cold water on them.

Editorial Portfolio.

THE HORTICULTURAL EXHIBITION.

As we announced before, the Fourth Annual Exhibition of the Bay District Horticultural Society, in conjunction with the Mechanics' Fair, opened on Tuesday, August 18th. The fact that the Exhibition was to continue for five weeks made it doubtful that many of our florists and nurserymen would participate, notwithstanding that the Horticultural Exhibition was divided up in four weekly shows. All those concerned in our horticultural affairs seem to agree with us, that a Horticultural Exhibition can not be kept up for weeks at the expense, loss, and sacrifice of exhibitors. Circumstances, too well known to members of the Horticultural Society, made a co-operation with the Mechanics' Fair desirable this present year, while we sincerely hope that sufficient strength will be developed in the ranks of our horticulturists and florists to inaugurate exhibitions of their own.

As for the Exhibition, the space devoted to horticulture was limited, and it was difficult to arrange with a view to produce effect. If we add to this that only certain classes of plants could be entered during the first week, to make room for other classes during the second week, then again to be replaced by others during the third week, and so on until the close of the Fair, it is surprising that so creditable an exhibition has been made. While but few of our most prominent nurserymen participated, those few have done their work well, and deserve praise.

The leading features of the Exhibition were during the first week.

Tropical plants were entered by R. B. Woodward and Miller & Sievers, the former carrying off the first prize.

Ferns were shown very extensively. The very select collection of forty varieties exhibited by Miller & Sievers was awarded the first prize. Among these we noticed in particular some fine specimens of *Adiantum Farleyense*, *Adiantum amabile*, *Ciboteum glaucum*, and *C. Chamissoi* (Pulu Tree-ferns from the Sandwich Islands), *Pteris argyrea*, *Lygodium scandens*, *Platycerium grande*, *Asplenium nidus avis*, *Gymnogramma chrysophila*, *G. Lancheana*, and others.

Greenhouse and conservatory plants were well represented, as usual.

A collection of Japanese plants, by Miller & Sievers, was attracting much attention.

During the second week, Roses, Fuchsias, Geraniums, Coleus, Bouvardias, etc., were shown. The most prominent collections, however, were tender ornamental foliage plants, shown by three competitors, R. B. Woodward, Miller & Sievers, and Mr. Thompson, of Oakland. Colored Dracænas, Caladiums, Crotons, Dieffenbachias, Alocasias, Anthuriums, and many other choice varieties, presented a charming appearance.

Much interest was felt in the collection of California native plants by Miller & Sievers, which was far superior and more numerous than on any former occasion.

The third week brought out tender climbers, new and rare plants, Begonias, Pelargoniums, Pansies, Gloxinias, Marantas, Caladiums, and Verbenas.

Ornamental foliage Begonias, in three collections, and new and rare plants, attracted the most attention, and were unusually good.

The Cut-flower show was not as largely attended as might have been expected; however, the display of Roses, Dahlias, Gladioli, and Pinks was very fair.

The fourth week's show consisted of

bouquets, floral decorations, and fruits; also, Fern-cases, rustic stands, and baskets. The "Temple of Liberty," by August Duhem, in the employ of Miller & Sievers, was probably the best piece of work in the way of floral decoration ever exhibited.

The fruit show was also creditable. We were particularly pleased with the wine and table Grapes of W. B. West, of Stockton, and the Apples and Pears of D. C. Young, of Sonoma, which have hardly ever been equaled.

It is generally conceded, that if the various collections had been on exhibit at any one time, instead of being cut up into weekly shows, the Exhibition would have been equal to any former display, at least in point of quality and variety.

OUR EXCHANGE TABLE.

The Overland for October is at hand, and is remarkable for the unparalleled length of its table of contents, nineteen names appearing opposite headings suggestive of interesting articles; a promise well fulfilled by the body of the magazine. Too little attention is generally paid by readers to book reviews; but we promise anybody that turns to this month's Overland—especially to the notice "The Gods, and other Lectures"—a treat of terse, instructive, and severe criticism. John H. Carmany & Co., Publishers, San Francisco. $4 a year.

Moon's Bee World; a monthly periodical, devoted to Bee Culture. A valuable work in its department. A. F. Moon & Co., Publishers, Rome, Ga. Price, $1 per year.

Vick's Floral Guide (No. 4), 1874. This valuable publication contains full and complete directions for fall work in the garden, much of which is useful in California. This work is published for the low price of twenty-five cents a year, and furnishes a vast amount of valuable information.

CATALOGUES RECEIVED.

The *Descriptive Catalogue* of the Dobroyde New-Plant Nursery, of Sydney, N. S. W.

Premiums, Rules, and Regulations of the Berks Co. (Pa.) Agricultural and Horticultural Society.

Worms in Fruit.—Heretofore California fruit has been exceptionally free from worms of all kinds. So much so, that this fact has been considered one of the best recommendations to our State as a fruit-growing country. We are sorry to learn, as we have, by report and personal observation, that this year worms are making their appearance among the Pears and Apples to an alarming extent. These varieties of fruits are dropping from the trees much more this year than heretofore, and we have no doubt that the presence of the worms is the cause of it. Fears were expressed by some of our fruit-growers when the Eastern fruit was sent out here and exhibited at our State Fair, some years since, that the fruit-worms would thus be introduced. If the fruits only about Sacramento are affected in this manner it is possible that these fears were too well founded and that they are being realized. We wish our contemporaries throughout the State would examine into this matter in their several localities and report the result of their inquiries. We would also suggest that the fruit-growers of the State, at their meeting on the 27th instant, compare notes on the subject and publish the result of their comparison.—*Sacramento Record.*

NEW AND RARE PLANTS.

A New Evergreen.—It is always a pleasure to record an addition to our list of really hardy new plants, and especially so when they are very beautiful and desirable in all respects. We now urge the claims of a new evergreen from Japan, which as yet has no common name, but which is called by botanists *Retinispora obtusa*. For the last five years, two of which have been more trying to our hardy plants than any within the recollection of our oldest horticulturists, this lovely tree has succeeded as well as the Norway Spruce. It grows rapidly and forms a very graceful tree, having drooping silver-green branchlets, and appearing equally indifferent to the extremes of heat and cold. So far as we have been able to judge, it is not affected by any particular soil or situation, but succeeds well wherever placed. So many of the newer evergreens have been injured of late years, that our horticulturists have been about ready to give up the whole family in despair, as too fickle for this climate; but we think a fair test with this charming plant will assure them that one at least will prove desirable.—*New York Tribune.*

Cyrtanthera Chrysostephana. — A new and very distinct species of the tropical American genus *Cyrtanthera*. It is of elegant habit, and conspicuous for the vivid red color of the midrib and nerves of the leaf beneath. The flowers, instead of being disposed in a dense thyrse, or in axillary cymes, as in most species of the genus, are collected into a crown-like corymb at the tips of the branches, and are of a bright golden color. It is a plant of easy culture, and considered a most desirable acquisition, for it produces its showy flowers in midwinter.—*Horticulturist.*

Singular and Rare.—There has been found recently in Southern Australia a remarkable flower, of the shape and size of our common Morning Glory, but having five streaks of color on its bell-shaped calyx. In the early morning, when it opens, the streaks are of a pale, delicate blue; as the day advances the color intensifies, and changes gradually to a dark, rich purple, which is succeeded by a light pink tint. As evening approaches, the color fades gradually, and when night comes on, the flower, from which all vestige of color has disappeared, closes and dies.

The French Bishop of Canton has sent to the Jardin d'Acclimatation a plant whose flower changes color three times a day. This is mentioned as a remarkable instance of the skill of the Chinese florists. It is probable, however, that this plant belongs to the same family as the first mentioned, and its wonderful changes are simply natural phenomena.

A rare plant has lately been discovered in Bucks County, Pennsylvania, by Dr. J. S. Moyer, of Quakertown. It is the *Trollius laxus*, or Spreading Globe-flower. It is found in a very few other places, and is considered by all American botanists as a great desideratum.—*Park's Floral Gazette.*

Dracæna Shepherdii. — Originated and named by W. Bull after Mr. Shepherd, a well-known nurseryman of Sydney. It is a very noble form of *Dracæna*, and considered one of the finest in cultivation. Mr. Bull says: "Unlike most of the forms already known, which color most on the free young growth of vigorous plants, this plant takes on its distinctive coloring gradually on the older leaves, the young ones being green, and showing paler green stripes on those parts which take on at

a later period the peculiar bronzy orange hue. It is very free-growing, of ample proportions, the broad oblong linear leaves, 2¼ feet long and five inches broad, being arranged in a distinctly spiral manner, and having channeled marginate petioles, six inches long, tinted at the edge with the same bronzy orange color, which is continued along the marginal portions of the lower half of each leaf."

New Liliputian Pelargonium Commodore Nutt.—This is one of a strain of liliputian Pelargoniums originated by Hovey & Co., a few years ago, and the Commodore Nutt is of the same style as the Dolly Dutton. It grows only ten or twelve inches high; very compact in habit, with small leaves, and entirely covered with large trusses of flowers, of a deep rosy lilac, spotted on the upper petals—a very beautiful acquisition.

Crocus Scharojani.—This new and hardy autumn-flowering bulb is very pretty, and produces its blossoms before the leaves appear. The flowers are of a deep saffron color, and are developed in the early autumn months.—*Park's Floral Gazette.*

A new Geranium, the Pride of Mount Hope, is announced and highly spoken of.

NEW AND RARE FRUITS.

Seedling Gooseberry, *from Mr. H. M. Engle, Marietta*: "I send by to-day's express a few seedling Gooseberries. The variety originated on the grounds of a neighbor of mine. It is evidently a seedling of the American Cluster, or Houghton, as there were no other kinds on the premises. It has now been fruiting about four or five years, side by side of the above-named kinds, and has thus far proved itself as profuse a bearer, and as free from mildew as either of the above; and in addition is a sweeter berry, and its fruiting is now over, just as the others commence to ripen. The samples which I send you are about the last that were on the bushes, and are not fully average size."

[There is no mistake about this being of the American species. The berries are very smooth—we think equal, and another to whom we submitted them thinks better in flavor, than the Houghton's Seedling. It probably averages larger, and we think well worthy of naming and disseminating.—Ed. G. M.]—*Gardener's Monthly.*

A New Species of Fruit.—It is said in the English papers that a new species of fruit of a character that will place it among leading articles, has been introduced from Japan. We have seen no account of it, but that some of the plants were exhibited at the Royal Horticultural Society—awarded there a first-class certificate. It is called *Pyrus Maulei,* so it is probably allied to the Apple, Pear, or Quince.

How to grow the Oleander.—The Oleander is a very ornamental plant when properly grown, but we seldom see fine specimens. There is scarcely one of my readers who has not seen dozens of tall, straggly plants. I propose to give a few directions by which fine plants may be grown. Take a healthy cutting, place it in a bottle of water, and let it remain there till roots appear; then pot it, shifting it into larger-sized pots as its roots require more room. Do not try to have it branch until it blooms. It will then have a long, straight stalk—a good foundation for the plant you desire.

After blooming, three shoots will start; allow them to grow, as they are the flower-shoots: but after these have bloomed, cut back all the shoots to within four or five inches of the former branching-place. Do this each time the plant blooms.—*Kitty Clover, in Floral Cabinet.*

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

One of the best reforms now much needed in the business of the sale of fruits is to dispense with the hurtful services of the middleman, who, at the expense of the producer as well as the consumer, reaps such immense and unproportioned profits in this great and important trade. It would appear that it is very probable that those Grangers who are especially interested in fruit-growing will, by next season at least, mature a plan by which the existent evils of this middle traffic will be remedied, and greater fairness be extended to the two parties chiefly interested, and who in this matter should not be so grossly imposed upon. To quote the language of a writer in one of our city papers:

"A large amount of fruit is annually wasted from the lack of knowledge of an economical method of preserving it. Between the profits paid to middlemen and the actual destruction of fruit, there is little profit to the producer. For instance, a Grape-grower in Sonoma sells his fruit in this city for fifty or sixty cents per box, but his profit on this sale is very small, as will be seen when the expenses are deducted. Picking and packing costs ten cents per box, the boxes themselves cost ten cents each, the freight another ten cents, wharfage and drayage one or two cents, and eight per cent. commission on the sales, making in all some forty cents per box, which the producer pays out of his own pocket. He makes from twenty-five to fifty per cent., while the retail dealer makes from two hundred to three hundred per cent. profit. The fruit-growers affirm that if suitable arrangements could be made in the city they could enable the consumer to obtain fruit at greatly reduced rates, and at the same time obtain a much larger profit on their sales than they do now."

Now this certainly must appear fair and reasonable for the interests of the large majority of the people, who should be regarded in this important particular, and who, next to the price of the "staff of life"—wheat—are concerned in that of fruit. As the old saying is, "Fair play is a jewel," and no one should complain when that "golden rule" is carried out. Two years ago the writer saw this crying shame in this affair between the persons who worked to raise the fruit and those—many of them poor persons—who had to provide it as a helpful and healthful diet for their households, and he spoke of it in his articles on the fruit and vegetable markets, in order to lead the parties whose concern it was, to apply the proper remedies where the injustice existed. Many of the cultivators of fruit are Grangers, and from their increase of numbers, power, and united efforts, they will soon be able to make arrangements to have their own depots in the cities under suitable agents for the sale of their productions.

About the 21st of last month (August) fruit was very plentiful, especially Peaches, and the supply of Grapes was increasing. Flaming Tokay was added to the list then in season, and was quoted at 6c. to 10c. per lb.; Black Hamburg and Rose of Peru retailed at the

same price, while the poorer descriptions of Muscat of Alexandria commanded a couple of cents more, the range being from 8c. to 10c. Sweetwater were in little demand, superior varieties increasing in supply; retailed at 4c. to 6c. per lb. There was an abundance of ripe Figs, and a corresponding reduction in price was the result. Pears were improving; fine ripe Bartletts were coming in in large quantities, but there was no change in price compared with last week. The Bellflower variety was conspicuous among the exhibit of Apples, and retails freely at 6c. per lb. Raspberries found few purchasers at 10c. to 15c., and Apricots were pretty much neglected at 5c. to 8c. Plums were the rage, and commanded, as a rule, good prices. Egg Plums were quoted at 8c.; Cherry do., 6c. to 8c.; Peach do., 8c.; Green Gages, 3c. to 5c.; German Prunes—the favorites—8c. to 10c.; Damsons, 5c. to 6c. Clingstone Peaches were in season, and offered at 5c. to 8c. Immense quantities of the early freestone varieties were begging on the market. From 3c. to 10c. per lb. will cover the range. Crab Apples were quoted at 5c. to 6c. per lb.

Sweet Potatoes increased in supply and improved in quality, while there was a steady decline occurring in prices, which ranged at 4c. to 6c. Okra is to-day retailing at 15c. per lb.; Chile Peppers, 15c. to 25c.; Egg Plant, 5c. to 6c.; Marrowfat Squash, 2c. to 3c.; Summer do., 5c. to 6c.; Artichokes, 25c. per doz.; Kale, 50c. per dozen bunches; Green Corn, 10c. to 25c. per doz.; Cantaloupes and Watermelons, 10c. to 25c. each; Nutmeg Melons, 8c. to 10c.; Asparagus, 10c. to 12½c. per lb.; Butter Beans, 4c. to 5c.; Lima do., 4c. to 6c.; Garlic, 15c.

The only addition to the list of seasonable fruits during the latter part of August was the Quince, two varieties of which could be had at 6c. to 8c. per lb. Seckel Pears were more plentiful and cheaper. There were few Peaches in market except Clings, some of which were very fine. Grapes were very plentiful and the varieties numerous. Prices of some of them were as follows: Sweetwater, Chasselas, and Mission were plentiful at 4c. to 5c.; Rose of Peru and Black Hamburg, 5c. to 8c.; Muscat of Alexandria, 8c. to 10c; Flame Tokay, 8c. per lb.

Plums and Blackberries were very plentiful and cheap, especially when purchased by the box. Raspberries were getting scarce. Apples, by the box, retailed at 75c. to 1 75; Peaches, by the basket, $1 to $1 75, delivered.

About the 12th of this month (Sept.) the market was abundantly supplied with Tomatoes from across the Bay. Artichokes were a shade cheaper, and with this exception vegetables were unchanged. Spinach was quotable at 8c.; Lettuce, 20c. to 25c. per doz.; Salsify, 8c. to 10c. per bunch; Potatoes, by the sack, delivered, $1 25 to $1 50 per cental.

Bartlett Pears were very scarce, and brought fancy prices; Seckels were in better demand in consequence. Blackberries will be out of market before the end of another week, and although very scarce show no advance. A few Currants were still coming forward, but there was little inquiry, and prices continued low. Mountain Peaches were in fair supply, and brought high prices. Grapes were plentiful and cheap. We quote some of the varieties as follows: Mission, Sweetwater, and Chasselas, 5c.; Rose of Peru, Black Hamburg, and Catawba, 6c.; Isabella, 8c.; Muscat of Alexandria, 6c. to 8c.; Flame Tokay, 8c. to 10c. A cargo of Tahiti Oranges is just at hand, and the

market is still plentifully supplied with the Australian variety. Sailing vessels have brought consignments of Bananas from Honolulu during the week, and the Panama steamer Pineapples and Limes from Mexico. Apples, by the box, retail at 75c. to $1 50; Pears, 75c. to $2 25; Peaches, by the basket, $1 to $1 75, delivered.

Following were the retail prices of Grapes: Isabella, 8c. per lb.; Tokay, 6c. to 8c.; Catawba, Black Hamburg, Muscat, and Rose of Peru, 6c.; Sweetwater and Mission, 5c. Plums were as follows: Egg, 6c. to 8c. per lb.; Peach, 5c. to 6c.; Damsons, 5c. to 6c.; Green Gages, 5c. to 6c. Prunes are represented to be worth from 6c. to 12c. per lb.; Hungarians retail at 8c. to 10c.; Germans, 6c. to 8c.; Italians, 8c. to 12½c. Several lots of Prunes have been received by recent steamer from Oregon, but they are no better than those grown in this State, notwithstanding they command higher prices. We quote Quinces at 5c. to 6c. per lb.; Blackberries at 10c. to 12½c.; Clingstone Peaches, 5c. to 12½c.; other kinds, 5c. to 8c. Pears—Bartletts, 6c. to 8c.; Flemish Beauties, 4c. to 5c.; Seckel and Sugar, 6c.; Winter Nelis, 6c. to 8c. Pomegranates, 10c. each. Nectarines, 8c. to 10c. per lb. Apricots and Raspberries are no longer in season.

SACRAMENTO WINE IN GERMANY.

On the 10th of March last, Jacob Knauth, of this city, shipped a barrel of wine to some friends in Eltville, Germany, for the purpose of getting an opinion on it from the wine experts of that country. The wine was made from Grapes from the vineyard of the O. H. V. A., at Cache Creek, Yolo County. It was in a pure state, with no addition of spirits, and was sent by steamer by way of Panama. When shipped the wine contained 13 2-10 per cent. of alcohol and .005 part tartaric acid. The climatic temperature of Germany was 90½ degrees Fahrenheit when it arrived there, yet it had lost nothing of its fineness, and the experts pronounced it excellent. It was expected that the wine would arrive in Germany in April, but it did not reach there until June. On opening the barrel it was found that some one had taken a great deal out—the space of "eight thumbs" was gone. They suspected that the wine was spoiled—it was "bath warm"—but it was found in good condition. A general invitation was extended to the neighboring wine-men to test the wine. It was kept for three weeks before the test, and it was desired to keep it longer, but the wine-men became impatient, and it was decided to try it. As the men placed the glasses under their noses and to their lips, they uttered exclamations of surprise—that wine so excellent should come from a State so young. They discussed as to which of their own wines it came nearest, and concluded that it was something like the Hungarian wine, but finer and more delicate, and that it was just as good as any Rhine wine. They expressed great respect for the wine, and were surprised that it had lost nothing in quality on its voyage and after being opened. After the barrel had been emptied it was discovered that it had been tapped in seven places, by removing the hoop and boring through the staves. They recommended that whenever wine is shipped in barrels hereafter, that an outer barrel be put on the wine-barrel proper, with several inches of room between the two, which is to be filled with straw, to prevent this boring nuisance.—*Sacramento Union.*

Editorial Gleanings.

Green Gage Plum—Origin of Name.—The origin of this name is said by *Notes and Queries* to be as follows: The Plum was brought into England in the middle of the last century, by Rev. John Gage, a Roman Catholic priest, connected with a monastery near Fontainebleau, France. The laws at that time against Roman Catholic priests were so severe, that Mr. Gage lived abroad, but frequently visited his brother, Sir Thomas Gage, of Hengrave Hall, near Coldham, in the county of Suffolk, fifth baronet. In one of these visits he brought over from the garden of the monastery grafts of the fruit, which were cultivated in the garden at Hengrave Hall, and soon were spread throughout England. This story is vouched for to absolute accuracy.—*Horticulturist.*

How to Dry Figs.—The Florida *Agriculturist* gives the annexed as the best method of drying Figs:

"The fruit should be picked before it is over-ripe, placed in a coarse sieve, and dipped in boiling lye to remove the furze; let them drain a few minutes and place them in a kettle of hot syrup, to bring them to a boil; afterward remove carefully and place in glass jars, covering with hot syrup, seal tightly, and set away in a cool, dark room. They may be flavored with lemon, ginger, or anything to please the taste. All fruit preserved in syrup can be easily converted into crystallized fruit by simply draining off the syrup, covering the fruit with powdered sugar, and gradually drying in an oven, turning them frequently, sifting fresh sugar over them every time. They must be kept in a very dry place. They make a handsome and delicious dessert dish.

"To dry Figs in the sun or in kilns, dip the fruit in boiling lye, made from wood-ashes, strong enough to bear an egg. They should be placed in shallow trays or pans and put in the sun, covering carefully at night. If a kiln is used, care must be taken to maintain a steady gentle heat. When dried they may be packed carefully in boxes with a layer of powdered sugar between.

"Figs may be preserved by dipping them in boiling lye, placing them in cans or jars, and covering them with boiling syrup, filling them full, and sealing while hot. Care must be taken to prepare the glass jars before pouring in the hot syrup, by heating them gradually in an oven or boiling them; for excluding the air, common sealing-wax answers the purpose admirably."

Buckthorn, not Wild Coffee.—For several weeks a discussion has been going on in various parts of the State relative to a tree growing wild in many counties, the leaves and berries of which bear a striking resemblance to the Coffee-tree of commerce. A rancher of Tuolumne, if we mistake not, first raised the question whether this tree was not allied to the Coffee of commerce, and people in all sections of the State began to inquire whether we had not for years overlooked a valuable product. Citizens of many other counties—Napa, Placer, Lake, El Dorado, etc.—came forward, stating that they, too, had noticed this tree growing in their localities. All had observed certain peculiarities about the berry, but the general impression was that it was poisonous. The *Bulletin*, in order to elucidate the matter, asked that specimens might be sent to this office for examination by experts. Our request has been complied with in so far that samples have reached us from Alameda, El Dorado,

and elsewhere. Doctor Gibbons, of Alameda, who has paid some attention to the science of Botany, has examined one of the samples, and he makes a statement concerning the tree and its berries which is substantially as follows: The name of the tree is the "Wild Buckthorn." It is found in all parts of the State, and grows to the height of from four to twelve feet. It somewhat resembles the Coffee-tree, but the leaves appear alternately on different sides of the stem, whereas in the true Coffee-tree the leaves grow in the same place and directly opposite each other. The berries of the Buckthorn are not poisonous, as has been supposed, but they are strongly cathartic, which any person who requires a purgative can test by personal experience. They have been in use for medical purposes for hundreds of years.

We may here state that at present Coffee has only been discovered in a wild state in Ethiopia, Abyssinia, and Liberia, all in Africa. The Dutch appear to have been the people who introduced it into general use among Europeans, after they had planted it in their colonial possessions in the East Indies and Java. It was first brought to America by the Dutch in 1715, and it was planted almost simultaneously in the West Indies and at Surinam, in South America.—*Bulletin.*

The value of the fruit crop of California last year may be estimated in round numbers at two millions of dollars. From the tenor of the reports from all portions of the State, the fruit crop of 1874 will exceed that of last year by about fifty per cent., and as the largely increased demand for packing will keep up the price, its value may be estimated fairly at three million dollars.

The *News*, of Denver City, says no grander object is met in the mountains about that place than the Snow-plant. It is an inhabitant only of the higher Rockies, being rarely found below an altitude of 4,000 feet, and its glorious crimson spike of flowers may be seen, early in May, forcing itself through the snows which at that period cling about the sides of our Pine forests. The portion of the plant which is visible above the soil is a bright, rosy crimson in color, and presents the very strongest contrast to the dark green of the Pines, and the "shimmer of the snow." Its root is succulent, thick, and abundantly free from moisture, attaching itself to the roots of other plants, principally to the species of the Pine family. Hence, it is among those curious members of the vegetable world which are known to botanists as parasites, and is consequently entirely incapable of cultivation.

Tea Culture.—We have been talking of Coffee, wild Coffee, and Coffee culture of late, and we have pretty nearly established the fact that we have an indigenous Coffee or something very closely resembling genuine Coffee, in general appearance of the bush on which it grows, the form of the berry, its color, taste, and smell; and numbers of persons will experiment with the product, whatever it may be, the present season.

Now we want to revive no undue excitement, but a moderate interest on the subject of Tea culture—the genuine Tea of China or Japan; for though past attempts have been anything but satisfactory, in fact have been failures as regards its culture in California, yet the project should not be abandoned, for we are perfectly confident that it can be successfully grown here if we give it

the proper climate, altitude, exposure, soil, and cultivation.

We have been studying these points carefully, and we have arrived at the following conclusions: That it is time lost to attempt its growth in any of the interior, intensely heated valleys. It is a mistake to attempt its culture among the foot-hills of the Sierras, wherever the air is excessively dry in summer, though the frosts of winter would be in no wise detrimental. Tea should have a thick, meaty, pulpy leaf, to enable it to carry the requisite amount of theine and tannin which all Tea leaves must contain to render them of the least commercial value.

Grown in a hot and dry atmosphere, the leaf is so thin as to be nearly valueless, and the same to a great extent affects the leaf of the Mulberry, injuring it for silk-worm feeding. We have been seeking for a climate in California, not too humid, and yet sufficiently so to grow Tea, and we believe we have found it in the most of the middle and western portions of Santa Cruz County, not too nearly adjacent to the sea. Take the highlands of that county, the Redwood section, receiving the cool ocean air, laden with moisture so that nightly dews are the rule and not the exception, and if there is any place in California where Tea can be grown with success it is there, and we hope renewed attempts will be made by some enterprising horticulturist of that district to establish our position, and add to the agricultural wealth of the State by the introduction of a new and important product.

Destroy all Insects and Bugs. — To protect Roses and Currant-bushes from slugs and insects, dust the bushes with powdered white hellebore; best apply it while the dew is on the bushes.

Manure for Orchards. — An essay read by Washington Gilbert, of Bath, Me., before the State Pomological Society, is now printed in pamphlet. It is a matter of history that Maine was once successful with what our author calls the "hardy, fragrant, and salubrious Apple;" success is still sure on new soils, and he maintains that want of culture is the cause of the general "decrepitude and decay." This condition is characterized as disgraceful as it is deplorable, since it can be remedied by means within easy reach. The trees are simply starved. Interesting instances of the effect of good cultivation are cited; farmers are advised to buy Western Corn and feed it during winter to fattening steers; to grow Mangel Wurzels among the young trees, and thus secure another supply of material which may be advantageously transmuted into manure. Again, sheep, swine and poultry may become worthy occupants of the orchard. In conclusion, the profits of Apple-trees under high cultivation are declared to be so great as to repay for all the intelligent care and labor which may be bestowed upon them. "If any farmer is ambitious to bequeath an estate of $100,000, he has only to leave his heirs well-planted and well-kept Apple orchards of 100 acres. If he is less ambitious, let him plant and sustain fifty acres, or twenty, or ten, or five, or at least one acre, if that is the measure of his capacity. If he can do no more, let him not fail to plant one tree and nourish and protect it. The petted tree will learn to lean on him as the child looks to the parent for protection and sympathy; and it will return to him a grateful and exceeding great reward. His children shall disport themselves in the shadow of its branches, and find health and solace in its fruit, and his children's children to

the fourth generation, when perchance, no other monument remains to declare the story of his life."

Use of Sulphur in the Vineyard.—M. B. Bateham, in the *Horticulturist*, says of the reports made of recent experiments in the use of sulphur on Catawba vines on the Islands: "It was stated by one of the Grape-growers from there, that sulphuring the vines had been practiced to some extent for several years past, and that when judiciously done, it was found a certain preventive of mildew and rotting of the fruit, and also of the blighting of the foliage; and where this was practiced in 1872, the vines ripened their wood so well as to suffer but little damage from the winter, and thus produced a half crop, while vineyards not sulphured bore no fruit at all." These facts will cause a very general use of sulphur hereafter, and much improvement is expected therefrom. The practice is to mix the sulphur with an equal quantity of fine, air-slaked lime, and apply the powder with a bellows, of which they manufacture a very cheap style for the purpose. The first application is made as soon as the blossoms are off in June, and repeat once a month or so during the summer. The labor and expense are quite small compared with the benefits; and the practice is recommended to Grape-growers generally, especially for varieties that are subject to mildew or blighting of the foliage. Let us all give the experiment a trial, and report the results next year.

Fruit Driers.—Mr. A. F. Knorp, formerly of Suisun, is now engaged as foreman in the manufacture of Ryder's American Fruit Drier in San Francisco. He writes to this paper as follows: "Taking an interest in everything that concerns the people of Solano County, among whom I have lived so many years; and knowing that large quantities of fruit are wasted every year from the want of proper drying facilities, I desire through the columns of your paper, which I know to circulate very largely among the people of Suisun, Vaca, and Pleasant valleys, to call the attention of those interested to our fruit drier. Being constructed of wood and iron, it is portable, and not very expensive; the largest, of sixty bushels capacity daily, costing only $335; thus enabling even the poorest to have his own fruit drier. There are three sizes, of twenty, thirty-five, and sixty bushels daily capacity respectively, and as I have seen samples of dried fruit, consisting of Cherries, Apricots, and Peaches, I am satisfied that it is just what is wanted."—*Ex.*

Plant Olive-trees.—There is no experimental risk in planting Olive-trees in southern California. They have grown luxuriantly and borne fruit copiously in every southern county for nearly a hundred years. The fine Olives of the church gardens in San Luis Obispo have yielded fruit since 1782. The Olive orchards of Santa Barbara and those of San Buenaventura, San Fernando, and San Diego have all flourished and yielded their exquisite berries for nearly a century. Our readers will therefore see that there is no experimental risk in planting Olive-trees anywhere in southern California. The Olive is one of those trees which can be easily raised in our climate. It requires but little irrigation, and once it has taken root will grow with about as little care as any of the class of ornamental trees our people are now so profusely planting. And there is certainly no tree more beautiful to the eye than the Olive. Its oblong,

lance-shaped leaves, with their deep-green shade on top, and light feathery color underneath, when disturbed by the breeze, produce a peculiar and pleasing effect. The tree grows to a height of thirty or forty feet, and its branches spread laterally in every direction, making a most desirable shade-tree for roads and for the entourage of houses. But its most inviting advantage is in the fact that the fruit will pay for the cultivation of the tree.—*Los Angeles Express.*

Cotton in Fresno County.—J. P. Yeargin informs us that Messrs. A. T. Yeargin & Co. have a forty-acre field of Cotton on Upper King's River, about three miles below Centreville, which is said to be the finest in the county. It stands about three feet and a half high, and is literally covered with bolls in the various stages of growth and ripening. As high as 170-odd bolls of various sizes have been counted on a single stalk. From present appearances it is estimated that the yield will be at least one bale, or 500 pounds, per acre. Our informant, who has himself engaged in the culture of Cotton in the Southern States, says this crop is not surpassed by any that he ever saw growing in his native State, Alabama. He claims an advantage for this section over the old Cotton-growing regions in the fact that the seasons here are at least six weeks longer. If the yield is anywhere near as good as is now anticipated, it will be a remunerative crop.—*Fresno Expositor.*

The Grape Worm.—Chas. Otis, writing from Rio Vista, under date of June 18th, says: "Since writing my hurried communication of the 4th, concerning the ravages of worms in the vineyards near Vacaville, I have been informed that the green worms are the "Tobacco Worm," and those which are dark on the back, with yellow lines, are the "Columbia Worm;" each having a horn about one-fourth or one-half an inch long on the posterior part of the back. In tobacco plantations they were destroyed by taking them by the horn and dashing them on the ground, their size making it easy to find every one. Their eggs are laid on the under side of the leaf. As to the origin of those now at work no one knows, only that they have traveled from one vineyard to another; the road at the time was covered for hours as they crossed in their journey. I am not an expert in Grape culture, or the pests that infest vines; but this evil, from all I can learn, is something new, and those interested should be on the alert to give information that will throw light on the subject, that means may be taken to prevent further spread of the pests. In this spirit I have written what little I could learn concerning the subject."

METEOROLOGICAL RECORD,

For the Month ending August 31st, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.08 in.
do 12 M.	30.07
do 3 P. M.	30.07
do 6 P. M.	30.06
Highest point on the 5th, at 12 M.	30.20
Lowest point on the 25th, at 6 P. M.	29.89

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	62°
do 12 M.	66°
do 3 P. M.	66°
do 6 P. M.	60°
Highest point on the 7th and 12th, at 3 P. M.	71°
Lowest point on the 10th, 19th, and 29th, at 6 P. M.	56°

SELF-REGISTERING THERMOMETER.

Mean height during the night	53°
Highest point at sunrise on the 15th and 26th	59°
Lowest point at sunrise on the 2d, 8th, and 10th	47°

WINDS.

East and north-east on 4 days; west on 27 days.

WEATHER.

Clear on 12 days; cloudy on 4 days; variable on 15 days.

DOUBLE WHITE GERANIUM.

(Aline Sisley.)

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. IV. NOVEMBER, 1874. No. 11.

HIBISCUS.

BY F. A. MILLER.

The Hibiscus (natural order, *Malvaceæ*) comprise a number of flowering shrubs which deserve our attention much more than we are accustomed to bestow upon them. All the varieties produce flowers freely, and while some of them are well adapted for the greenhouse and conservatory, we find others to be perfectly hardy in the open air.

Hibiscus rosa sinensis, native of Asia, is frequently met with in our conservatories, and some of its varieties are undoubtedly hardy here, and could be cultivated in the open air, if a fair trial was given. In their native country they grow to the height of twenty-five feet, and form objects of great beauty. A very pleasing habit of these shrubs is, that they bloom when very young. Plants raised from cuttings flower during the first year. As for the varieties of the *Hibiscus rosa sinensis*, we find them with double as well as single flowers, white, red, purple, yellow, and variegated. The flowers themselves are most elegant in form and in color, measuring fully two inches in diameter. Every one of the varieties is worth cultivating, and succeeds well under ordinary treatment.

A most elegant variety is *Hibiscus Cooperii*, with extremely handsome variegated foliage, producing a most brilliant flower of a rich, dark purple. This is one of the prettiest plants for the conservatory, being effective in all its stages. Although it has been cultivated for a number of years, it is yet rarely met with on this coast.

Hibiscus alba variegata is of late origin. As a variegated foliage plant it is also very remarkable and pretty. I do not know what the color of its flowers is. The plant we imported from England last summer I believe is the only one on this coast.

Hibiscus Syriacus (commonly known as Althæa) is a hardy shrub, and while many varieties have been cultivated in the gardens of the Eastern United States for a number of years, I have met with but very few plants on this coast. It is certainly well adapted to our climate, and being a late bloomer, is much more valuable for California, inasmuch as during the autumn months but few shrubs grace our gardens with their flowers. The flowers of this Hibiscus are large and very showy,

and are produced in great abundance. Like the *H. rosa sinensis*, it comprises a number of varieties, with white, red, and blue flowers of various shades, both double and single. These shrubs are certain to become popular with us as soon as they can be readily obtained in our nurseries. They will form a fine contrast with our Australian shrubs and trees, which we find almost exclusively in our gardens.

All varieties of the Hibiscus are easily propagated from cuttings, and make in one season plants strong enough to flower well.

I must not forget, before closing this communication, to state that a very handsome variety of this hardy Hibiscus has been introduced of late, having variegated foliage, which in itself is a very striking ornament to the garden.

Although the varieties of the *Hibiscus Syriacus* are deciduous shrubs, they retain their foliage much longer with us here than they do in the East, and in some cases I have noticed the foliage to be persistent during the entire winter season.

Origin of the Forget-me-not.—This popular tradition, which tells how the name came to be applied to the plant which now bears it throughout Europe, is not generally known. It is said that a knight and a lady were walking by the side of the Danube, interchanging vows of devotion and affection, when the latter saw on the other side of the stream the bright blue flowers of the Myosotis, and expressed a desire for them. The knight, eager to gratify her, plunged into the river, and, reaching the opposite bank, gathered a bunch of flowers. On his return, however, the current proved too strong for him, and, after many efforts to reach the land, he was borne away. With a last effort he flung the fatal blossoms upon the bank, exclaiming as he did so, "Forget me not!"

THE EUCALYPTUS.

The growth of the Eucalyptus is declared to be almost fabulously rapid; but even this term fails to convey an adequate idea of the rate at which the interest in this tree has grown in the public mind. And as popular manias are represented at Washington—with some other failings of the American people—we find that the Eucalyptus-tree has taken root there. A firm in San Francisco recently received an order from Government for a large quantity of the seed of this tree. A portion of the order has already been filled, from an invoice received a few days since per ship "Tartar." For the balance Uncle Sam will be compelled to wait awhile; until San Francisco can catch another "Tartar," or some other ship from Australia.

The avowed object of Government in ordering this seed, is to plant the Eucalyptus in places where miasma prevails to an extent that almost unfits them for dwelling-places for man, but where it is necessary that we should maintain military posts. In this far-sighted provision for the health of our soldiers, Government has acted considerately and we think wisely; for although the prevailing estimate of the power of the Eucalyptus in dispelling fever has itself become almost a fever, its claims in this respect are admitted by those whose heads are not turned by anything sensational. Whatever may be the effect of the Eucalyptus-trees on the health of the posts where Government plants them, the country will receive a large return in valuable timber; the value in-

creasing as the time of the return is deferred.

We would take this occasion to put the public on their guard against planting seed from the Eucalyptus grown in California. They will not germinate. The tree produces seed in abundance here. We have at the present time some of them in the office of the *Press*. They are all right as far as appearance goes; but those who are well posted in the matter, and could make money from the sale of them were they so disposed, declare they are valueless. Use none but imported seed.

We give below a portion of an article from the *Evening Post* on the value of the wood of the Eucalyptus-tree. The article was contributed to the *Post* by Charles J. Fox, of San Francisco, and contains much valuable and interesting information. There are worthless species of the Gum-tree and there are valuable ones. There are some (the South Australian Stringy Bark, for instance), which rot under ground as easily as our Redwood, and there are others which will stand intact for a quarter of a century; and while farmers and others in California are planting Gum-trees, it behooves them to make a proper selection.

The Jarrah, or Mahogany, of West Australia (a species of Eucalyptus), has a world-wide reputation for durability, and very justly so, for I have seen a Jarrah bridge-pile, after twenty-five years, taken up as sound as the day it was driven. The surface of the same pile was planed and polished and exhibited at the last World's Fair in London.

I have noticed that the museums of the other Australian colonies make a point of placing specimens of the Jarrah in a prominent position, with incontestable proof that it resists the ravages of the teredo, is impervious to the white ant, and possesses death-dealing properties to all insects that infest and destroy timber.

Jarrah is one of West Australia's chief items of export. The other colonies have discovered and appreciate its value for wharf and ship-building purposes; and India rejoices in the fact that whereas heretofore all its railway sleepers have succumbed to insects, the insects now succumb to Jarrah sleepers.

This Jarrah is a dark-colored wood, somewhat resembling Rosewood, and is hard, heavy and close-grained. It is adapted to all purposes, and is never complained of in any way except by carpenters, who say that the wood is so hard as to induce the belief that it was never intended to be worked up.

Well, what I started in to say is, that while our people in California are setting out Gum-trees in such large quantities, they should plant none but the best species. By and by there will be a demand in this State for durable timber for fencing and other purposes, and many who are now planting Australian Gum-trees will then be astonished to find that their timber is of no use for durability, and will make but very indifferent fire-wood.

I am inclined to believe that all the species of Eucalyptus which are now in this State came from the colonies of Victoria and New South Wales, which colonies acknowledge the superiority of the West Australian mahogany to any of their native timbers by importing it from West Australia.

The Jarrah, I have not the slightest doubt, will flourish as luxuriantly here af any other species, and the seed can be obtained as cheaply and in as great a quantity as that of any other variety; but I suppose it will be found necessary to import it from West Australia.

I have no axe to grind in this matter,

and am actuated only by a desire to give a little information upon a subject that may possibly prove of more importance in this State than is now supposed.—*Rural Press.*

NATIVE GRASSES OF CALIFORNIA.

BY DR. HENRY DEGROOT.

As the season has arrived for the native grasses of California to renew themselves, some remarks upon the several kinds indigenous to this State would be timely. The varieties of our natural grasses are quite numerous and many of them wide spread and highly nutritious. The most abundant, if we include its different varieties, is the Bunch-grass (*Festuca scabrella*) found growing in all parts of the State—and, indeed, nearly everywhere west of the Rocky Mountains. Instead of being scattered or springing up in small stools closely set together, like Rye, Timothy, and many other grasses, the blades of this grass grow up in widely separated tufts or bunches; hence the name. Of one variety the bunches are large, from six inches to a foot or more in diameter, the blades reaching in height from fifteen to thirty inches. A species of this kind, called Grama-grass, is very abundant in south-eastern California and Arizona. The clumps are large and stand comparatively close together, affording an immense amount of feed. Aided by a strong root and the occasional showers that occur in that region, it remains green and succulent during the greater part of the year; cattle feeding upon it at all times with avidity. A variety something like this, though not so large or nutritious, abounds throughout all parts of our Pacific States and Territories; there being in Central Nevada tracts covering many thousand acres, where this grass grows with wonderful rankness.

Another kind of Bunch-grass grows in small scattered stools, the leaf being very delicate. This kind never reaches above ten or twelve inches in height. It is extremely sweet and tender, and bears on its top a cluster of small black seeds strongly resembling when ripe those of the Onion. These, which taste not unlike parched Wheat, are gathered by the Indians, who esteem them a great luxury, while horses and stock prefer them to any kind of grain.

Animals love the grass also, while green, more than any other kind. This species of Bunch-grass grows only in the most arid and barren places. It is not often met with in California, its habitat being in the desert region farther east. There is a variety very like it produced in this State, save that it lacks the peculiar seed. It consists of the little velvety tufts that spring up with the first rains on the hills about San Francisco and almost everywhere else in California.

There is also a small species called Sheep's-grass—by the botanists *Festuca ovina*—found growing sparsely on the hills. Though scanty, the cattle, especially the sheep, are fond of it.

In its habits the Bunch-grass is singular and not very well understood. Sometimes it will grow with great rankness in rich moist soils, and again equally so on the sandy and arid deserts. The choicest variety, that which bears the comestible seed, grows only on the most barren plains, while the more common kind seems to have no preference as to soil and locality, thriving as well seemingly in one place as another. This grass propagates itself from the root which is perennial, and to some extent also, no doubt, from the seed.

If we consider the Wild Oat (*Avena*

fatua), one of our indigenous grasses—and practically it is such—this will be found to be one of the most extensively disseminated of the California family, being met with on the plains and the hills from one end of the State to the other. The only place where we miss the Oat growing wild is on the more extended deserts and the higher mountains. The Oat, however, is not native to this coast. It was brought here by the Spaniards over a hundred years ago, and from their plantings, made first in the extreme southern end of the State, spread afterward in every direction. Forty years ago it had not made its appearance north of the Bay of San Francisco, there having up to that date been but few settlements made on that side of the bay.

Like other grains this is grown only from the seed, the roots being annuals. The berry through lack of cultivation has so degenerated that the straw is never thrashed; yet the kernel possesses sufficient vitality to reproduce itself. To enable it to accomplish the act of self-sowing, nature has provided the capsule of this grain with a long jointed beard similar to the leg of the grasshopper. After ripening this capsule falls to the ground, still retaining the berry in it. With the swelling and shrinking caused by the alternations of moist and dry weather, so much motion is communicated to this beard-like projection as to cause it to advance several feet, carrying the grain with it and scattering it in every direction. So sudden and considerable are these movements sometimes, as to have led to the belief with many that these jointed beards are instinct with a sort of animal life. The wind, blowing these feathery capsules about, further helps to distribute the seed.

Until within the past ten or fifteen years, most of the hay used in California was made from the Wild Oats, this also formerly constituting the bulk of the earlier pasturage. With the plowing up of much of the oat-bearing ground and the constant cropping of the stalk by cattle before the seed has reached maturity, it is fast dying out, and in a few years this grain will have entirely disappeared in all the agricultural and more densely stocked sections of the State.

Where the Wild Oats have been extirpated by over-close feeding, there springs up often what is called the Squirrel-grass (*Atrophies Californica*). This herbage is perennial, but of no value either for hay-making or pasturage.

Among our aboriginal grasses none possesses greater value to cattle raisers than the Alfilerilla (*Erodium cicutarium*), popularly called Pin-grass, from the long slender spikes it bears. From its resemblance to the Geranium it is also sometimes called the "Wild Geranium." Its powerful root and great mass of stalk and leaves hugging the ground enables it to resist the drouth, while it affords to stock a large amount of nutritious and palatable food. It grows on the hills and in the valleys, prefering the coastwise climate.

California produces several kinds of native Clover, the principal consisting of the Red, the White, and the Bur. In moist localities or with irrigation the White Clover, bearing a yellowish-white blossom, grows to a height of two feet or more, while in a poor or dry soil it reaches scarcely more than three or four inches in height. Green or cured, there is no more acceptable food for animals than this, and the California Indians were accustomed formerly to feed extensively upon it while green, eating it both raw and boiled. The Bur Clover has a wide distribution in

this State, and as a food for cattle late in the season is of much value.

The stalk bears a cluster of small round burs, the seed of which abounds with a rich sweet oil. Stock do not care much for the plant while green; but late in the summer, when the stalk itself is dead, these berries fall upon the ground, and are licked up by the sheep and cattle and eagerly devoured.

Among our native grasses of less importance in a practical point of view, may be enumerated the following: The Bearded Darnel (*Lolium tremulentum*) common in grain-fields, and poisonous to both men and animals, though said to fatten chickens and hogs; Wild Barley (*Hoodeum Pratense*,) occasionally constituting the greater bulk of the grass found in meadows; Wall Barley (*Hoodeum murinum*). If suffered to get into the meadows, it deteriorates the value of the hay, its coarse beards injuring the mouths of the horses. Late in the summer a species of grass covers the hills in many parts of the State, called the *Milium lendigerum*, and according to Cooper, a standard authority in all that relates to the botany of this coast, is to be classed as an indigenous plant. Its value as a grass has not yet been determined. The *Aira danthonioides* forms a large proportion of the grass in some meadows, while again in many others it is entirely absent. It is an annual, and affords but little hay. On the downs about San Francisco, and generally on the sandy knolls bordering on the sea, is a sort of coarse, heavily jointed running-grass, called in botany *Brizopyrum Douglasii*. It runs along the ground like a vine, and spreads rapidily, every joint sending down a root. Only the goat feeds upon it. Another species of this grass, called Spike Grass, grows in soils impregnated with salt. It is also useless for fodder. The *Lophochlœna Californica* grows in damp soils all over the State. It has a delicate tapering culm, with slender branches and leaves. So fragile is the stem that when ripe, unless protected by other herbage, a moderate breeze is sufficient to break it off; after which the feathery mass being rolled about is gathered into long and tiny windrows. Animals are fond of this grass.

Besides the foregoing there is a variety of native grasses found growing on the salt marshes and tule lands in different parts of the State. But few of them, however, are of much value for either hay-making or pasturage.

Of the cultivated grasses almost every variety is now being grown in California, very often merely in an experimental way. The great trouble with these exotics is, that unless irrigated, or planted on natural meadows where there is much moisture, they die out during our long dry summers; furnishing but a single crop unless resown. The Alfalfa, when once fairly rooted, becomes perennial, but the roots of the other cultivated grasses, unless they have moisture constantly supplied to them, are apt to lose their vitality in a single season.

THE BANANA.

The *Florida Agriculturist* contains the following upon the culture and treatment of this fruit and the characteristics of its varieties, which we are sure will interest the readers of the HORTICULTURIST. There are several varieties of this fruit cultivated in the Island of Jamaica. Of these the *Martinique*, as named there, but called here the *Jamaica*, is considered the best, as being hardier in growth, easier to cultivate,

not easily blown or broken down, and the nicest for eating. They bear in one year after planting. The bunches are very large. We have seen some that a man could not lift. The fruit is long, and is of a rich yellow color. They are often brought here from Nassau. Once planted they require no care, but will continue growing, suckering out, and bearing in the high woods. They will grow in any soil, but prefer gullies or damp places close to a river or spring. All other sorts of Bananas have been cast aside since these were introduced into the island.

Another long Banana called the *Tiger*, from the skin of the fruit being striped with black, is grown in some places, but the fruit is not considered so good.

The *Otaheite* is another of the same class of the long Bananas. The fruit must be very ripe before fit to eat. The flesh is of a rich strawberry color. They are seldom grown, as they root up very easily and can not bear the weight of the bunch. They are not a profitable kind to grow.

Of short Bananas, *first* is the dwarf or *Chinese*, not growing more than four or five feet high, with a strong, stout body. They bear large bunches of fruit hanging nearly to the ground, and stand firm, but the fruit is of no account, and is usually used as a vegetable, the same as a plantain.

Second. The *Redskin.*—This is a strong-growing plant, bearing large bunches of handsome-looking fruit, and is most salable in this country, but not considered equal to the Martinique in Jamaica.

Third. The *Apple.*—This is not a profitable Banana to grow. The bunches are medium size, and the fruit about the length of a person's finger and very delicious, but the stalks root up easily, and they require more cultivating.

Fourth. The triangular Banana, usually grown here, is the meanest of all the Bananas. The bunches are medium size, but the fruit is not a nice one, being too slimy. They should be baked before eating.

There are some other varieties grown, but those we have mentioned are the only kinds that are commonly met with in the West Indies.

Every negro hut has Bananas growing around it. They are manured with ashes from the kitchen. As the bunches are fit they are cut off and taken into the house to ripen, for Bananas that ripen on the stalks are not near so nice, as they contain a strong alkaline juice which exudes from the stalk when cut off. The fruit should be allowed to fill out and be fully grown; the bunch is then cut off and hung *upside down* to ripen in the house. The green fruit can be used as a vegetable by peeling off the skin, washed and boiled, and mashed up with butter and lard, and pepper sprinkled over it. A favorite way in the West Indies is to boil them with salt beef or pork, and mashed up with some of the fat skimmed off the water. When ripe the fruit can be made into pies, same as apple-pies, or a pudding, by peeling them; then place in a dish and pour butter and sugar that has been rubbed together over them, and bake. They are very delicious done in this manner. Many inquiries have been made to us about protecting the plants from frost. We do not think that any Bananas will stand the frost and cold; the leaves are so thin that they are susceptible to any extreme, but some of the species may do better than others here. In the West Indies, when the stalk comes up spindling and weak, it is cut off just be-

low the leaves; this does not kill it, but has a beneficial effect in making it thicken out and become stronger. We think that if this plan was adopted with those that had been affected by frost it might have the same tendency, but it should not be done until the cold weather has entirely passed away and the plants show an inclination to grow. As the bunches are cut, the stalk should be cut down to within a foot of the ground, cut into pieces and placed around the roots; the same with the leaves. This is returning to the land a part of what has been taken away. The juice of the stalk is good for clarifying sugar. The young leaves of the spire are used for dressing blisters; very cooling and soothing when placed on after the blister is clipped.

We would not advise flooding the roots in the winter, for the frost is seldom severe enough to injure them; it is the leaf that suffers. When plants with young fruit are caught by the frost before coming to perfection, we think it is the best plan to cut down the whole stalk at once and chop it up, covering the roots with it. This will enable the plants that are standing to receive the full nourishment on return of spring, instead of wasting its strength on a part that will never come to any good. In the West Indies, if the Banana-plant is highly manured, the stalk, or body as it is called there, will grow very large and succulent, but at the expense of the fruit, the bunches being small. Ashes have been found to be the best manure that can be given, with an occasional sprinkling of salt.

Lord Rodney took a French ship from the Isle of France to St. Domingo, with a large collection of oriental exotics, and a few plants of the real cinnamon, in 1782.

ABOUT GRASSHOPPERS.

BY DR. W. P. GIBBONS.

Our agricultural friends in Kansas and Colorado appear to be exceedingly exercised on the grasshopper question. They write in dismal eloquence on the ravages committed by this gregarious animal. The editor of the *Boulder News* recently borrowed an amiable jack and took an excursion round the country to get sight of a grasshopper. Though the animals flew so far away before his valorous charge, that he failed to realize his expectations, he saw where they had been, and stopped the mule near Dry Creek, his attenuated index was pointed to a Corn-field, and, with tears streaming down the gutters of his cheeks, he exclaims: "There the stalks stand leafless, trimmed like an Iowa Sorghum patch, stripped standing, ready for crushing." On arriving at Carnahan's his exhausted frame was well cared for, and after recuperating, he spread out his profound knowledge of natural history, by telling his readers that the "grasshopper is a filthy fowl, poisoning everything it touches."

A correspondent of the *Colorado Farmer*, who in the midst of sorrow is not disposed to "hang his harp on the willows," thus mournfully discourses:

"The melancholy days have come,
The saddest of the year;"
And festive hoppers dismal hum
Around the ranchman's ear.

The territorial air is full,
And terra-firma hops!
Ten hundred billion hoppers pull
And gormandize the crops.

On baking bread, and growing grain,
The coolest of the clan
Eat solemnly in grim disdain
And *grin* contempt of man!

The harvest-hopper "bill of fare"
Beats Paris-ites and Jews!
And nature pays a tribute rare,
To man is left "the blues!"

We have no authentic information as to the species of this grasshopper. That which has at times infested the Atlantic States is the *Acrydium* (*Catoptenus*) *femur-rubrum;* it is from three quarters of an inch to one inch and a quarter. The *Canada Farmer* has endeavored to elucidate the question; and it also enumerates the periodical visitations of the insect. Upon the authority of the Rev. Cyrus Thomas, it avers that the western grasshopper is a different species from the *femur-rubrum*. In its migrations it frequently alights amid the common Eastern species, but never mixes with them; and when the migratory species leave, they fly away in masses without taking the common species. It is possible that Mr. Thomas has overlooked the *Acrydium alutaccum*, which abounds in southern Pennsylvania, and which is reported as being on the increase. This species is two inches long, and is capable of doing greater mischief than the smaller one. As yet there has been no serious visitation of these insects in California; though there are several species which make an annual appearance in limited numbers. The Digger Indians formerly depended on the grasshopper crop as one of their staple articles of winter food. In October they may be seen forming large circles on meadow land, and with brush in hand driving the insects toward the centre. When fairly corralled, some of the number enter the area and bag the game, which they subsequently roast and dry. As an article of food the grasshopper is not peculiar to the Indians. It is eaten in warm parts of Africa, where they are deprived of their wings and preserved in lime, in which state they form an article of commerce. The *Acrydium migratores* is common in Poland. The south of Europe, Barbary, and Egypt are frequently devastated by a larger species, the *A. Egyptius*. According to Sarigny, the natives of Senegal dry another species, reduce it to powder and rise it as flour. Thus it may be seen, that though the grasshopper is an occasional scourge to the country, it is not without value among some of the half-civilized races of mankind.

HARDY BULBS AND THEIR CULTURE.

The cultivation of hardy bulbs is without doubt becoming more general from year to year, and very deservedly so, as they withstand and outlive our severest winters, showing themselves on the earliest approach of spring, making glad the eye after the long winter of loneliness. We are filled with delight at the early appearance of the pure, chaste Snowdrop, which is followed by the gay Crocus, the sweet Hyacinth, and farther on by the flaunting colors of the showy, welcome, and desirable Tulip. Later on in the season, at a time though when our gardens abound with their other summer flowers, the stately Lilies begin to put in an appearance. These, if but a few varieties are owned, will continue to make a lengthened display of their very showy and desirable fragrant flowers.

The treatment and culture of bulbs is so simple, and success is so certain to follow, they may be enjoyed by all having the smallest space to devote to their culture. All Bulbs succeed best in a light, rich soil. Those not favored with a good soil may add a quantity of sand, rotten manure, or decayed leaves. If this is all spaded up thoroughly together to a good depth, and provided no water lies on the surface (which is fatal to bulbs), the best success will follow. All hardy bulbs, to

give good results, should be planted in October or November, in a good, well-enriched soil. The drier the situation, the finer will be the blooms. After the beds and spots are planted, they will be greatly benefited if protected during winter with a good covering of coarse manure, rotten leaves, or any good mulching material. This should be carefully raked off in early spring before the plants have grown too much, or injury to the plants will follow from drying winds and the effects of the sun, etc. Bulbs may be planted in beds (which give the finest effect), masses, or in groups, or even as single plants. It is a general custom to plant Tulips, Hyacinths, etc., in beds, which, as the same get through flowering, are filled with such plants as Geraniums, Verbenas, Petunias, &c. When so planted, Crocus and Snowdrops should always be planted in bands thickly around the margin of the beds. It is a good practice to allow these to remain for a number of years before removal; by so doing, the few straggling plants that are first planted grow into large masses of roots, giving such a display as can be only produced by this course of treatment. Never plant the late or show Tulips in beds where it is desired to fill with plants as above, as they are so late coming into flower, half of the summer will be lost before other things can be planted to take their place. Late Tulips should be planted in beds by themselves, or still better in groups in the mixed bed or border.

All bulbs as they ripen can be taken up, dried and laid away in a cool, dry cellar, until they are again wanted to take their accustomed place. This does not apply to Lilies; these should never be taken up to be dried and kept in the house, as it would be a positive injury and sure death to them to do so.

PRESERVING FERNS.

A WRITER in the *English Mechanic* gives the following directions for this kind of botanical work:

"In the autumn, and before the spore-cases or seed-vessels have ripened, cut the frond off close to the root. Wash in clean cold water, by simply dipping and moving the frond in the water. Provide yourself with two planed boards, about half an inch thick, a foot and a half long, and a foot wide, one or two quires of ordinary white demy paper, and a couple of strong leather straps. Place the specimens between the sheets of paper, then place the whole between the two boards and draw the straps tightly round. Change the paper now and then, drying one set of papers while the other set is being employed in the pressing. In the case of small specimens the root as well as the fronds may be dried and preserved. In your 'Fern album' use ordinary cartridge-paper, bound like scrap albums, so that when the specimens are affixed, the book will present a uniform thickness. In affixing your specimens use small straps of gummed paper. It is much better than gumming the paper itself."

On this last point, however, there may be a difference of opinion, and for the benefit of those of our readers who prefer the other way of mounting the Ferns we add the following directions for the process, from which we take another writer:

"After pressing the Ferns, lay them aside for a day or two previous to mounting. To do this, smear the sheet of paper over with liquid gum, lay the reverse side of the frond on the gummed surface, press gently, remove, and place carefully on the paper where you intend it to remain. Finally pass over a piece of blotting-paper to remove creases."

HORTICULTURE.

BY AN AMATEUR.

The monks were about the first horticulturists in Europe. Orchards and gardens grew round their sequestered homes of learning. It was about the same in California when the missions were established. The Grape and the Olive were at first the chief fruits cultivated. No doubt the fathers brought seed of the best flowers with them from both Spain and Mexico. But doubtless the wild-flowers of California went a great way to content and satisfy them concerning floriculture. In the reign of Henry VIII the Prince Apple was first brought to perfection in England —of course in the hot-house: at that time, also, the earliest Orange-trees were planted. Country villas on the banks of the Thames were then described by Evelyn as being shaded by spreading Elms with their vividly green pastures, Orangeries, groves, fountains and aviaries. Most of the flowers were at that time old-fashioned. There were no American borders, no Kalmias, Azaleas, or Magnolias, or shrubs of that kind. There were in that day no China Roses nor Dahlias. The gardens of the wealthy combined every excellence of the antique pleasure-ground. The terrace gravel-walk, three hundred paces long and broad in proportion; the borders set with standard Laurels, Hollies, and Whitethorns, and which at large distances had almost the beauty of Orange-trees both of flower and fruit; stone steps in series, leading to extensive parterres; fountains and statues; summer-houses; and cloisters facing the south and covered with Grape-vines; these with ivied balustrades, and

"Walls mellowed into harmony by time."

composed gardens which suited while they encouraged the meditative temper of our ancestors and religious convents. These solemn terraces, sloping lawns, parterres of flowers, and formal cut or sculptured trees, were common to both rich laymen and richly endowed monasteries. Perhaps these antique systems had more than one feature worthy of praise if not preservation. It is pleasant to contemplate our ancestors sitting in rooms or summer-houses shaded by Plane-trees—

"Deaf to noise and blind to light;"

or sauntering beneath embowered walks of vines, the turf so mossy and velvety (natural to England's damp climate) that in hot weather uncovered feet suffered no inconvenience. Pope says:

"There in bright drops the crystal fountains play,
By Laurels shaded from the piercing day;
Where summer's beauty midst of winter strays
And winter's coolness spite of summer's rays."

And Milton:

——"Alleys green,
Their walk at noon, with branches overgrown."

The ample lawn was one of the fine old features of olden gardens, as it should be now in California, when it can be well irrigated and the grass cut close and smooth. Mason wrote:

——"To feast the sight
With verdure pure, unbroken, unabridged."

What elysiums of gardens, though different in style from ours, were early made in Europe as well as Asia, as in modern times! What beautiful creations for homes! In the words of Shenstone, let us bring elegance of this kind even into our California rustic farms; let us

"Grace their lone vales with many a budding Rose,
New plants of bliss disclose,
Call for refreshing shades, and decorate repose."

By degrees from the old formal style

of gardening, taste began to spread. Gardening, like criticism, was taught by the poets. At length we have reached the eras of a Loudon and a Downing. One charm of an English garden is quite peculiar to it (and on a larger scale than, owing to our dry climate in summer, we can well afford on this coast), freshness and beauty of turf. The grass-plat is as much England's own as her green hedges. Comparatively throughout this country, and even Italy, the bright English color is unknown, except in small plants by irrigation.

I need hardly speak of the moral influence of the study and practice of gardening; but it is lively and lasting. Gray says: "Happy they who can create a Rose or erect a Honeysuckle."

—— "No works, indeed,
That ask robust tough sinews, bred to toil,
Servile employ; but such as may amuse,
Not tire, demanding rather skill than force."

I will conclude by quoting the lines of a mightier hand than Cowper's (given above), Milton, where he exhibits the earliest gardeners of the world reposing after their toil—

"Under a tuft of shade that on the green
Stood whispering soft, by a fresh fountain side,
They sat them down; and after no more toil
Of their sweet gard'ning labor than sufficed
To recommend cool zephyrs, and made ease
more easy."

New Ornamental Gourd (*Bryanopsis Laciniosa*).—This is a new miniature Gourd introduced last year from Africa by Sir Samuel Baker. It has slender climbing shoots, which are loaded with clusters of pretty little fruits, the size of small Gooseberries. When unripe they are bright green, striped and spotted with white; the green changing when the fruits ripen to capsicum scarlet, make it a very ornamental plant.

ROSES.

BY C. H. MILLER.

The Hybrid Perpetuals are general favorites, and deservedly so, for of all the hardy kinds they are the most desirable. They thrive under common treatment, and are generally suited for all soils and situations. For the embellishment of the flower garden and shrubbery they are indispensable, and can be relied on for all the various purposes to which Roses are applied in garden and lawn decorations.

Soils.—One of the conditions essential toward success in Rose culture is the preparation of the soil. Good loamy soil requires very little preparation beyond the usual trenching and manuring. It must be understood, however, that if the soil is wet, draining will be necessary, for it is useless and wasteful to put manure on wet soil. In all such cases, then, the first effort must be to drain the soil. Thorough draining airs the ground to whatever depth it drains off the water; therefore it is best to drain deep.

The hardy kinds of Roses are not so particular as regards locality, provided they have an open airy situation, and far enough from trees of all descriptions that the roots of the latter can not reach the soil of the Rose beds; for it must be understood that Roses want all the nourishment the soil can give them, and that they are not willing to share with others that which they require for their own sustenance.

Planting.—Under this head, I will take occasion to say, that the planting of Roses as isolated specimens on a lawn is in my opinion almost always a mistake; in fact, an error in good taste. There are few, if any, that ever form under such treatment an object sufficiently well foliaged to be pleasing, or even

an object of interest when not in bloom. Then the first step toward securing a nice show of Roses is to select the most sunny and airy spot the garden affords; and generally the most favorable spot is somewhere on the lawn. It should, however, be borne in mind that the location thus selected should not be the most conspicuous spot as seen from the principal windows of the dwelling, where their appearance in winter, from their being leafless, and the necessary covering and protection, would be decidedly objectionable; but where in summer, when all is bright and lovely, a walk to the Rose beds would afford a pleasant recreation before breakfast. And here let me say that, if you would see Roses in all their freshness and beauty, you should see their half-expanded buds with the glistening dew on their surface. A pleasure felt, but not easily described.

Arrangement of Beds.—The location selected, next in order is the form of the beds and their arrangement. Allusion has previously been made to the bad taste of planting Roses singly on grass. A decidedly better and more proper way is to plant them snugly in beds, large or small, as suits the means and taste of the grower. For a small collection, one good-sized bed, circular in form, with the four sides scalloped toward the centre, is the most convenient shape. By this arrangement the cultivator has all the plants within reach without having to step on the bed. The cultivator should also make himself acquainted with the different habits of the various varieties he intends planting. This can be learned by consulting the catalogues of the commercial growers. Those marked vigorous should be planted in the centre, distributing the smaller sorts around the larger, thus forming a compact and regular outline, at once symmetrical and beautiful. For large collections a number of beds would be needed, and a variety of forms could be used. Each form should comprise a complete part of a general plan; each part being complete in itself, a perfect whole would be the result.

In garden decorations the climbing and pillar Roses are very useful; neatly trained to posts for the centre of the Rose bed, and distributed throughout a well-cultivated shrubbery, they are very ornamental, and when blooming above and among the dark-green foliage of well-arranged masses of shrubs, they are seen to advantage.

Pruning.—The following few remarks under this title contain all that is necessary to be said on the subject. Long treatises have been written on it, describing in detail different modes applicable to different classes of Roses, and confusing the Rose-grower by unnecessary and perplexing particulars.

One principle will cover most of the ground. Strong and robust growing kinds require little pruning. On the other hand, weakly growing Roses should be pruned severely.

In shortening the shoots of the majority of Hybrid Perpetuals, four or five eyes should be left; but those of robust and luxuriant growth, such as Madame la Baronne de Rothschild and others of like nature, should be only shortened to about half their length. With the more vigorous summer-blooming varieties, cut off about one-third of their entire length only. Keep the centre of the plant well thinned, and prune moderately; anything like short pruning with such subjects being productive of abundant rank wood and scanty blossoms.

In the short growing Hybrid Perpetuals and Bourbons, two or three eyes or buds are sufficient to be left. In the

more tender Tea-scented and Chinas, all weak and useless shoots should be removed; and the operation must be done with care. And as in many varieties the eyes or buds are far apart, the knife must be sparingly used, or failure may be the result. Much, however, depends on the object or the aim of the cultivator. If a profusion of bloom is required, or a constant supply of buds is necessary, without regard to the size or the perfection of the flowers, then very little pruning is required other than merely thinning out all weak and superfluous shoots, and shortening the ends of the main branches.

Climbing Roses, such as Noisettes, Boursaults and the Prairies, and some of the vigorous summer Roses, are the strongest growers, and require little pruning; first, because of their vigorous growth, and secondly, because profusion of bloom rather than quality is required. The old and dry wood should be wholly cut away, leaving the strong and young shoots of one and two years growth to take its place, with no other pruning than the shortening of the ends of all side or lateral branches, and the thinning out of all useless shoots. In all cases it is the well-ripened, plump-looking wood that bears the best flowers. Old, enfeebled, and soft unripe wood should, in all cases, be removed.

Half pruning in the autumn is very important to lessen the weight that has to stand against the wind, and to prevent undue exhaustion from severe cold dry weather. The final pruning may be done in March or the early part of April. The exact time depends very much on the season being late or early.

The object of pruning is threefold: first, to give the plant shape and proportion; secondly, to improve the size and beauty of the flowers; thirdly, to invigorate the plant. The first object is a very important one, as the future shape and health of the plant depend on the first training it receives. No two shoots should be allowed to crowd each other; a mass of thick foliage is both injurious and unsightly. Sun and air should have free access to every part of the plant.

Pruning in summer, when the plant is in active growth, has the contrary effect to that of pruning in winter, when the plant is in a dormant state: the process is weakening rather than invigorating. It deprives the plant of a portion of its leaves, just at the time when they are most needed, and can not in all cases be recommended. It is, however, often desirable, and frequently saves much trouble, and may be effected to a great extent by cutting the blossoms with long stems when wanted for decoration or otherwise, and by removing all decaying and faded flower-stalks. Many of the kinds by this treatment, and by reducing their main branches to one-half their length in June, are much more certain to give autumnal blossoms; besides, the general appearance of the plants will be much improved.

To produce the best effect with Roses, continuous blooms should only be used; such as Hybrid Perpetuals, Teas, Bourbons, and Chinas. Summer Roses, that bloom once in a season and no more, are useless except for exhibition purposes. If you desire to have summer Roses—and none are more beautiful when in bloom—let them have a place by themselves. Never let them mar the effect of the others, by planting among them sparse-blooming kinds, when by a judicious selection of monthly blooms a complete succession can be had of beautiful buds and blossoms, and the Rose garden kept in perpetual and ever increasing beauty.

Transplanting.—As Roses flourish better for an occasional transplanting, and their bloom and foliage is always finer in cultivated than grassy ground, a biennial lifting of the plant should form a part of their culture. The process will enable the cultivator to perform the operation of root pruning, often a very important matter with the strong-growing kinds. And all who desire their Roses to bloom satisfactorily in the autumn, should embrace the opportunity thus offered, to enrich the soil by deep trenching and well-rotted manure.

Now the best time to transplant or lift and replant Roses is when the Roses are ready; and they are ready just before their leaves drop in the fall; say about the last week in October, or the early part of November. If proof of this is required, one has only to take up a few Roses, two weeks after planting in November, when it will be at once seen that a large quantity of delicate white fibres present themselves. These roots are formed by bottom heat, or to put it into plain words, by what ground heat remains of the past hot summer weather, which is sufficient to establish the roots before winter sets in. From November the heat diminishes, and vegetation becomes less active. Therefore, it is easily seen that if the operation is deferred until late in November, the roots will remain stationary, with every probability of their being injured by the winter, for it must be borne in mind that no amount of sun during the winter will have other than bad effect on Roses planted after the time here specified. They may, and probably would survive the winter, and the buds start in spring; but as there will be a deficiency of fibrous roots, the plants will suffer accordingly. Therefore plant early in November, unless the plants have been grown in the greenhouse in pots all summer; in that case better defer the planting until spring. Plants grown in pots, although smaller, are generally more desirable then those grown and taken from the open ground.

Before leaving the subject, it will be desirable to point again to the fact, that to have Roses in anything like perfection, they require liberal cultivation. They must have a compost of a substantial character; and in practice nothing has been found better than good, rich loam rather close in texture, and well-rotted barnyard manure.—*N. Y. Horticulturist.*

UTILITY AND BEAUTY OF TREES.

BY E. J. HOOPER.

Grand, imposing, and reverence-creating as are woods or forests, trees do not show there always to the best advantage, as they are generally too crowded to enable us to obtain a full clear view of their beautiful forms and the graceful sweep of their almost ceaselessly agitated foliage. Trees, therefore, are seen to the best advantage when standing alone, or in small clumps, which may contain few or many; and the most judicious way to dispose of them, in laying out ornamental grounds to be viewed from the mansion, is to plant few when to be seen near at hand, and several when viewed from a distance. It is in these clumps that we get such a variety of forms, when the boughs cut out sharp against the sky, and not a branch is visible in the whole outline but contributes to the loveliness of the picture or landscape. A clump of trees shows best when tossed together, as it were—planted without form or order, in and out, one here, another there; this catches the full light, that falls back in half shadow, a third goes deepening in, forming the

dark purple of the scene; Elms, Oaks, Eucalyptus, Australian Acacias, Monterey Cypresses, Pine, etc., growing at all angles, wild, irregular, fantastic, yet each tree filling its own space when looked at separately, though, if it were taken away, the charm would at once be broken.

Trees have also a magnificent effect when seen from the bottom of a deep green dell or cañon, from which they go climbing up until the topmost boughs seem lost in the sky; for the trees and sky are all you can see overhead. Then there is generally a stream of water of some description in the bed of the ravine; it may be only a few pools, or a small lake, or a slight brook which at a certain hour of the day gives an eye to the solitude, when the sun's rays dart deep down upon it, and all the little bits of underwood, sage, or chemise scattered at the bottom and along the sides, have at such a time lights of their own. The wild Laurel, or Madroña, or Manzanita, Magnolias, or whatever you may plant, bear no resemblance to the low-growing ferns or dwarfish-flowering plants, nor the latter to the graceful, taller Pepper-trees; but each seems to have chosen the light that suited it best, and clothed itself with it. And here the birds build and sing, in this delightful green world of their own, finding it all they require, without any assistance from man. And if such rural places can be preserved unmolested from hunters, the pretty California quail will there raise their young, and the cooing dove its offspring. And here I will mention what I witnessed in a flower-border next to Mr. R. B. Woodward's mansion at Oak Knoll, in Napa Valley, namely: a female quail sitting upon her eggs in a small Geranium, while we looked into her snug domicile as we walked by.

All Oaks, whether the English or Californian, when they attain a good age are always grand, no matter how shattered some of them may be. They always call up old and solemn associations, and are always beautiful, either towering above smaller brethren in a cañon or ravine, or standing in lonely majesty upon a heath or an old English park in England, or on the foothills, mountains, or in the valleys of California. Poets have sung its praises. Shakspeare calls it—

"The unwedgeable and gnarled Oak."

Spenser has beautifully described it verging to decay—

"A huge Oak, dry and dead,
Still clad with reliques of its trophies old,
Lifting to heaven its aged, hoary head,
Whose foot on earth hath got but feeble hold,
And half-disboweled stands above the ground
With wreathed roots and naked arms."

It is alike suited to the mountain, hill or valley, mansion or cottage, Indian tent or wigwam. Even in the greatest age it retains a beauty, when the boughs are withered or fallen away, when it bends over the resting-place of the dead, and but little more than the desolate trunk remains to still brave the winds which it has faced for centuries. Almost every other tree shoots out its branches in level lines from the trunk, while the Oak twists its boughs in grotesque forms, like a serpent coiling itself into a thousand fanciful figures as it moves along. There is nothing that grows upon the eternal hills which fills the soul with such emotions of sublimity as those mighty Oaks which cover many of our ranges of mountains and valleys in all their glory of bough and follage—especially our Live-oaks.

What pictures float before us of late country visits in Napa Valley—what glimpses of rural objects do these glo-

rious old knotted Oaks there call up; while surrounded by merely artificial objects! What memories are awakened within us now of the jay, the woodpecker, and the mocking-bird, flitting among those old Oaks' branches; the hawk poised almost motionless above them; the hare we startled from the Ferns that grew at the roots; the doves we heard cooing, while lying idly in the shade; the brook that seemed to sing for a moment, and then to become silent again, just as the wind went and came among the green Oak-leaves. Surely no man was ever intended to spend his days in walled cities without beholding the beauty with which nature has clothed the earth, to instruct and delight him.

Even a life of toil and anxious business is sweetened by the remembrance of scenes like these, for they are pleasures that pass not away, but are ever stepping unaware upon us, throwing sudden bursts of "sunshine upon the shadowy places," and cheering us in our solitary and sometimes melancholy hours.

HOW TO CULTIVATE THE GRAPE.

The *Gardener's Monthly* says: One of our correspondents, Mr. Roderick Campbell, recently brought to our mind the difficulty some good gardeners labor under of a perpetual interference by those who employ them with the *details*. What would be more absurd than to employ a shoemaker to measure one's feet and then to insist on directing the knife that is to cut the leather out? It would not matter so much if the attempt to pilot the "gardener" was always in the same direction, as it could be soon proved wrong if it was wrong; but they are often as contradictory as they are numerous. It is often a puzzle to these good gardeners to know where these well-meaning employers get their horticultural knowledge from. Perhaps the following from Max Adeler may afford the clue. It was fortunate that Max Adeler had no gardener, but had to do his work. That is, fortunate for some poor "gardener." The nurseryman who charged "ten dollars" for "advice" strikes us as the most philosophical person in the whole picture:

I have not been very successful with my experiments in Grape culture. I bought a vine some time ago, and the man who sold the cutting to me enjoined me to be careful to water it thoroughly every day; I did so, but it didn't seem to thrive. One day I asked my neighbor Pitman what he thought was the matter with it, and when I mentioned that I watered it daily, he said:

"Be gracious, Adeler, that'd kill anyone! A Grape-vine don't want any artificial waterin'."

Then he advised me to discontinue the process, and to wash the vines with soap-suds in order to kill the bugs. My anxiety to know why it still didn't thrive was relieved some time afterward by overhearing a man in the cars remark that "some men kill their Grape-vines by their durned foolery in putting soap-suds on 'em." He said that all a Grape-vine wanted was to have the earth around it loosened now and then with a spade. Then I began to dig around my vine every morning; but, one day, while engaged in the exercise, Cooley came and leaned over the fence, and said:

"Adeler, you'll kill that there vine if you don't stop diggin' at it. Nothin' hurts a vine wuss than disturbin' the soil around the roots, now mind me. That vine don't want nothin' but to be trained upon a trellis an' fastened with wire."

I ordered a trellis that afternoon, and tied the tender shoots of the vine to the cross pieces. The job cost me thirty-four dollars. On the following Tuesday I read in my agricultural paper that if a man wants to ruin a Grape-vine,

the quickest way is to tie it up with a wire, as the oxidization destroys the bark. So I took off the wire and replaced it with a string. I was talking about it to the man who came over to bleed my horse for the blind-staggers, and he assured me that there was only one sure way to make a Grape-vine utterly worthless, and that was to run it up on a trellis. In France, he told me, the vineyard owners all trained their vines on poles, and that was the right way. So I got the axe and knocked the trellis to pieces, and then fixed the vine to a bean-pole. Still it didn't thrive very well, and I asked a nurseryman near to come and look at it. He said he couldn't come, but he knew what was the matter with the vine as well as if he saw it. It wanted pruning. I ought to cut it down within ten feet of the roots, and then manure it well. I did cut it down and emptied a bag of guano over it; but as it seemed sort of slow, I insisted on the nurseryman coming over to examine it. He said that his fee was ten dollars in advance. I paid him, and he came. He looked at the vine a moment; then he smiled; and then he said, "By gosh, Adeler, that isn't a Grape-vine at all! It's a Virginia Creeper."

So I have knocked off on Grape culture, and am paying more attention to my Cabbages.

INSECT PESTS INCREASING.

We notice, in looking over our country exchanges, that from several localities come complaints of various insect pests having made their appearance. In no case, we believe, have they assumed proportions of sufficient magnitude to give cause for any general alarm; still such visitations should not be lightly passed over, for the causes which this season produce comparatively small quantities of the pests may, in coming seasons, if unchecked, or under more favorable conditions, produce them in destructive numbers. While we believe the appearance of the Grape-worm in some localities, the Potato disease in others, the curculio and grasshoppers in still others, to be due in a great measure to the almost unprecedentedly wet warm spring and summer we have had and are having, yet we fear a part may be attributable to the train of evils which almost invariably follows the extensive occupation and farming of any country, and which consists in killing and frightening away the natural enemies of these pests—the birds—and in the greater introduction of their normal food in the shape of the crops they prey upon.

The wonderful rapidity with which forms of life may be called into existence under conditions favorable to their development is well known; for instance of which, see the hordes of mosquitoes which follow the overflow of the bottom lands in many States; the stagnant pools and ponds left by the retreating flood, and heated under the rays of a burning sun, forming the best possible nidus for them, and forthwith they put in an appearance in countless myriads and apparently almost independent of parentage. Yet spontaneous evolution is far from being necessary to account for their presence, and in the wonderful powers of reproduction of many of the forms of insect life lies our greatest danger. Hence we can easily see in the destruction of a single moth in the spring the death of almost, if not quite, millions of army-worms, or caterpillars, or similiar pests, in coming summer. For this reason we believe it to be the duty of every farmer to protect and encourage by all possible means those birds which feed upon these pests in all stages of their development, whether larvæ, pupæ, or perfect insects. He can well afford the small per cent. these tiny underwriters ask for insuring his crops against loss from these sources; and

which is more than repaid by the dividends he receives in the way of cheerful, caroling companionship in his toil.

As to the best means of fighting these pests in localities where they are at work, a city contemporary offers a few timely hints which are as follows: "A coat of pitch between earth and air will do wonders with Peach-trees. A sprinkling of salt between Cabbage rows will preserve them from caterpillars and slugs. A little lime slaked and showered over newly turned earth will detroy grub-worms of all kinds, and scarcely an invader known to the insect world is not immediately conquered by easy means." To which we would add, that in those districts where the Grape-worm is traveling from vineyard to vineyard, a deep furrow with the land-side toward the vineyard, ploughed all around, will prove a formidable barrier, and if the same can be filled with water from the irrigating ditches, the defence is almost complete.—*Rural Press.*

GARDEN PRACTICE IN OLDEN TIME.

We delight in poring over the works of some of the old writers upon gardening, and noting their directions for the various operations required. Although their works are generally garrulous in style, and their scientific reasons for their practice very frequently a laughable muddle, yet the directions they give are, for the most part, correct and well founded, and anticipate much that is now regarded as new discoveries in practice. Science, two hundred years ago, in so far as it related to vegetable life, was in its infancy, but while the investigations of the last and present generation have given us much insight into the operations of nature, we have not greatly improved upon the practice of our ancestors. We have better structures, better tools and better appliances of all kinds to facilitate our labors, and with these, wonderful results are obtained; yet we doubt whether our present gardeners, having only the scanty means at command of such gardeners as Rose in the seventeenth century, or Loudon, Wise, Speechly, McPhail, Abercrombie, Switzer, Lawrence, and others of the eighteenth century, could more than equal them in the quantity and quality of the fruit obtained. As examples of the practices recommended in those olden times, we make a few extracts from Batty Langley's *Pomona, or Fruit Gardens*, a large folio work copiously illustrated with engravings, published in 1729:

"To be certain of adapting every plant to its proper soil, we must examine the exact quantities of each principle that's contained in every plant we would propagate, as also in the soils we intend to cultivate. And then, if we plant our several soils with such vegetables whose principles are found to be equal, or nearly equal to those of the soils, we assure ourselves of success, and work with certainty.

"If your land is deep, that is, when about two feet in depth, 'tis best to trench it two spits. . . . But if your land is shallow, the best method is to dig it one single spit only. . . .

"When by trenching the aforesaid depth, a hungry, raw, or sharp bottom comes up, 'tis best to leave off, and go no deeper than the goodness of the land will allow.

"And since that fruit-trees are apt to shoot down tap-roots into the lower stratas where the moisture is crude and unprepared, and renders their fruits insipid, and growth luxurious, 'tis much the best way, when we plant our trees, for not only to prune away

every root that seems to tend downwards, but to pave the bottom with tile-shreds, brick-bats, etc., and so prevent others, which nature may afterward produce, from entering therein.

"When luxurious branches only are produced, stop them, when each branch contains four or five buds in length, by *nipping off* the leading buds with your finger nails, which will cause them to produce new branches from every bud that will become fruitful; for that nourishment which nature intended for one branch, will be distributed into three or four, which consequently can not be so luxurious as when wholly imploy'd in one branch; therefore if this rule is well observed, we need never be troubled with luxurious wood."

STANDARD PELARGONIUMS.

A correspondent of the *London Farmer* gives the following directions: To grow standard Pelargoniums, as many strong young plants of the robust kinds as are requisite should be planted out on an apportioned piece of ground, previously thoroughly well manured, at the usual time; here they must be encouraged to make one strong shoot only, which must be fastened and kept trained to a stick as it proceeds to grow upward. When this single shoot has reached the necessary length—the usual height being about three feet—then the top must be pinched in or stopped, and as frequently as young shoots continue to form at the apex so must they be pinched back, always allowing that two or three buds, with the leaves at whose axils they are attached, remain; these in their turn form fresh shoots, to be again pinched back, and so continue until a bushy head is formed. After the first season some kind of trellised support must be formed for the heads. The readiest formed ones I have had experience of consisted of a round hoop of a smaller wire to the necessary diameter, say from two to two and a half feet in diameter, having cross-wires for support, and the whole to be supported by a strong stake firmly fixed into the pot in such a manner as not to admit of more oscillation than can possibly be avoided. Upon these trellised crinolines the young shoots must be kept constantly tied down as they grow.

In those instances where by process of grafting, etc., rarer kinds, such as Tricolors, etc., are induced to grow upon the previously formed strong upright shoots, it will be well to take the plants up somewhat earlier in the autumn than the others; so soon, in fact, as they have attained to the necessary height, because by taking them up and potting them some of the extra sap will be exhausted, and it will be possible to graft at once. The grafts will then take hold, stand through the winter in their preliminary established stage, and be ready to make a good, strong start in the early spring. Keep all when taken up and housed for winter rather dry at the root.

Lilium Auratum.—At the Chillingham Gardens, in England, a plant of this Lily has this season produced one hundred and twenty-one blooms, all fully expanded at the same time. The main stem was eight and a half feet high and produced fifty-three blooms. Previous to this season it had been grown for three years in a twelve-inch pot, but this spring was put into a tub twenty-one inches by fourteen inches. The soil in which it was grown was a rather strong loam.

The Governor of St. Domingo gave orders for cultivating Mulberry-trees in 1503.

Editorial Portfolio.

BEDDING-PLANTS AND PERENNIALS.

This is what Mr. Hogg, in his new *American Garden*, has to say on this subject: After our long and dreary winters, lovers of flowers, especially if they are residents of the country, long to greet their eyes with something bright and cheerful in the way of flowers. This they can do by making a proper selection of hardy perennial plants. Commencing with Crocuses in March, they may, at little expense, have a hundred or more species bloom in succession before their bedding-out plants are fit to be seen, which can not be before the first of July. How much more pleasure and interest is to be derived from a plat a quarter of an acre in extent, planted with a hundred species of such plants, lasting season after season, and sufficient to stock the whole ground, than from a single bed costing just as much, and containing fifty Alternantheras for an outside row, twenty-five Centaureas for an inner row, and twenty-five General Grant Zonales for the centre?—the plants to renew which the next season have, nine times out of ten, to be again purchased.

With our almost tropical summers, we can do that which gardeners abroad can not equal in sub-tropical gardening. What with the various species of Ricinus, Cannas, Erythrines, Caladiums, and similar plants, we can give a variety and uniqueness to our gardens, at but little expense, which the wealthiest nobleman abroad would envy. Such plants are as easily kept as Dahlias, Gladioli, and Tuberoses; and these added to the former will, with good taste, give us all necessary means to divest gardens of any appearance of sameness or lack of distinctive features. If we add a judicious mixture of plants of colored or striking foliage among our perennials, our gardens will never be wanting in that individuality which should distinguish one garden from another; and thus each would become a continual source of delight to its owner from March until November or December.

CATALOGUES RECEIVED.

Descriptive Catalogue of New and Rare Plants, etc.; from James Hutchison, Bay Nurseries, Telegraph Avenue, Oakland. Mr. Hutchison is one of our oldest growers, of established reputation; and if amateurs and others can not suit themselves from the lists embraced in his catalogue, they must be very hard to please.

Messrs. F. Lüdemann & Co., proprietors of the Pacific Nursery in this city, have just issued their third annual *Descriptive Catalogue of Evergreen and Deciduous Trees and Shrubs*. It is arranged in seven classes, as follows: 1, Ornamental Plants; 2, Leading Evergreens; 3, General Collection of Evergreens; 4, Coniferous Plants; 5, Deciduous Trees and Shrubs; 6, Fruit-trees and Fruit-plants; 7, Leading Flowering Plants. The depot is located at 106 California Market.

We are under obligations to James Hutchison, Esq., of the Bay View Nurseries, Oakland, for the engraving of the superb new double white Pelargonium, Aline Sisley, that adorns our current number.

Liquid Manure.—Peruvian Guano, dissolved in water at the rate of one pound to thirty gallons, and two quarts of soot added, makes an excellent manure for all soft-wooded plants.

Correspondence.

BARREN PÆONIES.

Editor California Horticulturist:

Dear Sir:—Three years ago I purchased a Pæony (*P. elegans*) which produced in the first season nothing but leaves. That season, or two years ago, I bought two other sorts (*P. edulis* and P. *nivalis*), which in due time put out a liberal stock of leaves, but not even the rudiments of a flower; nor has either of the three yet shown a blossom. The plants appear healthy, except that the tips of the foliage acquire a burnt look about the middle of June.

The soil is a well-enriched sandy loam, well drained; the exposure sunny; the sea-breeze tolerably fresh. Roses flower freely and brilliantly all around these Pæonies—even to Cloth of Gold.

Now, sir, not having been able to raise any Pæonies, I have a great desire for some—in fact I begin to think them extremely desirable flowers. Can you come to my help?

I noticed a similar complaint in an an Eastern horticultural publication, which first made me think of writing to the *Horticulturist* for information. C.

West Oakland, October, 1874.

A PUBLIC BENEFACTOR.

I have just received from the public-spirited Baron Ferd. von Mueller, Curator of the Botanical Gardens of Melbourne, Australia, his interesting pamphlet *Additions to the Lists of the Principal Timber-trees and other Select Plants* readily eligible for Victorian industrial culture. Taking into consideration that the trees and plants referred to are equally suitable to this coast, a careful perusal of this publication forces upon us many valuable suggestions for the inauguration of new industrial pursuits, and it seems very desirable that the people of this coast should make themselves acquainted with the recommendations of the learned gentleman. California in particular owes to him the introduction of very many valuable trees and shrubs, which now adorn our gardens, fields and parks, and without which at the present day they would have a barren aspect. But not only California owes gratitude to the Baron for the introduction of thousands—yes, millions—of valuable trees and shrubs; other and more distant countries are equally benefited by his toil and perseverance, in exploring new regions, collecting seeds of useful trees and plants, and in distributing the same all over the world, frequently at his own private expense. May his untiring labor meet with a proper appreciation from all those who directly or indirectly enjoy its vast benefits.

F. A. Miller.

San Francisco, November, 1874.

Beautiful New Plants.—The *Garden* speaks in terms of high praise of the single Japanese Rose, with large white flowers "as pure as that of any flower in existence," and the dark green, closely pinnate, shining leaves; of an *Oncidium zebrinum* now in bloom, with a spike ten feet high, profusely branched, bearing 240 flowers; of the *Pentstemon breviflorus*, a rock or border plant, with yellow flowers, and foliage resembling that of the narrow-leaved Myrtle; of a plant of the *Dendrochilum filiforme*, which sold for £25 4s., or about $125; and of the fine *Hydrangeas* growing in the southern counties (where the winters are very mild), often forming specimens thirty to forty feet in circumference and six to eight feet in height.

NEW AND RARE PLANTS.

New Ferns.—Ferns have yielded little of importance during the past year, if we except the interminable and hard-named varieties of British species, which we owe to the enthusiasm of cultivators. The *Dicksonia Sellowiana*, however, a Tree-fern of Brazil, which has found its way to the Belgian gardens, will be a nice addition to our collections; *Davillia* (or *Humata*) *Tyermanii* is a charming basket Fern from west tropical Africa, its small deltoid tripinnate fronds and silvery-scaled rhizomes being singularly ornamental. *Elaphoglossum Herminieri*, christened the Eel-fern by Dr. Seeman, from the resemblance of its clustered glossy iridescent sterile fronds to clusters of silvery eels, is a good stove basket Fern; and *Trichomanes auriculatum* is a lovely creeping-stemmed hot-house film Fern, with transparent green, narrow, bipinnatifid fronds. *Asplenium marinum Thompsoniæ* and *Polypodium vulgare cornubiense* (or *Whytei*, as it is sometimes called) may be mentioned as most distinct looking bipinnatifid varieties of the Sea Spleenwort and common Polypodia respectively, which, as is well known, are normally pinnatifid only.—*Gardener's Chronicle.*

A New Clematis.—A new Clematis, a hybrid between *C. integrifolia* and *C. lanuginosa*, has been originated in France. It has been described as growing about four and a half feet high and bearing dark violet, velvety flowers, with yellow anthers; the flowers measing from three to four and a half inches in diameter. It blooms like one of its parents, (*C. integrifolia*) continuously, from May to October. If it really accords with its description it will be a valuable accession to our list of hardy flowering plants. It is to be sent out under the name of *C. integrifolia de Durand.*

Lilium Tigrinum Flore Pleno.—This is one of the most remarkable varieties yet produced of the Tiger Lily class. Its flowers are very large, double, and of a bright orange color; the segments are thickly studded with dark brown spots, except at the tips, which are recurved—introduced from Japan only within a few years, and hitherto has been quite rare and high priced. Considered by florists very novel and extremely handsome. Most American florists now have it.

NEW AND RARE FRUITS.

A New and Valuable Pear.—A first-class seedling Pear from the Bartlett (known in Europe as the Williams' Bon Chretien) has been raised by M. Morel, of Vaise-Lyon, France, and is figured in a recent colored frontispiece of *The Revue Horticole.* The fruit is of good size, and handsome in shape and color; the flesh is white, fine-grained, melting, juicy, and agreeably acidulous; ripening from the end of September to the middle of October or later. The tree is an abundant bearer, and it also does well on the Quince. It is recommended by M. Carriere as being in every respect of first-rate quality. We call special attention of American nurserymen to the propriety of introducing it into America.—*N. Y. Horticulturist.*

Living Telegraph Poles.—A correspondent of the *Scientific American* suggests that telegraph companies plant trees on which to hang their wires. "In most sections ot the country, the trees first planted would cost but little more than a pole, and after two or three years in growth would be a permanent

pole which would not rot at the bottom or need resetting, and would be seldom struck by lightning. Having many times seen from three to a dozen poles in a row, shivered up by a charge of electricity running along the wires, the above question arose in my mind."

REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

At this time (middle of November) the fruit stalls are still loaded with all the varieties of both foreign and native Grapes, for where is there any country that can produce them in greater perfection than California? It is true that the last month (October) was the time when Grapes were most abundant, and in the greatest perfection. What a delicious and healthy fruit is the Grape! Many physicians, especially the French and German, have published statements of the curative effects of Grapes in various disorders of the body, and the following is about the substance of their general remarks. They act first, by introducing large quantities of fluids into the system, which, passing through the blood, carry off by perspiration and other excretions the effete and injurious materials of the body; secondly, as a vegetable nutritive agent through the albuminoid or nitrogenous substances which the juice of the Grape contains; thirdly, as a medicine, at the same time soothing, yet laxative, alterative and depurative; fourthly, by the alkalies, which diminish the plasticity of the blood and render all more fluid; fifthly, by the various mineral elements, such as sulphates, chlorides, phosphates, etc., which are an analagous and valuable substitute for many mineral waters.

Employed rationally and methodically, aided by suitable diet and regimen, the Grape produces most important changes in the system, in favoring organic transmutations, in contributing healthy materials to the repair and reconstruction of the various tissues, and determining the removal of vitiated matters which have become useless and injurious to the system. Directed by a skillful physician, this valuable agent can be made to produce the most varied effects on the constitution. It also possesses the advantage of being acceptable to most invalids. The treatment, either in town or country, where of course, the fruit can be obtained, lasts from three to six weeks. The quantity of Grapes that may be consumed varies from one to four pounds a day, commencing with small quantities, which are gradually increased. The skins and seeds must not be swallowed. In the absence of Grapes the most beneficial effects may be obtained from the best dried raisins, provided a quantity of water, sufficient to satisfy the thirst they excite, be taken at the same time; or they may be stewed in the same manner as Prunes. Dyspepsia seems to be the chief complaint most beneficially affected by the Grape.

To be on the safest cure side, and as the surest measure for temperance—at least among many persons—I would rather see Grapes used for enjoyment and health, as recommended above, than made into wine, much as it adds to the wealth of the State; although light wines are preferable as a drink to stronger and more ardent liquors, and may in some degree do good by replacing them, and ameliorating the chances of intoxication and the diseases and miseries more practically arising from them.

Fruit is evidently, in either fresh,

dried, or canned condition, destined to be the ultimate glory of California. Nowhere else, I believe, on earth, is it produced so readily or so bountifully. Such Pears, Peaches, Apricots, Nectarines, Plums, etc., as load the trees of Napa Valley, and of nearly every valley in the State which has had any chance to produce them, are likely to stagger the faith of our readers abroad. And very few insects comparatively are known in all this region. No borers, curculios, or very destructive caterpillars have yet appeared, although I hear of the Appleworm doing some mischief lately in one orchard. But it will stand us in need to be vigilant, and if possible take every means to check their first ravages, for we are likely to be troubled in this way in course of time, and we can not tell how soon, and how greatly.

About the middle of this month (November) Green Corn and Tomatoes became exceedingly poor, and Green Peas were in no better condition. Egg Plant was abundant at 6c. per lb.; Chili Peppers, at 15c. to 25c.; Okra, 15c.; Lima Beans, 10c.; Cabbage Sprouts, 7c. to 8c.; Salisfy, 10c. per bunch; Green Corn, 20c. to 30c. per dozen; Green Onions, 20c. per dozen bunches; Chiccory, 25c.; Lettuce, 25c.; Water Cress and Parsley, 20c.; Kale, 50c. per doz.; Celery and Celery Root, 75c.; Savoys, 10c. per head; Garlic, 20c. per lb.; Spinach, 8c.; Winter Squash, 2c. to 3c.; Summer do, 5c. to 6c.; Mushrooms, 10c. to 35c. per lb; Cantaloupes, 10c. to 25c. each; Artichokes, 50c. to 75c. per doz.; Jerusalem do. 8c. per lb.

A cargo of Tahiti Oranges arrived the first week of November, just in time to find an appreciative market; retailing at 75c. to $1 per doz. Lemons, Limes, Bananas and other tropical and semi-tropical fruits were then retailing at prices ruling months before. Quinces continued in fair supply and were of excellent quality. Grapes retailed as follows: Mission, 3c. to 5c. per lb; Black Hamburg, Rose of Peru, and Muscat, 8c.; Isabella, Tokay, and Catawba, 8c. to 10c.; Morocco, 8c. to 12½c. Chestnuts retailed at 25c. to 37½c. per lb.; Walnuts, 15c. to 20c.; Almonds, hardshell, 20c., softshell, 25c. to 35c. The market is well supplied with native nuts.

The high price of Potatoes which prevailed in the beginning of last month, gave way under heavy receipts, and the market was still weak, and likely to go lower.

Great injury was done to the Grapes remaining on the vines, by the early and recent rains. Those now coming forward are generally soft, and keep only a few days before decay sets in, and renders them unsalable. Probably more Grapes have been dumped within the two or three last weeks, than in any-one's recollection. The Flame Tokay, once one of the highest priced in the market, is now, and has been nearly the whole season, the most unsalable of all. The wine makers will have nothing to do with it, and the market becomes glutted; all that can be done is to dump it, unless the salesmen are considerate and liberal enough to give them to the poorer classes, which we think they ought to do, rather than throw them entirely away. Apples by the box retail at 75c. to $1.75; Pears, $1.00 to $2.00, delivered.

Toward the latter portion of this month (November) no further advance had taken place in regard to vegetables, nor are their prices likely to rule much higher, for the reason that as the season advances the quality of most kinds deteriorates. Tomatoes, Green Peas and String Beans were plentiful about the 20th, having given way under heavy receipts, and the market is still weak

and likely to go lower. We quote Spinach at 8c., Lettuce, 20c. to 25c. per doz.; Salsify, 8c. to 10c. per bunch; Potatoes, by the sack, delivered, $1.75 to $2.00 per cental.

Grapes still hold out. The supply continues undiminished and prices are pretty firm. Strawberries are in fair supply, in good condition and demand, and Pears are very plentiful. A few quoted at 25c. to 37½c. per lb. Apples and Peaches are still obtained; a straggling box or two may linger in the market for another week perhaps. Late Plums continue to find their way to market; but this and other descriptions of summer and autumn fruits can not hold out much longer against the prevailing pinching frosts. Nuts are crowding in. Following are the retail prices: Chestnuts, 25c. to 37½c. per lb.; Walnuts, 15c. to 20c.; Almonds, hard-shell, 20c.; soft-shell, 25c. to 35c.

Many of the descriptions of vegetables that have been familiar during the summer months are fast disappearing. Corn is very poor, but sells at 30c. per dozen. Ripe Tomatoes are scarcely presentable now, yet prices are unchanged. Green Tomatoes are in a better condition. Egg Plant has advanced from 2c. to 4c., being sold now at 8c. to 10c. per lb. Small quantities of Asparagus are to be had at 50c. to 60c. per lb. Cabbage Sprouts retail at 6c. to 10c.; Lima Beans, 10c.; Okra, 15c.; Chile Peppers, 15c. to 20c.; Garlic, 20c.; Spinach, 8c.; Winter Squash, 2c. to 3c.; Summer do. 5c. to 6c.; Mushrooms, 10c. to 35c.; Jerusalem Artichokes, 8c.; Salsify, 10c. per bunch; Chiccory and Lettuce, 25c. per dozen bunches; Green Onions, Water Cress and Parsley, 20c.; Kale, 15c. per doz.; Celery and Celery Root, 75c.; Artichokes, 50c. to 75c.; Savoys, 10c. per head; Canteloupes, 10c. to 25c. each. Ripe Winter Nelis and Beurre Clairgeau Pears are more plentiful and cheaper. The first Medlars are now in market, at 25c. per lb.

Pæony Sinensis.—These superb, hardy and showy plants undoubtedly stand without a peer in point of attractiveness, usefulness, and great beauty. The size of the blooms of some varieties are in fact stupendous, there being nothing at all to approach them in size among our cultivated garden plants. There is now a great diversity of shape and color existing in the Pæonies that are offered for sale. Some kinds are composed of an outside row of guard petals, with the inside filled up with a rosette of the most beautiful fretwork imaginable; other varieties are in shape like the Poppy (Papaveriflora, etc.)

All are desirable. We have in stock about eighty varieties, all of which are well worth growing.

The Pæonies are as hardy as the Oak and will succeed in any soil or location. They can be planted in the fall or spring; we, however, always prefer to plant in the fall. Unless large, whole roots are planted, but little bloom will be produced the first year. In planting, set the crown or bud of the plant about four inches beneath the surface.

After planting, on no account disturb the plants for a number of years if grand results are desired. Those who are in possession of long narrow borders following the carriage-way or foot-path, can produce grand floral banks of bloom by planting a continuous row in it; if a fence or hedge is on the back, the effect will be heightened by such companionship. We advise all to plant several varieties of these gorgeous floral ornaments in their grounds in appropriate places.—*Briggs & Brother's Illustrated Floral Work.*

Editorial Gleanings.

Oranges, Lemons, and Olives.—A sample of the above mentioned fruits, grown on the Alhambra Ranch of Dr. Strentzel, near Martinez, reached San Francisco not long ago. There were Oranges of last year's growth, as fresh as if just taken from the trees; Oranges just picked, large, and of excellent flavor; Oranges just set, and Orange-blossoms. The Lemons were also perfect. The Olives were very large, and of the best variety. This orchard can be reached in two hours with a horse, from San Francisco, or in one hour by steamboat.

Dr. Strentzel's experiments have been very successful. He is now beyond the experimental stage, and every year produces an increasing quantity of semi-tropical fruit, not surpassed by any produced in the southern part of the State. A handsome income is now derived from this orchard. Intelligent fruit culture, as pursued by Dr. Strentzel, has been of great importance in demonstrating the fitness of a considerable area of land north of the bay for semi-tropical fruit-growing.

Preparing Phosphorus Poison.—For the benefit of those who may not have a satisfactory method of preparing phosphorus bait, the Contra Costa *Gazette* gives the following: "To a pint of sweetened flour paste, while boiling, add two sticks of phosphorus, and stir constantly until the phosphorus is quite melted and thoroughly mixed with the paste. When so mixed, pour the paste over four quarts of dry Wheat, and stir until it is perfectly distributed; then throw in dry flour and stir thoroughly, and the bait is ready for use. If it should, in standing, cake together, it will fall apart on being stirred or shaken; and when put out, is protected from combustion or spontaneous ignition by the dry paste coating, and is in very toothsome form and condition to be eaten by squirrels.

Hardy Roses.—The June displays of Roses in England, in consequence of lack of rain early in the season, have not been as profusely supplied with blooms as usual, although the flowers were fine and brilliant. It is noteworthy that the older sorts hold their own against new-comers; as is evidenced by the fact that the following are named as conspicuous for quality on the occasion referred to:—Marie Baumann, Peter Lawson, Duke of Edinburgh, La France, John Hopper, Princess Mary of Cambridge, Madame Barriott, La Rhone, Charles Lefebre, Boule de Niege, Comte de Paris, Prince Camille, De Rohan, Dr. Andrey, Victor Verdier, Madame Victor Verdier, Mdlle. Eugenie Verdier, Baroness de Rothschild, and Ipswich Gem. The following are also noted as being specially fine this season: Elie Morel, Ferdinand de Lesseps, Comtesse de Chabrillant, Alfred Colomb, Xavier, Olibo, Francois Michelon, Camille Bernardin, Dupuy Jamin, Fisher Holme, Exposition de Brie, Madame Hector Jacquin, Madam Vidot, Louis Van Houtte, Beauty of Waltham, and Madame Bravy. These lists will prove excellent guides for such of our amateurs as wish to make a selection of a few choice hardy Roses.—*American Garden.*

In 1493 Columbus took a cargo of domestic animals, seeds, vine-cuttings, and sugar-canes on board, and carried them to Dominica.

Azalea Mollis.—This species of Azalea, a native of China and Japan, was introduced into Europe several years ago, but we are not aware that it has ever been introduced in this country. The flowers are as large as those of *A. indica*, the species and varieties of which are so well known in our greenhouses; and the habit of the plant is also somewhat similar, being very compact and of a dwarf, tree-like form. In Europe it has proved quite hardy; and this with the size and beauty of the flowers has attracted the attention of florists, who are breaking them into varieties. Mr. Van Houtte, of Ghent, now offers twenty varieties, and these, as novelties, are high-priced. We hope that some of our enterprising nurserymen will obtain them, and, by propagating, place them within the reach of amateurs. The introduction of a class of hardy shrubs having the beauty of our greenhouse Azaleas will be a great addition to our gardens. The colors of the varieties so far obtained run through the various shades of red, flesh color, white, primrose, orange, yellow and nankeen —spotted with other colors in the way of a Rhododendron. The trusses of flowers in many of the varieties are very large.—*American Garden.*

Sonoma and Marin Fair.—The most beautiful and valuable decoration, and which at once struck our attention, was the wonderful display of all the varieties of delicious fruit of the season, cultivated by Sonoma fruit-growers. Think of a single table, forty feet long by four in width, covered with fifty-six varieties of choice Grapes, exhibited from the vineyard of one firm—the Morris Brothers, of Sonoma—besides varieties of Figs, Pomegranates, Olives, Oranges, Lemons, Almonds, etc. A pyramid of a dozen varieties of Grapes decked its centre, Black Hamburgs, White and Flame Tokays, etc.; while a single bunch of Barbarossa, weighing five and a half pounds, must have equaled those the Israelite spies brought out of Canaan. But few other fruit exhibitors made fair showings of superior articles. W. H. Popper, of this township, exhibited seventy varieties of Apples and other fruits. This was the only one commensurate with the pomological character of the district. The Apples, Pears, Quinces, etc., exhibited by others, considering the season, was good, however. It is not safe to compare them with similar productions in the fruit-growing States from Nebraska to Massachusetts, unless the writer making the comparison had very recently witnessed exhibitions in all these States—for progress is the order of the day in all our enlightened Union. Besides, "comparisons are odious." But it was evident, not only from this fruit-show, but from the enormous Cabbages, Squashes, Beets, Potatoes, and other vegetables here seen, as well as the choice Wheat and other cereals, that the rich soil of this district is that of which Douglas Jerrold said, "Only tickle it with a hoe, and it will laugh with a harvest."

American Passion for Flowers.—It is stated that more bouquets (not buttonhole) are made up in a single month in the city of New York than in the course of a whole year in the city of London. This is, perhaps, a trifling exaggeration, but Mr. Dickens said very much the same thing in writing of his American experience several years ago, so that it is evident that our love for flowers is sufficiently conspicuous to attract the attention of foreigners

Fruit Culture in Florida.—But very little capital is needed for the starting of a grove, and the rewards of a successful one are very great. Oranges sell at from $25 to $68 per thousand in Jacksonville, and are readily transportable to any of the Atlantic seaports. When the necessary dredging and building of canals has been accomplished, so that the Indian River may have an outlet via the St. John's, the North will be supplied with Oranges of more delicate texture than any it has yet seen, and the number of groves along the river will be legion. The fitness of Florida for the growth of tropical and semi-tropical fruit is astonishing. Not only do the Orange, the Lemon, the Lime and the Citron flourish there, but the Peach, the Grape, the Fig, the Pomegranate, the Plum, all varieties of Berries, the Olive, the Banana, and the Pineapple grow luxuriantly. Black Hamburg and white Muscat Grapes fruit finely in the open air; the Concord and the Scuppernong are grown in vast quantities. The Guava, the Tamarind, the wonderful Alligator-pear, the Plantain, the Cocoanut and the Date, the Almond and the Pecan, luxuriate in southern Florida. We have within our boundaries a tropic land, rich and strange, which will in future years be inhabited all winter long by thousands of families, and where beautiful towns, and perhaps cities, will spring up.—*Edward King, in Scribner's for September.*

Corn and Hemp in the Foot-hills.—The Placer *Herald* says: "J. W. Payne has a ranch here in the foot-hills, a few miles from Auburn. He has raised each year a little hay, a few hogs, a few fowls, and cut a little wood, from which, in the aggregate, we suppose he has scratched together a pretty fair living. A brother of his, Madison Payne, came out from Missouri about a year ago, and went to live on the ranch with J. W. He read somewhere or heard somebody say that anything would grow in this locality if well cared for. Being naturally enterprising, he determined to test the matter, and planted, besides many other things, some Corn and some Hemp. The result astonishes even the oldest settlers. Through the kindness of Mr. Payne, a stalk of the Corn and a stalk of the Hemp hangs against the wall in our office. The Hemp-stalk measures over five inches in circumference at the butt, and is fourteen feet long, and bore, Mr. Payne tells us, three quarts of as fine seed as he ever saw. The Corn-stalk still has one fine large ear of Corn on it, just nine feet from the roots, and was originally fifteen feet long. Mr. Payne comes from a State where Corn and Hemp are the principal productions, but he is free to confess that he never saw hemp fourteen feet high, nor an ear on a stalk of corn nine feet from the ground, until he saw these, and he thinks that these foot-hills, properly cultivated, will beat even the rich Missouri river-bottoms in the production of anything that grows. It is fair to add that this corn and hemp were raised on the common high red land."

A Beautiful Bed of Geraniums.—According to *The American Rural Home*, there was this summer in Rochester a Geranium bed, approaching perfection as near as any ever seen. This bed undoubtedly owes its great success to the care exercised in propagating the plants, in assorting and transplanting them, and in the care which they receive all through the season. Cuttings of the finest plants of the Gen. Grant variety are made during the latter part of sum-

mer. These are kept in the greenhouse until the latter part of May, when they are assorted, and the most vigorous ones used. The bed is oval, or palm-leaf shaped, highest in the middle, and well manured with rotten stable manure, and decayed leaves. The bed is kept clean and mellow all through the season, and the fading flowers removed. The result is a mass of brilliant scarlet bloom from June to October.

Cultivation of Tropical Fruit.—*The South* says: We understand that a company has been formed for the cultivation of tropical fruit, and is in treaty for a tract of 640 acres of land at Biscayne Bay, at the south-eastern extremity of Florida. This tract was a military post during the Florida war, and has growing upon it a large number of fruit trees, viz : Banana, Plantain, Cocoanut, Orange, Lime, Lemon, Breadfruit, Date, Guava, Mango, and others too numerous to mention. The capital of the company will be $10,000, $7,000 of which is already subscribed. Frost never reaches this place; the climate is delightful, winter or summer, and perfectly healthy.

Tuberose Bulbs. — There are rules that the novice in these matters must bear in mind. Do not undertake to dry the bulb with all the top on; do not cut it off too near the crown of the bulb. Either proves injurious. The first, because there is such a mass of green, succulent growth to wither up, and consequently to engender decay; and the latter, because there will be great danger of destroying the germ in the centre. I have seen bulbs to all outward appearances sound and healthy, but when I examined this vital point I found it gone beyond recovery, and the bulb was necessarily worthless. My practice is to dig them as soon as the first frost injures the leaves, cut them down to say three inches of the bulb, and then spread them thinly on a shutter, or what is better, a slatted frame, and place them in the sun or near fire heat, until every vestige of moisture has departed. It is really wonderful how much vitality there is in the leaves of this beautiful flower, for not unfrequently one has to wait for several weeks before they are ready to store away. When once thoroughly dried, I simply place them in a box without any packing material whatever, and keep them in a warm and perfectly dry place. The cellar near a furnace will answer, provided there is no dampness in the air. It is a good plan to examine them carefully during the winter to see if there is any moisture present, and if it is detected take them out at once, and again spread thinly over the top of a furnace or other surface, to remain until dry once more.

Oxalis Lobata.—*Oxalis Lobata* is now flowering in Mr. Tyerman's garden, in Cornwall, and tempts us to call attention to this very interesting genus of plants, which would do so much to make our gardens more interesting at this season of the year. They are all of the easiest possible cultivation, and in dry soils perfectly hardy, or at the utmost a slight protection from heavy rains during the dormant season would make them quite secure. The bright yellow flowers of *O. Lobata*, which are large compared with the leaves and short stature of the whole plant, which is barely a couple of inches high, make a really pretty and pleasing feature,

and are sure to arrest the attention of the most casual observer. When planted in masses the ground looks studded with golden stars. *O. elegans* is, as its name implies, beautifully elegant; the leaves, which are of great substance and smooth, grow three to four inches high, and the flowers rise six or eight inches above the leaves, of a pleasing rich purple-lake with dark centre. *O. Deppei* is well known, its full reddish flowers being produced well above the neat foliage for several months in succession, and, like the beautiful *O. Bowiei*, would make an excellent variety in the modern flower garden. *O. floribunda*, with its numerous varieties, are hardy perennials, and are almost perpetual flowering. *O. Smithii*, with finely divided foliage, will become a general favorite when better known; at present it is scarce. Where the soil and situation are at all genial, we are quite certain that all the summer-flowering kinds will prove much more satisfactory when grown in the open borders "than as they usually are, cramped in pots;" even that weedy species, *O. lactæflora*, is much more interesting in the open ground.—*Gardener's Chronicle.*

Piratical Plants.—Dr. Mellichamp, of Bluffton, S. C., who has been studying the insect-traps of the Pitcher-plant (*Sarracenia variola*) reports that there is a sugary secretion within the rim of the leaf-cup, extending all the way around the throat, and from one-half to three-fourths of an inch in depth. But, what is most curious, this saccharine secretion continues externally in a line along the edge of the wing of the leaf-cup down to the ground—thus forming a honeyed pathway to decoy insects, especially ants, up to the throat of the cup, whence they tumble into the water it holds, and are drowned. Could a fox be more cunning? From his experiments Dr. Mellichamp was unable to discover that there was any intoxicating quality in the sugary secretion. On cutting off the rim of the cups, or pitchers, and exposing them to the flies in his house, he found that the insects would feed upon it and fly away unharmed. The fluid in the pitchers, however, seems to possess anæsthetic properties. House-flies, after a brief immersion in it, or after walking about in a thin layer of it, were stupefied or paralyzed in from half a minute to three or five minutes, but would gradually revive in the course of an hour or so.

The India-rubber-tree.—Californians are prepared to believe, from the experience they have had, that almost every kind of vegetation will flourish in this State, whether it be from the temperate zones, or tropical or semi-tropical climates. And, in truth, the success in cultivating exotics from different parts of the world has been so great that it will not do to reject any plant until trial has been made whether or not the quality of our soils and the temperature of our climate are suited to its growth. A correspondent suggests that the India-rubber-tree might possibly be grown in certain parts of this State. It is cultivated in the vicinity of Panama, where the tree flourishes and attains its growth in about four years. At maturity it is tapped like Sugar-maple, and the rubber flow caught in basins dug in the earth. The price for this crude liquid is from $22 to $25 per 100 pounds, and the business of cultivating rubber orchards is found to be quite profitable. We have not heard that any attempt has been made in California to raise the

India-rubber tree, but the experiment of transplanting might be tried by some of our horticulturists and farmers—particularly in the southern counties—and the problem as to whether it could be made to flourish could be thus solved at comparatively trifling expense.

Winter Blooming Pelargoniums.—There is much difference among Zonale Pelargoniums as to their habit of blooming, some varieties blooming much more freely in winter than others; those of dwarf habit being the best for room or greenhouse culture. The following varieties are particularly adapted for this purpose:—Glow, dwarf, bright scarlet, prolific bloomer; Vulcan, brilliant scarlet, large truss; Vesuvius, fiery orange scarlet, dwarf, a free bloomer; Payne's Perpetual, rich scarlet, very dwarf, dense growth, trusses small, but a very profuse bloomer; Pioneer, pink-shaded salmon, dwarf, compact habit, free bloomer; Mrs. Upton, pink, a fine sort; Resplendent, orange-scarlet, large truss, good habit, and very showy. The Bride and White Swan, both pure whites, are good. Among the double varieties suitable for this purpose are—E. G. Henderson, carmine, dwarf habit; Jewel, deep scarlet, very dwarf habit, free bloomer; Mons. R. Abel, dark carmine rose, very fine; Marie Lemoine, deep pink, dwarf habit.

The Eucalyptus Globulus.—Mr. Learned has been experimenting for three or four years upon the Eucalyptus, in order to prove whether it will flourish in the black adobe of San Joaquin County without irrigation. In December, 1871, he obtained some seed of the variety mentioned above, and for the first season he irrigated them. Since then they have not had a particle of water other than from natural causes. His trees are nearly three years old, and some measure six inches in diameter at the base, having attained a height of thirty-five feet. He maintains that he has established the proposition that these trees will grow without irrigation in San Joaquin County, and he believes that a similar result may be attained in the San Joaquin Valley generally, notwithstanding the difference of soil.

Erythrina compacta.—A new species, described as being one of the finest of the genera. It has very strong, rather erect shoots, very thickly set along their whole length with handsome deep red flowers.

METEOROLOGICAL RECORD,

For the Month ending October 31st, 1874.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.09 in.
do 12 M.	30.08
do 3 P. M.	30.08
do 6 P. M.	30.08
Highest point on the 28th, at 12 M.	30.30
Lowest point on the 25th, at 6 P. M.	29.81

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	58°
do 12 M.	64°
do 3 P. M.	63°
do 6 P. M.	57°
Highest point on the 7th, at 3 P. M., and 8th at 12 M.	75°
Lowest point on the 25th, at 6 P. M.	48°

SELF-REGISTERING THERMOMETER.

Mean height during the night	52°
Highest point at sunrise on the 9th	60°
Lowest point at sunrise on the 26th	43°

WINDS.

North and north-east on 4 days; south and south-east on 7 days; south-west on 5 days; north-west on 2 days; west on 13 days.

WEATHER.

Clear on 8 days; cloudy on 10 days; variable on 13 days.

RAIN GAUGE.

9th	0.17
15th	0.04
18th	0.07
19th	0.05
21st	0.27
22d	0.11
25th	1.86
27th	0 16
Total	2.73
Total Rain of the season to date	2.81

July 6 1802

Watkins' Photo.

OAK KNOLL, NAPA COUNTY, CALIFORNIA.

For "California Horticulturist."

Country Residence of R. B. Woodward, Esq., Proprietor Woodward's Gardens, San Francisco.

THE

California Horticulturist

AND FLORAL MAGAZINE.

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THE LILY OF THE VALLEY.

BY F. A. MILLER.

Very few plants enjoy a greater popularity than the Lily of the Valley (*Convallaria majalis*) and the number of plants furnished annually by the bulb-growers of Holland is enormously large, which fact in itself goes far to prove that it has become a universal favorite. *The Garden*, of London, in a recent article on the subject, says: "Fortunes are being built up on this humble plant; it employs thousands for several months in the year, in this and other countries; it is the most favored of all the plants that come into Covent Garden Market, in the winter and spring months; and, loaded with little green-tipped lumps of white, is undeniably a queen among flowers." Most of our people here are under the impression that the roots exposed for sale are simply dug up from the forests of Europe. This is not the case. The roots offered here are especially grown for market.

So far but few persons have met with success in the cultivation of this pretty plant, but the failure must be attributed, first, to very inferior roots, containing no flower-buds; and secondly, to improper treatment. The roots are sent out as single crowns or in clumps; the latter are masses of flowering and leaf crowns. Single crowns have no soil attached, and are apt to suffer from the effects of a long journey. In purchasing these, the crown should be carefully examined, and if found plump and firmly attached to the root, its healthy condition can be relied upon. Frequently I have seen crowns offered for sale, which were simply leaf-buds, and would not produce any flowers. The two are easily distinguished; the flowering-crown is much larger and more roundish than the leaf-crown. A very little experience will enable anyone to distinguish one from the other.

Clumps generally reach us in much better condition, and are therefore reliable, unless they were previously used for forcing, which operation exhausts the roots for at least one year. It is also very important that the roots should not be taken up from the ground until after some heavy frosts in autumn.

Our first attempt at cultivating the Lily of the Valley for this market during last year was a complete success. We received our clumps during the last week of December, and we had

them profusely in bloom from the 15th of January to the 1st of May. They met with a very ready sale, and we were much encouraged to continue their cultivation more extensively. During the present season we received an invoice of crowns and clumps as early as November 1st; the crowns were very much damaged, and the clumps were inferior. During the last week of December we received a second and very large invoice of both crowns and clumps. In unpacking them we found them frozen, notwithstanding their having been in this mild climate for over a week. However, their condition was most excellent, and those which were transferred into a warm-house are already showing their graceful snowy-white bells, and we shall be enabled to have them in bloom from this time until the 1st of May.

To bring flowering crowns or clumps into bloom is most simple, and anyone can succeed by planting them in almost any kind of soil. By giving them a position in the greenhouse or any warm room, they will come into flower much earlier than if placed in a cold room or out-of-doors. They require a liberal supply of moisture, particularly if cultivated in a warm room.

But to establish the Lily of the Valley out-of-doors seems not to be thoroughly understood here as yet. I apprehend no difficulty in making it at home in our gardens, if reasonable care can be bestowed upon it. Imported roots are generally planted in pots, until they have passed their flowering season. No sooner are the flowers decayed than the plant is totally neglected, the leaves die off for want of water and attention, and within a short period of time nothing is left except an exhausted and dried-out root, which can not be expected to regain vitality. In this condition it will finally find its way to some out-of-the-way place in the garden, never to show life again.

To those who wish to perpetuate the Lily of the Valley in their gardens, I would say: Treat the plant after flowering as liberally as before and during its flowering season. Let the foliage decay under the same treatment. Transplant into a warm and shady place, well protected from our strong winds. Before planting out, work the soil over to the depth of eighteen inches, and give a good top-dressing of very old decomposed stable-manure. Place a stake beside it, in order that some well-to-do gardener may spare the root in digging over the ground; and I am quite certain its glossy leaves will make their appearance in due time, and another year's grace will surprise you with a very respectable harvest of the sweetest flowers of all. In accomplishing this much you have domesticated the Lily of the Valley.

TRANSPLANTING EVERGREENS.

In removing evergreens from the nursery great care must be taken not to allow the roots to become dried. More trees are lost in transplanting them from this one cause than from all others put together. They should, if possible, be puddled as soon as they are taken up; but at any rate puddled when received — a process which excludes the air from the roots and keeps them moist. Puddling is dipping the roots into a mixture of finely pulverized soil and water made into the consistence of thick cream, which adheres to and incases the roots and protects them from the injury otherwise arising from exposure to the atmosphere.

The trees should be planted with the least possible delay, and the earth well

pulverized before being thrown over the roots. During the filling in, the tree, if not too large, should be shaken up and down so that the earth may fill up the interstices between the roots; and the earth should, afterward, be well trodden down. If the roots have not been puddled it is better not to tread down; but, when the hole has been two-thirds filled, pour in sufficient water to well soak the soil and cause it to settle about the roots. When the water has well soaked away, fill in the remaining soil, and this will absorb any overplus of water and prevent the surface from becoming baked. If the surface soil becomes hard and baked it prevents the moisture of the soil below from being drawn up, and also prevents the air from filtrating through the soil to the roots. Should the weather be dry or hot, it may be necessary, in ten days or a fortnight after the trees are planted, to draw the earth away from the tree to a depth of three or four inches and give another good watering, and, when the water has soaked in again, return the soil. Never use soap-suds, manure-water, or any liquid except pure water, to newly transplanted trees; nor apply any manure, earth from the woods or wood-piles, or any other ingredient, to them in this operation. Nothing more is required than good fresh earth and water; anything else is positively injurious, if not certain death to them. After transplanting the trees should be firmly staked, to secure them from the action of high winds, which, by rocking them to and fro, prevent the young roots from properly taking hold of the soil and furnishing the tree with suitable nourishment by absorbing from the earth the moisture so necessary to its existence.

The operation of transplanting is a very simple one, and there are none of the mysteries about it in which many ignorant people believe. Its success consists in preserving as many roots as possible on the tree; never allowing them to become dried; making the fresh soil in which they are planted as nearly firm as can be to that in which they were previously growing, and preserving a sufficient moisture in the new soil to insure rapid root-making. Mutilated roots, like cuttings, will not make new roots unless they have a proper supply of moisture, and not when in contact with decomposing manure or similar materials. In re-potting greenhouse plants the case is different, as then the roots are all intact (or should be), and they immediately begin to absorb the stronger plant-food. But it is impossible to remove a tree of any usual size for transplanting, without in some degree depriving it of its roots. The more carefully, therefore, these are retained and preserved, the more likely is the operation of transplanting to prove successful.—*The American Garden.*

THE OAK (*Quercus Robur*).

BY E. J. HOOPER.

Artists divide the greater number of trees into four distinct classes: the round-topped, as the Oak and Elm, the Chestnut, Willow, Ash, and Beech; the spiny-topped, which includes different species of the Fir tribe; the shaggy-topped, comprehending those of the Pine; and the slender-formed, as the Lombardy Poplar, California Pepper-tree, and the Cypress.

With regard to the Oak, in California, we have two deciduous Oaks (fruit annual), White Oak, Burr Oak (*Quercus Lobarta*, Nee.), and White Oak (*Qu. Douglasii*, var. *Gambelii*, Nutt.); the first generally found in the valleys, and the last in gravelly soils.

Of Evergreen Oaks (fruit annual), we have the common Live-oak (*Qu. Agrifolia*, Nee.), and the Mountain Live-oak (*Qu. chrysolepis*, Liebm.); the first frequent in valleys, and the last on hills near the coast.

Of the Black Oak, deciduous (fruit biennial), *Qu. Sonomensis*, Benth., inhabiting hill-sides.

Of Evergreen Oaks (fruit biennial), we have the Live-oak (*Qu. Wislizeni*, Engelm.) in the northern valleys, and Chestnut Oak (*Qu. densiflora*, Hook.) in the Redwoods.

We have, also, several shrubby Oaks. The Oak stands foremost both in dignity and grandeur; pre-eminent, like the lion among animals, and as the eagle among birds. Beauty united to strength is everywhere developed; its leaves, elegant in outline, are strongly ribbed, and firmly attached to the branches, which, although individually slender and excursive, are bold and determined in their aggregate; while the abrupt and tortuous irregularity of the massive boughs that start from its giant trunk are strongly contrasted with the density and richness of its luxuriant foliage. Who has not thrilled with gratification, and even with ecstacy, as I did the last summer, when visiting Oak-wooded and Oak-knolled Napa Valley, listening to the wind whispering among the branches, causing the leaves to strike one against another, where cooing doves answered their mates from out their branches, the busy woodpeckers tapped on their trunks, and the restless blue-jay flitted from one tree to the other? And thus, one may say, men have fabled that trees could speak, and thought them worthy of double honor. But the Oak has ever been pre-eminent. Poets have sung concerning it, from the earliest periods in this world's history. The Greeks bestowed upon it appropriate honors, and from the smallest of its twigs was composed the Roman civic crown. Nuptial processions were graced with its boughs, and men carried them on commemorative days as emblems of victory. Ancient poets, equally with those of modern times, sung concerning this majestic tree. The former even attributed to it not only vegetative power, which imparts, especially in the Live-oak, eternal duration, but that it was inhabited by Dryads and Hamadryads. Some such, they sung, loved as we do to haunt these greenwood shades, and to wander by their often-accompanying clear streams; or, looking tranquilly from their fostering trees, passed a dreamy existence, as some of us do, at least for a time, in listening to the soothing sound of the winds and zephyrs among their leaves. The painter, also, selects from Oaks those tablets on which he embodies his imperishable thoughts. Salvator Rosa made great use of old Oak-trees. He liked to contrast them with young saplings. Their gnarled boughs and gray trunks look well in wild scenes, in depicting which, like our Hill, and Keith, and Bush, he so much excelled.

Observe in their pictures the bright velvet Moss that they have stationed around the roots of the Oak. Brimstone-colored lichens succeed, and extend up the trunk; some are smooth and spreading, and seem imbedded in the bank; others are rough, and hang in small rich knots and fringes; and with these are intermingled a nearly white lichen, beautiful in the contrast which it presents, and denoting that the vigor of the tree is about to fail. Different kinds of Mosses also congregate upon the bark; some dark green, others of a rich brown hue or nearly black, others of a dingy orange; others inclining to red, and even to bright yellow, resem-

bling gleams of sunshine. In this brotherhood of parasitic plants, different species blend with one another: the knotted brimstone-tinted lichens cling to an ash-gray species; these giving to the rough and furrowed trunk a peculiar character of sylvan beauty. Immense masses of rocks are seen in the Californian scenes of our artists, scattered in all directions, and in their midst, either growing among them, or else seeming to spring from out their interstices, arise wildly and widely scattered a grove of dwarf Oak-trees.

These old Oaks can tell many strange histories of Indian times, concerning the chipping of stone arrow-heads, and the fashioning of mortars and pestles, and other implements of both peace and war. Those trees have sheltered many generations of confiding birds, too; they have showered myriads of acorns from their good green boughs, and some, which the squirrel has buried for his winter store and then forgotten, have sprung up, and furnished timber and fine wood for our present generation.

"Ponderous and stately stood the firm old tree,
'Mid the thick groves, where moss-entwined and gray
The brotherhood stood round, with lichen tufts
Depending from their boughs, which up and out
Fantastically grew, and made a gloom
E'en at the cheerful hour of bright noonday."

George Hood has in the town of Santa Rosa two Catawba Grape-vines seven years old, from a graft on a Mission Grape stalk; they have been trained upon a trellis-work, and cover a space of about 1,400 square feet. From these vines, in the yard of an ordinary town lot, Mr. Hood took a ton of Grapes. The success of this experiment should encourage further effort.

DAS VEILCHEN.

FROM GOETHE.

Lonely and sweet a violet grew
The meadow weeds among.
One morn a rosy shepherd maid,
With careless heart and idle tread,
Came by,
Came by
The meadow lands, and sung.

"Ah!" said the violet, "would I were
Some stately garden flower!
Then I might gathered be, and pressed
One little hour to her sweet breast!
Ah, me!
Ah, me!
Only one little hour!"

On came the rosy shepherd lass
With heart that idly beat,
And crushed the violet in the grass.
It only said, "How sweet!
How sweet!" it said, with fainting moan,
"If I must die, to die alone
For her,
For her—
To die at her dear feet."

Old and New.

RAISING PELARGONIUMS.

Mr. Sisley, well known as the originator of several choice varieties of double zonal Pelargoniums, describes his practice thus:

"My friend Carriere, speaking of my double white zonal in the *Revue Horticole* of Oct. 1st, says that it is the result of scientific combinations. I must decline to accept this encomium, and am willing to make the horticultural world acquainted with my very simple practice, which I have never kept a secret. When, six years ago, I began the artificial fertilization of zonal Pelargoniums, I procured about fifty of the best varieties of single-flowered zonal Pelargoniums of different colors, and about 200 plants of the then-existing double-flowered varieties. And until 1870 I continued to buy all the new double varie-

ties that were brought out, and all the single-flowered sorts which were of different shades from those in my collection. Without any preconceived theory I fertilized all the single-flowered with the pollen of the double ones which had stamens.

"For three years I did not obtain a seedling worth mentioning, and I was on the eve of giving up artificial fecundation, when 1869 I obtained Victoire de Lyons and Clemence Royer, which, although not perfect in form, were very different in color from any double zonal Pelargoniums then produced. This led me to continue my efforts. I have not learned by my practice anything that can be called a theory, because among my seedlings coming from the same mother and the same father I have found them all differing from one another. My double white is the produce of a single white (one of my seedlings, second or third generation) by a double red; but four other seedlings from the same fecundation are either white, pink, or red, and all single flowers.

"And in this there is nothing astonishing. Why should the laws of nature vary and act differently in the vegetable world from what they do in the animal world? Nature and science have not yet taught us why the offspring of the same father and the same mother are always different from one another, notwithstanding their family likeness. And it is very likely that man will always be ignorant of this. The only thing I know and every horticulturist knows, is, that to obtain double flowers, single flowers must be fertilized by double."

The Apple Crop.—The largest Apple crop ever known in this State is that of the year just past. There are probably four times as many Apples as can be consumed to any advantage.

SANDAL-WOOD.

The Sandal-wood of commerce is the product of various trees belonging to the genus *Santalum*, and the species called *Santalum album* for a long time furnished the principal supply. Being a hard, close-grained, and ornamental wood, it is used for some descriptions of cabinet-work; and various carved ornamental and useful articles, such as writing-desks, work-boxes, card-cases, etc., are made of it. But its chief characteristic consists in the remarkable smell of the wood, which it owes to the presence of a peculiar volatile oil, extensively used by the natives of India as a perfume. This also has caused it to be largely used as incense to burn in the temples of China.

In course of time, Sandal-wood was discovered to be abundant in some of the South Sea Islands, where it is the product of several species of Santalums different from the long-known India one. There are about ten species of the genus, which are chiefly restricted to the East Indies, Australia, and Oceanica.

The Indian species are *Santalum album* and *S. myrtifolium*. The former is a small tree from twenty to twenty-five feet high, which is found on the border of Wynaad, in the Peninsula, and in Mysore. The exports of the wood from Madras are large—to Bombay, Bengal, and the Persian Gulf. The tree grows in the islands of Sandal, Timor, Rotti, Savii, Sumba, Bali, and in the eastern part of Java, in the arid soil of the lower regions. The wood, which, in its color and texture resembles Boxwood, is much sought for as an article of commerce by the Chinese, who use the sawdust for making rings and pastiles for burning, as during combustion it exhales an agreeable odor. In Europe

Sandal-wood is chiefly used for carving and turning. In the India Museum, Whitehall, various specimens of the ornamental application of Sandal-wood in the East may be seen in boxes inlaid with ivory, a handsome carved Sandal-wood table from Bombay, and other objects. The Australian species of Sandal-wood are believed to be derived from *Santalum lanceolatum*, *oblongatum*, *obtusifolium*, *ovatum*, and *venosum*. The tree is found in Queensland and Western Australia. At the London International Exhibition of 1862, a fine log of Sandal-wood, weighing 4½ cwt., from Black-wood River, Western Australia, was shown; and another three feet and six inches long by eleven inches diameter, from York. The Australian Sandal-wood is of an inferior quality as regards odor. In 1849 as much as 1,204 tons of Sandal-wood, valued at £10,711, were shipped from Western Australia. The merchants bought it for shipment at £6 to £6 10s. a ton. The Sandal-trees of any size within the radius of 150 miles of Perth have now been cut down, and little can be obtained.

It is probable that there are several distinct species of the tree in the South Sea Islands which have yet to be botanically determined. The tree is not found on all the islands of the Pacific. Its headquarters would appear to be among those of the south-western portion, including New Caledonia, the Loyalty Islands, New Hebrides, Espirito Santo, and some others. In the Fiji Islands, which have produced several thousand tons within the last thirty years, the tree has also become scarce. It is only the central portion of the tree which produces the scented yellow wood constituting the Sandal-wood of commerce. The trunk and larger branches are cut into lengths of from three to six feet, and the whole of the bark and outer white wood are chipped off with the axe—an operation technically called "cleaning." Thus a log one foot in diameter is reduced to a billet only from four to six inches thick. The quality of the wood depends on the quantity of the oil contained in it, as indicated by the smell when freshly cut or burned. The old trees produce the best, and in them that part of the wood near the root is the most prized. A handful of the shavings of the wood will prevent moths from attacking clothes of any description; and the same means may be used to keep away insects from specimens of natural history. Owing to a similar strong aromatic odor, furniture made of the fragrant timber of the bastard Sandal-wood of Australia, (*Erimophila Mitchelii*, *Bentham*) may be freed from the attacks of insects. The wood is hard, of a brown color, nicely waved, and beautifully grained. It will turn out handsome veneers for the cabinet-maker.

S. Austro-Caledonicum, of New Caledonia, furnishes a kind of Sandal-wood superior to that of other countries, owing to the strength and firmness of its odor. It is to be regretted, however, that this tree is being ruthlessly destroyed in the island, as the wood is of such great use in perfumery. Scarcely anything but the stumps and roots left from former trees can now be utilized. An essential oil, distilled in England and France from Sandal-wood, is sold at £3 per pound. The powdered wood for filling sachets and other uses is sold at 1s. per pound. The Pacific species of Sandal-wood are *S. ellipticum* and *S. Freycinetianum* (Gaudichaud), which are met with in the Sandwich Islands. The latter species is found in the high mountainous ranges of Tahiti; but the wood is of inferior quality, as it is not odoriferous, or only becomes so by age.

The wood of *Myoporum tenuifolium* (Foster) is sometimes used as a substitute for Sandal-wood. The fragrance of the fresh wood is very pleasant, but it loses its odor after being kept some time.—*The American Garden.*

THE EVERLASTING PEA.

While most people are well acquainted with the Sweet Pea, a charmingly fragrant and variously colored garden annual, but few seem to know its perennial brother, the so-called Everlasting Pea. Neither the Sweet nor the Everlasting Pea belong to the same genus with our common garden Pea, (*Pisum*), but they are, more properly speaking, Vetchlings, (*Lathyrus,*) though the difference between the two depends upon points which would only be noticed by a botanist.

The best-known of all the perennial Peas is *Lathyrus latifolius*, a native of Europe; the stems are six feet or more long, and broadly winged, the leaves consist of a pair of oval or lanceolate strongly veined leaflets, terminated by a branching tendril; the flowers are on stalks longer than the leaves, several in a cluster, large and showy, of a lively purplish-rose color. The plant flowers very freely, being in bloom nearly all summer. If planted where it has room to spread, a single specimen, growing flat upon the ground, is a handsome object; or it may be allowed to run upon a low trellis, or even over brush, and it may be introduced with a good effect in a wild part of the grounds where its stems may hang over rocks, or trail upon banks. There is a white-flowered variety, which is much more rare than the ordinary kind, probably for the reason that it does not produce seed freely. This Pea is an excellent plant for cut-flowers for summer bouquets, and for that reason is well worth growing for that purpose alone. A related species, *L. grandiflorus*, has larger flowers, but only two or three in a cluster. The seeds of the Everlasting Pea may be sown in spring, or if they can be obtained early in the fall, and then sown, they will before winter make plants large enough to flower the next year. Well-established plants may be multiplied by dividing the roots.—*American Agriculturist.*

AMPELOPSIS TUBEROSA AND NAPIFORMIS.

A. Tuberosa, though not quite hardy, is a plant well deserving of attention; it has slender branches and smooth, glossy, much-divided leaves. Its roots, which are tuberous, are generally united together at the shoulders into an irregular mass, deep red or brownish in color; in texture they are cellular, and contain a good deal of mucilage something like that found in the roots of the Chinese Yam. *A. napiformis* is a hardier plant than *A. tuberosa*, but closely resembles it in appearance, and, like it is deciduous. Its roots, which are turnip-shaped, are arranged in clusters, fleshy and brittle, and covered with a wrinkled, brownish skin. They are also abundantly stored with mucilage, similar to that of *A. tuberosa*. Both of these species of *Ampelopsis*, which are natives of China, may be increased by means of cuttings put in in spring, and struck under a bell-glass. A peaty soil suits them best when young; but when established they may be planted out-of-doors in summer, when they will succeed in good garden mold. Both kinds possess considerable interest as out-door climbers in warm situations.—*Revue Horticole.*

POETRY OF FLOWERS.

BY AN AMATEUR.

Where would the poet find his images of beauty, if flowers were to perish? They are the emblems of loveliness and innocence, the living types of all that is pleasing and graceful. We compare young lips to the Rose, and the white brow to the Lily; the winning eye is as blue as the Violet, and the sweet voice is a breeze kissing its way through the flowers.

There is no land where flowers are more plentiful or flourishing than in California, or where they are more appreciated. We hang, profusely and charmingly, delicate blossoms on the ringlets of the young bride; make a floral arch under which is performed the marriage ceremony, and strew her path with flowers as she leaves the church. We place them around the marble face and loved form of the dead in the narrow casket, and they become emblems of our warmest and dearest love and affections—of pleasures remembered and hopes faded—wishes vanished, and scenes cherished in our fondest memory all the more because they can never return. We look to the far-off spring in other valleys—to the eternal summer beyond the grave, where flowers that never fade bloom in those starry fields which no chilly winter ever blew over. They come upon us in spring, and even before in our warm clime, like the remembrance of a pleasant dream—a vision that hovers above us in sleep, peopled with shadowy beauties and simple delights, embroidered with the richest hues of fancy. Sweet flowers!—that bring back again the scenes of childhood—faces remembered in youth—the love that knew not it was love! Even in our rooms they conjure up images of the mossy or shingly bank by the river's side, where we have many a time gazed on the early pink Anemones, and where we have so often angled for the rushing trout. They recall the sheltered glen or cañons darkly green, filled with the perfume of the white Azaleas.

The flush of early flowers, and the intervals of bright but fitful sunshine in the young spring, tempt the bees to come out, and you often see one go blundering about as if he were not thoroughly awakened to the opening warmth. You wonder where he has been hiding himself during the cool weather of our mild winters, for a single glance tells you that he is a wild bee, and has a home somewhere in the thickets or chemisal or some wooded cañon. Beside the water-courses may be found the Escholtszias or California Poppies, as large as Tulips and more brilliant; and a pretty sight it is to see them mirrored in a clear stream, with the deep blue sky reflected far down below, seeming to lie like large lumps of our California gold on the water. Nor is it the early flowers alone that gives a cheerful look to the opening spring; there is a green flush upon the pastures and sides of the hills and mountains which becomes deeper every day since the early showers of our rainy season. There is something very pleasing in looking upon the earliest tiny flowers that are the first to bloom so thickly in the green-sward and by the road-sides. Tens of thousands of them appear after our winter rains, mostly starlike and tender and delicate in all their various forms and hues. These early flowers of spring, also, bring with them sweet and sorrowful recollections, and they are fraught with the memories of childhood and youth; they bring promise of brighter days, and we know that for thousands of years they existed here in

the era when the wild Indians possessed this coast: but on them Time leaves not his gray foot-mark, as he does on us and so many other things. The revival of our spring in California affords the best opportunity of witnessing the rich effects produced by mosses, lichens, and fungi upon our Oaks, Buckeyes, Pines, etc. Here we meet with the gaudy and mingled colors of the rich green, the bright yellow, the glowing orange, the pale primrose hue, the silver gray, with browns of every tone, that go deepening down from the dusky amber to the dark hue of the more humble Buckeye, until they sink into the jetty darkness which mantles the stem of the lordly and gigantic Oak.

"Curled Leaf" in Peaches. — Sometime last spring I read a paragraph in some paper to the effect that the curled leaf in the Peach orchards might be prevented by scoring the trunk and limbs of the tree. I immediately tried the experiment on a fine large tree in my grounds, that had been a very prolific bearer for the past five years, but unfortunately lost nearly all of its fruit every year, in consequence of that scourge. I tried everything I could think of—plucking off the leaves, cutting off the affected branches, cleaning, and putting lime, and ashes, etc., about the roots, but all to no effect—it would ripen but little fruit. With my knife I scored the trunk and limbs all around, as high as I could reach (the fruit at that time being as large as marbles), since which not a single curled leaf has made its appearance, and the tree has just yielded a most prolific crop of unusually large and juicy fruit. I give my experiment for what it is worth, and leave to more experienced men the proof. — *Correspondence of the S. F. Call.*

THE WINDOW GARDENER.

Edward S. Rand, Jr., has written a very timely little volume, entitled *The Window Gardener*. It is not an ambitious book, and does not aspire to the dignity of an authority on Horticulture. It seeks to give, and we think does give—all the information necessary for the culture of plants in the parlor. We give the following extracts:

VENTILATION.

This must not be neglected; it is as essential to the health of the plants as to the human organization. The best method of providing it is to open the top of the window when the sun's rays are hottest on the plants. The quantity of air to be given must be proportioned to the outside temperature. In cold, cloudy days, but little, and often none, should be given. Care must be taken never to allow a direct stream of cold air to blow upon any plant.

WASHING.

This must be done frequently. A plant breathes like an animal, and not through one mouth, but thousands. As is well known, the plant draws up its food from the soil through the roots, in a liquid form. This food, very much diluted, must be concentrated, and thus assimilated to the plant. We have in the leaves of the plant a most beautiful arrangement to answer this need. They are filled with "stomata," or breathing pores, which allow exhalation when moisture is freely supplied, and check it when the supply falls off. These little mouths are found on both sides of the leaf in most plants, but usually on the lower side in by far the greater number. They vary in different plants from several hundred to more than one hundred and fifty thousand to a square inch of leaf. Now we are careful in our

persons to bathe daily, lest, as we say, the pores of the skin become obstructed; yet we are willing to allow our plants to go unwashed for a whole winter, when the pores are much smaller, more numerous and delicate, than those of the body. The rule is obvious: wash the leaves of the plant, both under and upper sides, at least once a week; if oftener, the better. Use water moderately warm, and if the plants become very dirty, a little weak soap-suds is beneficial. This washing should be carefully done, with a soft sponge or cloth in the case of plants with thick, polished leaves, such as Camellias, Oranges, and Daphnes. Where plants have hairy leaves, or the substance is soft, water is best applied with a small syringe, fitted with a very fine "rose." To use this, place the plant on its side in the kitchen sink, syringe it well, turning it from side to side. Let it stand for a few minutes for the water to drain off, and return it to its place: it will thank you for its bath by its bright foliage. Never wet the flowers of a plant, water always injures them; nor allow drops of water to stand on any leaves in the sunshine, the rays of the sun form a focus in the drop of water and scorch the leaf. Once a month, at least, wash the stem and branches of all the hardwood plants with a soft sponge dipped in lukewarm water; this prevents the lodgment of insects, and contributes to the health of the plants.

WATERING

is one of the most difficult subjects to prescribe by rule, yet there are some rules of general application.

Let it be always done with a watering-pot with a fine rose, such as may be procured at any tinman's. The advantage of this is, it allows the water to fall drop by drop over the whole surface of the soil, whereas, if a pitcher is used, the plants are deluged, or holes made in the earth by the stream of water, and the roots not unfrequently disturbed.

Let it be done regularly: the morning is the best time, and once a day.

The surface of the soil should never be allowed to become perfectly dry, nor should it be sodden with moisture. The temperature of the water used is of vital importance. It should neither be cold nor warm, but just the temperature of the atmosphere of the room. Thus no check, or chill, or undue excitement is given to the roots, both roots and branches being equally warm.

A good plan is, to set over night a large pan of water among your flowers; then you will be sure of a sufficiency of water of the proper temperature for the morning watering. If this is too much trouble, remember in watering, it is better to have the water too warm than too cold; that is, of a higher rather than a lower temperature than the roots and branches. Now as to the quantity of water. No rule of universal application can be prescribed. What is life to one class of plants is death to another. The amount of water necessary to make a Calla Lily thrive would kill a Cactus or a Heath, and yet the drought necessary for the Cactus would be death to the Heath.

A good rule, however, is never to allow the soil to become dusty or muddy; and with drainage in potting the latter is easily prevented; by regular waterings, the former. Particulars of treatment for different plants will be given when treating of each plant.

Never allow water to stand in the saucers of the pots unless the plants are semi-aquatic.

The Baron de Wimpfern, in 1789, carried out the first seeds of Narcissus, Hyacinth, and Violet ever known in St. Domingo.

CALIFORNIA FRUIT IN NEW YORK.

The New York *Tribune* of November 14th gives an account of California fruit in New York, and a description of its carriage across the continent, from which we extract the following:

"The rapidity with which fruit can now be transported across the continent from California to this city, and the splendid condition in which it arrives in this market, has created for it a trade that is not only worthy of note, but is to some extent surprising. The fruit, which at the present time consists of Bartlett Pears, German Prunes, and Plums, is first very carefully picked, and then turned over to the packers. It is next sorted with great care, and those which may be over-ripe, or in the slightest degree damaged, are picked out and laid aside for home use. During this process the fruit has to be very carefully handled, as the least abrasion would render it unfit for packing; the slightest unsoundness of one Plum or Pear imperiling the whole box. The fruit is then wrapped carefully in paper, each Pear or Plum by itself, and next packed in a box so tightly that it is impossible for the Plums or Pears to shake or knock against each other while *en route* to the East. Although so closely packed, the paper wrappers prevent any undue pressure or contact between the fruit. The boxes are made sufficiently open to admit the air, and yet the openings are not wide enough for any ordinary damage through handling the fruit. These boxes are 18 inches long by 12 broad, and when intended for Pears are 12 inches deep, rendering them capable of holding about 200. When intended for Plums the depth is very little more than six inches, the box holding about the same number of that class of fruit.

"The boxes having been thus packed, are shipped East by means of the Diamond Refrigerator Line, along the Pacific Railroad, and stowed away in cars constructed for the purpose. These cars have double walls of wood, the intervening space being filled with cork, the floor covered with zinc, and a roof in which is an ice-chest capable of holding several tons of ice. When the car is loaded, thick double doors close the cooling-chest, an ordinary railroad car-door then shutting the whole from the outside world. When thus closed the only air that can reach the contents of the car is through the air-passages; a small but constant current passing under the eaves of the car into the ice-chest, where it is cooled to the temperature of melting ice, from 35 to 36 degrees Fahrenheit. This cold air then sinks by its own weight, through air-passages along the sides and ends of the car, into the receptacle or store-house for the fruit, at the same time driving out, through ventilators in the roof, any air that might have been heated inside the car. The warm air thus driven out is made to pass again over the ice, and after being cooled falls as before into the receptacle. By these means a constant current of air of even temperature is kept up—not cold enough to freeze the fruit, but sufficiently cold to prevent any change taking place in its condition. Whole car-loads of perishable fruit are thus consigned in California to persons in this city, and arrive in the market in an excellent condition. The cost of transit is very great, a certain car-load, consisting of 340 boxes of Pears and 299 boxes of Plums and Prunes, having cost, for freight and charges alone, $1,200. But, as the fruit realized at wholesale, upon the average, about $5 per box, the shipment of a car of fruit at this time of the year

proves to be somewhat of a profitable investment, the gross receipts being over $3,000 per car."

TREE-PLANTING IN NEW ZEALAND.

The New Zealand Government is taking up the subject of state forests in a comprehensive manner. Mr. Vogel, who considers it "the largest question demanding consideration at the present time" in New Zealand, has just introduced to the General Assembly a bill to provide for the establishment of State forests, with the objects of making provision "for preserving the soil and climate by tree-planting, for providing timber for future industrial purposes, for subjecting some portion of the native forests to skilled management and control, and for these purposes to constitute State forests." The revenue hereafter to be derived from these forests is to be devoted to the purpose of paying off the public debt. It is proposed to spend, annually for the next ten years, a sum of £10,000 for carrying out the scheme of forest development, and to select three per cent. of the area of the whole territory for forest operations. This money is to be expended on the management of state forests, the acquisition of land by renting or purchase, the instruction in forestry of persons employed in the management of the forests, the establishment of schools and colleges for teaching forestry, and so forth. A department for the management of the forests is to be created, consisting of a commissioner, who is to be a responsible minister of the crown, a conservator and two assistant conservators. With regard to the amount of revenue likely to be derived from planting, Mr. Vogel's expectations are decidedly of a sanguine nature. They are based on calculations made by T. Calcutt, of Otago, who is stated to be a competent authority. Mr. Calcutt shows the cost of planting and subsequent management of 100 acres of suitable land in trees. Starting on the basis that the land is obtained free of cost, he estimates the expense during the first year for plowing, subsoiling, trenching, seed-planting, weeding, and the like, fencing and contingencies, at £500. For a period of five years £100 a year is allowed for labor. The trees are to stand five feet apart, so that 100 acres would contain 174,500 trees; and in the sixth year an income would begin to be derived by thinning out to 10 feet apart, "thus taking away 130,700 trees, which, at an average of 3d. each, would yield £1,533 15s., for an outlay of £1,038 15s., leaving a balance of £495." At the end of ten years the remaining trees are valued at 2s. 6d. each, equal to £5,412 10s., and at the age of twenty years £1 each, or £43,500. He concludes by affirming that "£10,000 expended properly in planting trees would, within thirty years, result in their having a market value of half a million sterling." The kind of tree proposed to be planted as the easiest to rear, and the quickest growing, is the Australian Gum.—*Melbourne Leader.*

STRENGTH AND DECAY OF TIMBER.

Some questions have been raised of late about the durability of the Fir timber of this coast. Fir piles driven into the mud last a long time if the teredo lets them alone. Thus, on Long Bridge it is found that the piles of Fir will endure as long as three sets of beams or cross timbers. Very extensive repairs are now being made on this bridge. Many of the old beams have been removed

and new ones put in. Of course these beams were not worn out, and the exterior appearance indicated sound timber. But on boring into the centre it was found that decay had set in, and in some instances it was far advanced. So, the bottom of a ship framed of Fir will outlast two or three sets of top-timbers of the same material. The best that can be said of Fir on the point of durability is, that it is a middle-class timber, neither the best nor the poorest. But its great strength and cheapness make it the most available timber on this coast.

There were on exhibition at the Mechanic's Fair, several samples of timber from the Eucalyptus-tree. The breaking strain shows it to be all that could be desired in this particular. The timber from the Red Gum resembles Mexican Cedar, but is more dense. It is a very handsome timber, and will yet have a prominent place in the list of woods for ornamental use.—*Bulletin.*

THE FALL OF THE LEAF.

The phenomenon of the "fall of the leaf," common as it is, is very difficult to explain satisfactorily. The following are the facts, so far as we understand them, which are exceedingly interesting and instructive. It seems that nature begins the provision for separation almost as soon as the leaf is born in spring. When first put forth into the atmosphere the stalk of the leaf, supposing one to be present, is continuous with the stem. As the leaf and its stem grow, however, an interruption between their tissues (fibrous and cellular) occurs at the base of the leaf-stalk, by means of which a more or less complete articulation or joint is gradually and ultimately formed. This articulation is produced by the continuation of the growth of the stem after the leaf has attained its full growth, which it generally does in a few weeks. The growth of the leaf being completed, the base of its petiole, or foot-stalk, is no longer able to adapt itself to the increasing diameter of the stem, and a fracture between that base and the stem necessarily ensues; the excision advances from without inward, until it finally reaches the bundles of woody fibre which form the main support of the leaf. While, however nature is forming a wound, she is at the same time making provision to heal it, for the cuticle or epidermis of the stem is seen to grow over the surface of the scar, so that when the leaf is detached the tree does not suffer from the effects of an open wound. The provision for separation being thus completed, the leaf is parted from the stem by the growth of the twig at the bud base, the force of the wind, or even by its own weight. Therefore, as soon as the glorious colors of the autumn leaves begin to fade, this provision for separation is completed, and the winds sing their death-dirge as they carry them away from their summer's home on the branches of the trees, and scatter them in countless numbers upon the ground. The fall of the leaf is, therefore, the regular vital process, which commences with the first formation of the leaf, and is only completed when it is no longer useful to the tree. There is no denying, however, that the frosts of autumn, by suddenly contracting the tissues at the base of the leaf-stalk, accelerate the fall of the leaves. All must have noticed, on a frosty morning in autumn, that the slightest breath of air moving among the decayed and dying leaves will bring them in complete showers from the trees to the ground. The leaves of the Beech, Hornbeam, and

Oak die in autumn, but frequently remain attached to these trees throughout the winter months, provided that the trees are not so situated as to be exposed to violent winds. Such leaves, when examined, will be found to be continuous with the stem, and therefore without that articulation or joint which so naturally assists in the separation of the leaf from the tree. Those dead leaves fall off when the new leaves are put forth in spring; they are, in fact, pushed off by the expansion of the stem when the growth of the season commences. The leaves of evergreen trees and shrubs, and of coniferous trees, as the Pine and Fir, do not fall in autumn, but in spring, when the growth of the season is proceeding; and, as this annual leaf-fall is only partial, consisting of one-half or one-third at a time, there is always a sufficient number of leaves left on such trees to keep them clothed with perpetual verdure. Hence it is that their foliage consists of leaves which have been attached to the stem from one to three or five successive years.—*The London Garden.*

Removing Trees by Steam.—A method of removing trees by dragging them out by the roots by a steam-engine, has been successfully introduced on the Duke of Sutherland's estate in Scotland. The engine (a twelve-horse power, being one generally used for plowing), was placed in a field 150 yards distant from the trees; a chain was passed round each at some distance from the ground, and the engine being then set on, the tree was tumbled over and dragged out with a large ball of earth adhering to the roots. In this way, 300 trees, from six to twelve inches diameter, were removed in a few hours; but trees of three feet diameter have been dragged out by the same means.

PRUNING DOUBLE-FLOWERING PEACH AND ALMOND TREES.

Several years ago I saw the statement in a well known horticultural journal, that it was not advisable to cultivate the double-flowering Peach and Almond, because when old they had an unsightly appearance — although the writer admitted that when young they were very beautiful. I propose to show that with proper pruning they retain their beauty as they become old.

As the Peach and the Almond produce their flowers on wood of the previous year's growth, and as the shoots year by year grow longer, the lower parts of the branches necessarily become bare of flowering wood, while only the upper parts of the shoots produce leaves and flowers. In this way the tree becomes unsymmetrical and unsightly. In pruning the ordinary Peach-tree the shoots of the previous year are cut back to one-half or two-thirds their length, and if this practice were applied to the double-flowering Peach and Almond, it is evident that one-half of the blossoms would be sacrificed every season.

Several double-flowering Peach and Almond trees which were growing in my garden had begun to show the bad effects of non-pruning. As this could not be remedied by an annual shortening in at the regular pruning season, I saw with regret the beauty of the trees gradually disappear. As no means of preventing it occurred to my mind, I applied to a number of experienced horticultural friends, but was unable to obtain the needful advice. Just at that time I received from a nursery some trees which by mistake had been delayed seven weeks and reached me as late as the 15th of May. On opening the package I found that the Peach and

Almond trees had commenced growing, the shoots being as white and leafless as young Asparagus, so that I had little hope of doing much with them. But, after all the young white shoots had been cut off, and the stems had been pruned back until they resembled walking-canes not much over three feet high, I planted them. Shortly after this planting I was agreeably surprised to find that a number of dormant eyes began to break, and make a vigorous growth during the ensuing summer, blooming beautifully the following spring. I was also enabled, by thinning out all unnecessary shoots, to bring the heads of trees to good form.

Profiting by this experience, I cut back each of the shoots to two or three eyes immediately after they had bloomed. These eyes then pushed out shoots which made a fine growth during the summer and formed flower-buds in abundance. The next spring I pursued the same course with the like gratifying result, the heads of the trees becoming nearly doubled in size. And now every spring they are covered with an abundance of their beautiful blossoms; not one has a bare shoot, and they excite the admiration of all who see them. I cultivate all the varieties of the double-flowering Peach, and I think nothing more elegant and imposing than they when in full bloom after being thus treated. The red and the white Dwarf Almond, when being grafted or budded either on Peach or Plum stocks, should be pruned in the same way. They then make charming little trees. — *Correspondence of The American Garden.*

The Gazzerat Wheat, Barley, Ashmond Rice, Pulse, etc., as also a species of Mangosteen — plants taken to Jamaica by the Earl of Effery in 1790—succeeded beyond expectation.

THE CULTIVATION OF FLAX.

It has been suggested that California is wonderfully adapted to the cultivation of Flax, and its manufacture into pieces of linen for all the coarser purposes, such as towels, crash, and similar uses, and eventually, if not at once, for the finer and more delicate and costly fabrics. In our Eastern States the weather is too uncertain, the rain too certain at times, and on the seaboard the fogs during a portion of the summer altogether too common, for the preparation of the Flax after it has been pulled. If rain and cloudy weather in the warm days of summer and autumn, and particularly if the fogs which invades the sea-shore counties and vicinity of rivers and lakes, comes upon the Flax spread out for the outer covering to rot, it is more than likely to mildew and be ruined, particularly for any nice manufacture. But away from the region of our fogs, no such objection lies against Flax culture on this coast. During our long summer months we have no rain at all.

We have an unbroken summer of dry weather. In extensive portions of the State we have not a particle of dew, even. And where fogs prevail generally, except on the immediate coast, they float away early in the day and leave a clear and beautiful sky and sun. That our soil is well adapted to the cultivation of Flax we have no doubt, although we can not speak from experience and observation. If the supposition is correct, why should not California not only produce Flax and the coarser articles of linen manufactured from it, but also fine linen? When such shall be the case, we may expect real linen when we purchase what is called such. Now, that which is sold for linen almost invariably is composed in part of cotton,

LOBELIA PUMILA GRANDIFLORA FLORA PLENA.

One of the greatest acquisitions of the season. It is a beautiful light blue color, resembling the shade of the Neopolitan Violet. The flowers are large, full and very double. It is a free bloomer, as well as a fine grower.

The above plate is a very good representation of it, but it should be seen to be appreciated.

Price, - - $1.00 each.

Grown and for Sale by

MILLER & SIEVERS,

Florists,

27 Post Street, San Francisco, Cal.

LOAG, *Printer, Phila.*

and often in very considerable proportion. Some of our intelligent cultivators of the soil must know by experience and observation whether we are right in this supposition, and we should be pleased to hear from them on the subject.—*Alta.*

FANCY WORK WITH AUTUMN LEAVES.

The bright tints of autumn leaves are very lovely for ornamenting our parlors, boudoirs, and dining-tables. Brackets and picture-frames can also be adorned with them, and they add greatly to the beauty of one's surroundings. Collect a large quantity, combining every hue, from crimson to scarlet, from scarlet to yellow, and from yellow to green. The red Beech and the beautiful variegated Sumach are very desirable, as also are the Oak, and Ferns, but the Maple exceeds them all in the great variety of its tints, and the various sizes of its leaves. Smooth every leaf on the wrong side, with a moderately warm iron, holding it upon the leaf only a minute. Then take a camel's-hair pencil, and a little Olive oil, and carefully brush over every part of the leaf. Place them on a flat surface to dry, and let them remain until the next day. For wiring these leaves into garlands, &c., or for preparing them for bouquets, take the fine green-covered reel wire, such as is always used in manufacturing wax flowers, and attach it around the stem, first laying it so that it will extend the entire length of the leaf to support it. Afterward wind around each stem to conceal the wire, either narrow strips of green tissue paper, or brown Berlin worsted, and join the leaves together in sprays; of course the individual leaves on each spray must be of the same species. Prepare a large number of these sprays mounted on wires, and then arrange them in vases, about picture-frames, over mirrors, and as ornaments to lace curtains, and your apartments will present a festive appearance, although the dreary winter weather has browned the face of nature. Oak-leaves, Acorns, and brightly colored Beans, gummed upon a cardboard frame, will make handsome corner brackets or wall-pockets and vases to hold your beautiful leaves. The Acorns and Beans ought first to be cut in half, when used for this purpose.

AMERICAN GRAPE CULTURE.

The admirable report of Prof. Planchon, for the French Government, has been translated for "*Our Home Journal*" of New Orleans. We give the following from this source, in relation to the experiments in this country with the European Grape, in connection with the Phylloxera:

"In 1633, William Penn essayed in vain to cultivate the Grape of Europe in Pennsylvania. In 1790, a colony of Swiss, faithful to their generous vines of Leman, attempted to grow them in the county of Jessamine, Kentucky. A fund of $10,000 was uselessly spent in this enterprise. In 1801, they transported their penates to Vevay, Indiana, in the thirty-ninth degree of latitude. They cultivated there with better success a seedling, said to be indigenous, which they called the *Schuylkill Muscatal* or *Cape* Grape; but this variety, now almost abandoned, must have proved to be unproductive, because the vineyards of this colony gradually declined, and in 1819 the botanist Nuttall saw fields of grain waving over the earth once occupied by them. To-day, Vevay retains nothing Swiss but its name, and of its vines only a few scattered individ-

uals. The same check occurred to the vineyard of an obscure laborer from Lorraine, named Pierre Legand, who, toward the end of the last century, made repeated and obstinately persevering efforts to cultivate, near Philadelphia, roots from France, Spain and Portugal. Two analogous unsuccessful attempts are well known, those of our compatriots of the Field of Asylum, and that of Lakanal. Chased out of Texas, where they had first established themselves, the first old soldiers of the Empire founded upon the banks of the Tombigbee River, in Marengo, Alabama, a small agricultural colony. They were naturally desirous to cultivate the vines of Europe, but all their cares ended in deceptions. Lakanal, their companion in exile, whose name remains attached with honor to the Institute and the Museum of Natural History, made equally vain efforts in behalf of the European vines, in Kentucky, Tennessee, Ohio, and Alabama. It would be fatiguing to multiply the examples. The number is large, over all the extent of the Union, and I could easily gather them up out of the American books on viniculture. But I will speak only of one quite recent, which I have seen, from notes I made in September, 1873. Kelley's Island, in Lake Erie, is a charming place, whose vineyards make it wealthy. This culture dates only from 1848. One of the first colonists, a German by birth, the late Thomas Rush, planted there, in 1860, eight hundred roots of German vines, comprising seventeen varieties, all coming from Neustadt, on the Hardt, in Bavaria. These vines pushed admirably during three years, since which they declined rapidly, and were replaced by indigenous roots. The only European roots I saw living there, very miserable indeed, and with roots garnished with Phylloxera, were two or three *Traminer*, a variety well known in Germany, which, perhaps, resists somewhat the Phylloxera. All these facts have convinced the Americans that European vines will not flourish in their country. This can not be the effect of climate, because America has every sort of climate, from Florida and Louisiana, where the Banana ripens, to Canada, where rivers freeze over every year; and vines have been brought from everywhere in Europe. The same soils are found on both sides of the Atlantic. It is only in California that the European vines, planted by the Spaniards, flourish! The reason of this destruction is very small in appearance, but fearful in its devastations. It is only the *Phylloxera!* This cause, first recognized by Riley, and confirmed by my recent severe examinations and careful study, is certain. California is filled with European vines! *It has not yet the Phylloxera!* East of the Rocky Mountains it reigns supreme! Some of the American vines resist it. Let us study their characteristics."

California Nutmeg.—From R. M. Cochran we had the pleasure of receiving a branch of the California Nutmeg-tree. It represents, as near as we can judge, the pinnate leaves with the nuts growing at the extremities of the stems. It is an evergreen, and grows from fifteen to thirty feet high. The nut, about the size of a common Plum, is concealed in an outer covering, which on being taken off discloses the hard nut. The meat is of a reddish color with white heart, and has the flavor of the Nutmeg. Mr. Cochran got this branch from a tree on the Humboldt road, and he thinks it would make a handsome ornamental tree for a city garden.—*Chico Enterprise.*

THE SNOW-PLANT OF THE SIERRA.

(*Sarcodes Sanguinea*, Torrey). — One of the grandest objects which meets the eye of the traveler in our mountains is the exquisite plant whose name we have quoted at the head of our article. It is an inhabitant only of the higher Sierra, being rarely found below an altitude of 4,000 feet, and its glorious crimson spike of flowers may be seen early in May forcing itself through the snows which at that period cling about the sides of our Pine forests. The portion of the plant which is visible above the soil is a bright rosy crimson in color, and presents the very strongest contrast to the dark green of the Pines and the "shimmer of the snow." Its root is succulent, thick, and abundantly full of moisture, attaching itself to the roots of other plants, principally to the species of the Pine family. Hence it is among those curious members of the vegetable world which are known to botanists as parasites, and is consequently entirely incapable of cultivation. The deer are extremely fond of it, and it is not an uncommon circumstance to find a number of the plants uprooted and robbed of the fleshy part of their underground growth by these animals. It belongs to the natural order *Orobanchacea*, and is met with through the whole of the Sierra region, becoming rarer as we approach the south. It must have been a rare treat to an enthusiastic botanist like John Torrey to have figured and described this exquisite flower, and must have furnished him with a joy such as none but those of similar pursuits can know.

A magnificent specimen of the plant, one of the largest ever seen in California, was brought not long since from the Mammoth Grove, Calaveras County, by Harry Edwards, and may now be seen at the Bohemian Club-rooms. This specimen measures twenty-eight inches in length, inclusive of the root, the spike of flowers being over thirteen inches, and containing ninety-eight separate blossoms. It has been photographed by Bradley & Rulofson, and is well worthy of the examination of all who are interested in the botany of this State.—*Bulletin.*

IRRIGATION AND ALKALI. — Col. Dudley, of the Third Cavalry, U. S. A., has written to the Nebraska State Horticultural Society an account of his experiments in agriculture in Lodge-pole Creek Valley, 400 miles west of the Missouri River. An epitome of the letter states that the soil of this valley is very rich, and the application of horse-manure to "fertilize" it proved a positive injury. The excess of alkali is no detriment so long as the land is properly irrigated. Colonel Dudley worked several acres, with the greatest success. In the first place the land has to be thoroughly plowed and harrowed. It is then laid out in long, narrow beds, with small ditches between for conducting the water. The water is not permitted to overrun the tops of the beds, but is allowed to run into and fill the ditches a few times during the season, remaining long enough to ooze through the soil, so as to moisten the roots of the vegetables. Some kinds of vegetables were found to require less water than others, and, to regulate this, all that was needed was a small piece of board at the end of a ditch or furrow to keep the water from coming in contact with certain beds. The garrison at Sidney Barracks, in the valley, consists of about 150 men, and they have more Corn, Onions, Beets, Squashes, Peas, and Beans than they want, and bushels of Cucumbers are going to waste.

RAISIN CULTURE IN CALIFORNIA.

Horticulture will take a new departure this season in regard to the cultivation of raisin Grapes. It having been demonstrated by years of actual experience that this is a good Grape country, and that the culture of raisin Grapes is a sure and profitable business, many will immediately embark in the business, to be followed by thousands of others. It being a business requiring little or no capital, and one in which immediate returns may be had, it must become one of the most general industries. It is one peculiarly adapted to land in the foot-hills of this State, where the Grape grows very luxuriantly, and where hundreds of tons of the best raisins could be produced annually. The vineyard once bearing, the entire labor of picking, drying, and boxing could be performed by the husband and wife, assisted by their family. The only outlay would be the cost of box-lumber, which is now quite cheap. The increasing demand for our raisins renders a sale positive, and at remunerative cash prices.

There is a wide market for raisins suitable for cooking, and it is a field of industry which the people of California, who are compelled to earn a livelihood, should not be slow in entering. A few acres of vines of the best raisin variety will produce a thousand or two thouand dollars worth of raisins annually, and the expenses would prove trifling, where the labor was performed by the hands of the family. Raisin-making is far preferable to wine manufacture. Our wines are cheap, and the cost of pressing, casking, and getting to market is much more than raisins. Where the viniculturist has vines adapted to wine-making he can easily substitute the best raisin Grape by grafting. We observe that this change is in progress in many parts of the State, and that the white Muscat is being grafted upon the old cions. There a new variety called the Peruvian Huasco, which is to be tried by our horticulturists. It is said that raisins from this variety of Grape have a very pleasant flavor, and are believed to be preferable to the Muscat. An increased attention is also being given to curing or drying of raisins, and it is probable that some cheap furnace may be invented by which the Grape may be converted into a cleaner and brighter-looking raisin. We are learning every year new means of utilizing our semi-tropical products, and we are vain enough of our remarkable climate and its various productions to believe that in a few years we will not only drive out the imported raisins, but supply our brethren on the other side of the Rocky Mountains. Sooner or later we will read of the shipment to New York and Boston of car-loads of California raisins. —*Marysville Appeal.*

American Apples in England.—The London *Garden* speaks as follows in regard to the importation of our national fruit: "American Apples of the past season's growth are now selling at moderate rates in provincial towns, both in England and Ireland. The high-colored and well-flavored Baldwin is the commonest kind as yet. As usual they come in barrels, without any kind of packing material, and are, as a rule, in excellent condition. That Apples should be sent several thousand miles, and then be sold as cheaply as home-grown fruit, is a noteworthy fact. At this rate of progress fruitless and cold regions will soon be supplied with the finest fruits at a cost that places them within the reach of all classes."

Editorial Portfolio.

OAK KNOLL, NEAR NAPA.

THE COUNTRY RESIDENCE OF R. B. WOODWARD, ESQ.

We present our readers, this month, with a splendid photograph, from a fine painting of Jos. Lee's, of the princely mansion and grounds of R. B. Woodward, the energetic and enterprising proprietor of the famous and most popular "Woodward's Gardens," the great park of the Pacific. We will give a description of this lovely and extensive estate, situated in one of the most beautiful valleys in the world, in the words of E. J. Hooper (in an article sent to an Eastern paper), who visited it last summer. He says:

"We entered this fine property through a gate by the side of the California Pacific Railroad. We walked to the noble mansion of the owner over a good carriage road or avenue, lined and shaded on either side by grand native evergreen Oaks, Acacias or Locusts, Ailanthuses or "Trees of Heaven," and other fine trees and shrubs. It took more than a mile's walking to reach the house. We saw some large grain-fields, and pastures for horses, cattle and sheep; there being on the ranch, together with the fruit and ornamental grounds, much land for raising these animals. When we approached this splendid country-seat, extensive orchards of Apple, Pear, Peach, Apricot, Nectarine, Plum, Fig, Almond, and other fruit-trees, presented themselves continually to our admiring gaze, with large vineyards of foreign and native Grapes, and patches of Strawberries, Raspberries, Blackberries, Currants, and Gooseberries:

"Before the new mansion, lately erected near the site of the old house of the last owner of the property, was a large and well-kept lawn, made verdant by the dry season water-sprinkling apparatus, movable at will. The finest and rarest evergreens, shrubs, and parterres of Roses and the richest flowers, adorn this delightful grass-plat, with, here and there, magnificent specimens of old, wide-spreading, gnarled, native evergreen Oaks and two other kinds of Oaks, and many indigenous shrubs and wild-flowers.

"A wide and pellucid trout-stream meanders through the premises of this valuable and choice property of 2,000 acres of cleared land and woods. The proprietor's young son drove us through and around it, and if we had gone over all the roads we should have traveled twelve miles.

"Domesticated wild geese and other water-fowl were seen swimming and gamboling in a small and highly picturesque pond. We drove under the early Pear, Apple, Plum, and Apricot trees to feast on their already ripe and luscious fruits, although it was but the commencement of summer. The Apricots were as large as medium-sized Peaches, and mostly of the Moorpark and Royal kinds. The Columbia Plums were also gigantic, though size is common to all the fruit and vegetable productions of this favored valley, and indeed the State in general. The night-fogs from the ocean and bay are very beneficial to this portion of the coast, consequently all vegetation is kept green and healthy.

"The mansion itself is very elegant, light in architecture, liberal in its dimensions, highly convenient, and furnished with every modern improvement, and many exquisite works of art."

Five ears of pop-corn from one stalk contained 3,454 grains! So says the *American Agriculturist*.

PLANTS WORTHY OF CULTURE.

We presented to our readers in the December HORTICULTURIST illustrations of a few flowers which might be very advantageously cultivated in our gardens, and which will thrive well under very ordinary treatment.

The *Carnation* is one of those old-fashioned and popular flowers which is rarely met with in our gardens. The Carnation differs from the Pink proper in having broad stripes running from the edge to the base of each petal. Carnations may be raised from seed, but we can not always rely on obtaining good varieties in this way. Good varieties must be propagated by layerings or cuttings.

Crepis is an annual, with purple, white, or yellow flowers, which has not yet found its way into our gardens. It is worthy of a place in the border.

Daturas, both single and double, are showy flowering plants for the garden; some herbaceous, and others shrubby or tree-like; the latter are most generally known as the Brugmansia. The flowers are very fragrant, and mostly white.

Thunbergia is a very graceful and neat climber for the garden, as well as for the greenhouse. It is considered an annual, but in California we have frequently seen plants do well for several years. It is also a very pretty basket-plant. The flowers are either white, yellow, or buff, with very dark eye.

WOODWARD'S GARDENS.

IMPROVEMENTS, ADDITIONS, AQUARIUM, ETC.

The liberal and public-spirited proprietor of these favorite and most popular grounds is evidently unceasing in his outlays to institute, improve, and add everything that can conduce to the interest, amusement, taste, and instruction of the public. The cabinets of Natural History, of beasts, birds, fishes, reptiles, etc., have within the last year been re-arranged and classified, the cases being enlarged, and more sashes and glass made, in order to show more light upon the specimens, so that they may be inspected with plenty of it on all sides. It is, I believe, contemplated that the second-story shall be taken down, and the first-story much enlarged.

The aviary has been removed to the grand building on the hill, if its inmates can be kept comfortably warm there (not receiving so much sun as in its former locality). It is a good situation, and is much more ornamental than the old building. This latter conservatory-like apartment is now devoted to the splendid collection of Ferns, with which it is filled, it having received accessions brought by Mr. Schuman from the Sandwich Islands. And this leads us to say that there is a fine and extensive collection of Palms, Ferns, and other plants, also brought by the same gentleman from those islands, ready for placing in a large and new conservatory to be built adjoining the present cabinet building, and where the swings and gymnastic apparatus now are; these last to be placed in some other suitable portion of the Gardens.

It is likewise designed by the energetic and enterprising owner of these most attractive premises, that that part of the grounds which lies back of the entrance and office, and where the old road is, shall be appropriated to the planting of a varied and large collection of all the semi-tropical and some of the tropical plants of the globe.

During our last visit to this grand "Central Park of the Pacific," we observed in the aquarium, specimens of

lakes Tahoe and Ontario trout. The Tahoe trout are most distinctly and beautifully speckled with black spots nearly all over the body, the ground of which is a very light yellow, and the form rather more elongated than the eastern brook trout. The Ontario trout is very singularly marked with whitish blotches intermixed with red and golden specks, the general color being rather a dark yellow.

The California brook trout, with a few eastern, have now reached a large size, some of them weighing nearly five pounds. What sport they would yield to the angler or fly-fisher could they be hooked in their native element, in their natural state!

There is in one of the tanks a large "cod" or the "green-fish," properly *Oplomona pantherina*, which is so tame as to come to the top of the water and eat pieces of beef from the hand, but will snap at the bare hand, and, as it has long, sharp teeth, the feeder has to be careful in presenting it near his codship without food.

All the tanks are continually replenished when deaths occur, or added to when anything in ichthyology is discovered new, curious, and interesting.

A Fine Specimen of the Eucalyptus.—A great deal has been published in reference to the rapid and luxuriant growth of the *Eucalyptus globulus*, or Blue Gum-tree, in various portions of the State. In the garden of Richmond Davis, corner of G and Fifteenth streets, is a tree of this order, planted in 1863, which measures six feet four inches in circumference at the trunk, and is about sixty feet in height, its branches covering a diameter of about forty feet. It has been trimmed, and a third of it cut away, but it is yet a noble tree.—*Sacramento Union.*

AGRICULTURAL LECTURES.

Professor C. E. Bessey, M. S., of the Iowa Agricultural College, Ames, Iowa, commenced Monday, Jan. 18th, the courses of lectures before the College of Agriculture, which he has been invited by the Regents of the University of California to deliver at Berkeley.

1. The first course will be on Economic Botany, or the Vegetable Products used by Man; including a discussion of the Cereals, Forage Plants, Textile Plants, Medicinal Plants, Timbers, etc.

2. The second course will be on the Improvement of Varieties in Plants and Animals; including a discussion of the principles and methods which control such improvements.

Students in Agriculture are required to attend these lectures; the Resident Graduates and the Senior Class are advised to do so; the members of the University generally, and other persons interested in Horticulture and Agriculture, are invited to attend.

The lectures will be given in the Senior Lecture Room, North Hall (Room 17), on Mondays, Tuesdays, Wednesdays, and Thursdays, at three o'clock.

On Fridays, in the Assembly, at a quarter past two o'clock, Professor Bessey will deliver four public lectures, beginning Jan. 22d, 1875.

Mr. J. J. H. Gregory, of Marblehead, Mass. has his annual advertisement in our columns. He was the original introducer of some of the best vegetables now found on every table. He comes this year with a new Squash, and a number of tempting specialties, some of which are finely illustrated from engravings taken from photographs. The fact that so many of his varieties of seed are of his own growing, is a golden fact for farmers and gardeners.

VICK'S CHROMO FOR 1875.

This pretty production has been received at our office. It is lettered "H" in the series of chromos issued by Mr. Vick, and is called "Winter In-doors and Out:" representing a stand covered with winter flowers, house-plants, etc., while from the window are seen the leafless trees, the snow-covered hill-side, and other evidences of winter. It is a charming picture. Send 75 cts. to Jas. Vick, Rochester, N. Y., and it will be sent to your address post-paid.

NEW AND RARE PLANTS.

New Roses.—Messrs. Miller & Hayes send us specimens of a large number of new Roses, blooming on the first of October. Among those particularly fine we note: Hybrid perpetuals—Mad. Guillot de Mont Favel, a beautiful deep blush, and of full-cupped petals, to whom we take at first sight in spite of her horrid name; Elizabeth Vigneron, another large full-petaled variety, of a deep purple rose; Paul Neron, a very large light rose; Mad. de Ridder, crimson rose. There are some beautiful Teas among them, especially Comptesse de Nadellac, a bronzy salmon; Montplaisir, a rosy cream, and which we have before noticed favorably in our notices of exhibitions; La Jonquille, one of the deepest of yellows, almost orange, and La Nankin, a white with a nankin base.—*The Gardener's Monthly.*

Dahlia coccinea.—Mr. Salter exhibited in London recently cut-flowers of *Dahlia coccinea*, an old but extremely handsome species of unwonted brilliancy of color—in fact, of a vivid fiery scarlet hue. The single flower looked like a rich-colored form of *Anemone japonica*. Like the ordinary Dahlia, it is a tender perennial, propagated in the same way, growing three feet and a half to four feet high, and blooming at this season of the year. After all that our cultivators have done in the way of improving the quality of the double Dahlia of our day, they have never been able to get into it the splendor of hue belonging to this brilliantly colored species. It is a plant that richly deserves to come into cultivation again, and many of our horticulturists were making inquiries for it.—*The Gardener's Monthly.*

A New Colorado Conifera.—Dr. Englemann has been exploring in Colorado this summer, and has found *Abies concolor* in Glen Eyrie, at the foot of Pike's Peak. It is a sad commentary on the use of eyes when it is remembered that such usually wide-awake fellows as Meehan, Hoopes, Parry, Porter, and other collectors have been through this glen without seeing it!—*The Gardener's Monthly.*

New Shrubby Spirea.—Mr. Thomas Hogg, writing from Japan, states that he has found there a new shrubby Spirea, with long racemes of white, fragrant flowers; and which in his opinion, will be a decided acquisition to our lists of hardy shrubs. He had thus far found but one plant, though he entertained the hope of finding others, or of obtaining seed.—*American Garden.*

A New White Pansy—"White Treasure."—Among all the varied colors presented by Pansies it is not strange that there should be white ones; indeed there are several old named sorts of this color, or rather lack of color; but there are not so many that a new and meritorious white variety is not welcome. "White Treasure" originated with Mr. J. W. Morris, a florist at Utica, N. Y., who sometime ago sent us specimens of

the flowers, and more recently we have been able to inspect entire plants. The strong stocky habit of the plant is its most striking characteristic; it is very short-jointed and large stemmed without the straggling weakness that often makes these plants unsightly; the foliage is of good substance and dense, and stands the sun well; a photograph taken of the bed in August shows a vigor of growth quite unusual with Pansies in hot months. The flowers are well up above the leaves, upon strong stems, and of good shape and texture, perfectly white except a small orange-colored eye. The fringe at the base of the side petals is pure white, and by its different texture from the petals themselves, increases the beauty of the flowers. The flowers were quite an inch and three-fourths across. This variety comes true from seed, which the plant produces freely. Almost every grower of flowers is fond of Pansies, and will regard a white one with favor, and it will no doubt be a valuable Pansy for forcing.—*American Agriculturist.*

NEW AND RARE FRUITS.

New Western Cherries.—The far West is entering the lists with the East as a raiser of seedling fruits. The following are said to be Oregon seedlings of high excellence:

Willamette.—A seedling from the Royal Ann; very large, light red color, sweet, late; a good market variety.

Clackamas.—An extra fine large black Cherry, ripens just before the Black Tartarian, which it much resembles; rich, fine flavor.

Major Francis.—A new Cherry of Mr. Walings' raising; very large, black, fine rich flavor, ripens just before the Black Tartarian; one of the best Cherries in their time; tree vigorous and productive. Took the first premium two years ago at an Oregon exhibition in succession over all other Cherries.—*Gardener's Monthly.*

Brier's Sweet Crab.—Mr. A. G. Tuttle, Baraboo, Wis., writes: "We send by mail, to-day, a package of fruit of a new Crab, which is causing quite a sensation West. It is sweet, and perfectly devoid of the astringency, or bitter taste, peculiar to the Crab family. Is called 'Brier's Sweet Crab.' Please test quality and size, color, etc."

[This shows a remarkable improvement in Crabs. It was quite as good to eat as any ordinary Apple. Indeed one would not know by the flavor alone, that he was eating a Crab.—Ed. G. M.]—*Gardener's Monthly.*

New Melon.—A new Melon has been introduced into England, the seeds of which were brought from Africa by Sir Samuel Baker. It is said to be wholly distinct from every variety yet known in Europe or in this country. In size it resembles a large Gourd, but has a true Melon skin of a deep golden color, beautifully netted; with a flavor of the finest possible quality.—*American Garden.*

Though the Orange-tree grows true to the seed, yet, like all other fruit, it is improved by grafting. The Konah Orange, a large and well-flavored variety, has been introduced here this year, and budding the Konah into the ordinary Orange has become quite the fashion hereabouts. It is said that the China Lemon root budded with this variety will bear four years from the graft, thus saving four years time, as the ordinary Los Angeles Orange only begins to bear at eight years from the seed.

FRUIT CULTIVATION, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Upon no subject connected with Horticulture has more been written than upon the cultivation of fruit-trees, a fact to which the shelves of the Bay District Horticultural Society, in common with those of most other libraries, bear ample testimony. But, although cheerfully granting to the authors on Pomology their full meed of praise for the valuable materials laid open in their writings, from which the writer of this article has derived both pleasure and instruction, he can not help lamenting that one of the most important subjects in this interest has been hitherto much neglected on this coast among all the agricultural and horticultural societies as well as among the producers and salesmen, namely—the correct nomenclature of the science, so that purchasers of fruit should become acquainted with their correct names, and thereby become properly cognizant of their merits as well as their demerits, and not to be directed so much by the beautiful complexion, form, and size of the various fruits, as by their flavor and excellence.

Horticultural societies should be careful and diligent in forming for their own benefit and that of the public, select lists of the various kinds of fruits, with their synonyms attached thereto. They should contain only such sorts as are really worth cultivation. None should be admitted but varieties of the highest character, and such as will repay the cultivator for his trouble and expense. The selections should be made for our latitudes, and planters can then make the necessary allowance, if they live in a higher or lower latitude in our State. Mr. Robert Thompson, of the Horticultural Society of London, has done much in the arrangement of the nomenclature of fruits there, and Dr. John A. Warder has done as much, if not more, for the United States, especially in his admirable large work on "Apples." Knight and Lindley in England, and Wilder, Barry, Thomas, Elliott, and others in America, have treated the subject physiologically, and to all these every horticulturist is deeply indebted. Pomology as an inductive science can only be said to have originated in the beginning of the present century in Engiand, and only the last fifty years in the United States. Much yet remains, however, to be determined in regard to names, to enable the fruitist to select the best sorts from the many inferior ones sometimes in cultivation in many parts of the country. With respect to Peaches in particular, there are not half so many distinct sorts as there are names in use; and of that half, most likely, two-thirds are not worth cultivating. Of most of the sorts originated from seed, sufficient time may not have elapsed to judge of their merits; they may be described as good; but unquestionably many of them are worth little in comparison with the best old sorts. The same may be said of Cherries, and perhaps, also, Pears and Apples.

In forming a collection of fruits, it will always be found more satisfactory not to attempt too great a number of sorts, and to endeavor to fix upon those that are already well known, and also such as are found to suit the latitude and circumstances of the situation. There is unfortunately a mania with some persons for collecting endless varieties of fruits, and in a few cases I have known the oldest and best sorts have been cast out of gardens, or cut down and

grafted with others far inferior to them in every respect. Many French and English fruits at one time were introduced, which, perhaps, though excellent in their native climate, were quite unfit for many parts of America. The proprietor consequently has sustained a serious loss, although in this climate, favorable in general, to all vegetation, many fruits have been found happily congenial to it. As to such fruits as Strawberries, Raspberries, Gooseberries, etc., which bear early, the disappointment is of little consequence, because a year or two at most will rectify the mistake; but in the case of Apples, Pears, Cherries, Plums, etc., which require some years, even in California, to bring them into a profitable bearing state, the disappointment becomes very serious. It were better to be contented with a few good kinds, that produce well in most seasons here, than to plant many sorts for the sake of variety. It is no doubt of very great importance to select and adapt the kinds to the climate, soil, and aspect; and in some situations a greater variety may be planted with propriety than in others. This matter must be determined by existing circumstances, by the fancy of the proprietors, and by the direction of a first-rate gardener and pomologist, or the advice of the most experienced cultivators.

Some attention should be also paid to selecting sorts suitable to their destined soils, as some that would succeed well in a strong clay or adobe soil, would languish in a poor, light, sandy one; but as to this State, fruits in general succeed in all parts of it. There are situations, however, where the Apple and Pear thrive better than the Cherry and Plum.

The retail markets are now at their best this season of the year. At the holidays the stalls were, of course, set out with as good a display of fruits and vegetables as the season would permit. Notwithstanding that it was the off season for farm and garden products, there might have been a better display than the one made; under more favorable conditions of weather, no doubt there would have been a marked improvement noticeable in the quality of many of the vegetables offered, and there would have been some descriptions occupying a conspicuous position on the stall that did not then appear. But the long, and for this State, extraordinary cold weather (the thermometer being in some places 16 degrees below the freezing point), and frosts have retarded the growth of early vegetables, and materially affected the appearance of late descriptions. There was no description of vegetables then in season wherein this was more apparent than in the case of Mushrooms. Up to the middle of December, the cold weather had not seriously injured the crops. The supply was undiminished, and the size and quality were up to the standard; but its continuance to the end of December has interrupted their growth, and while the supply was much less, the quality was correspondingly inferior. The price had consequently advanced from 10c. to 15c. @ 25c. per lb. Asparagus was also dearer, being quoted at 50c. to 75c. per lb. Christmas managed to draw a supply of Artichokes from secluded corners, although this vegetable has been nominally out of season several weeks, and a fancy price asked and paid for it as a luxury, retailing at $1 to $1 25 per dozen. Jerusalem Artichokes were unchanged, selling at 8c. per lb. Cauliflowers now sell at 15c. to 25c. each, an unusually high price. The reason is obvious; it was almost the only presentable vegetable

within the reach of the masses, and the demand for it was enormous. Green Peas were classed among the luxuries, but their exceedingly poor condition did not encourage much demand. Common Potatoes were getting scarce, and threatened to become very dear. Other vegetables are unchanged.

The best Oranges in the market were from Solano County. They were riper, larger, and cleaner than the Los Angeles Orange, and command a much better price, selling at 10c. each. The Australian steamer *Mikado* brought a small consignment of a delayed picking of the last crop of Australian Oranges. The lot was received in excellent condition; and owing to the unusual size of the Oranges embraced therein, and the fact that they were of a description foreign to this coast, the entire consignment was sold for fancy figures, none of it finding its way into the hands of retailers. Los Angeles Oranges betray a marked increase in the ravages of the scale-bug. Fruit from groves hitherto exempted from the undesirable presence of this obnoxious insect came to hand extensively stained with its secretion. Unless growers make a determined effort to annihilate this parasite, it will very soon assume such proportions as to materially prejudice their interests; Mexico, thus early, this season, sending in its Orange crop, and Mexican Oranges have not a stain on their golden skins. Lady's Apples were in abundant supply at the last week's prices. Prunes and Raisins (California dried) were unchanged. Grapes were nearly out. Black Morocco retailed at 15c. to 25c. per lb.; Flame Tokay, 25c.; Muscats, 15c. Gilded Nuts for Christmas-trees, 25c. per dozen.

For the first time in three years Peas were out of market about the 8th of this month (January). The unprecedented period of cold weather, north winds, and frosty nights finally put an end to the supply of Green Peas, String Beans, and Tomatoes, and materially curtailed the receipts of Mushrooms, which have been so abundant this fall and winter. Rhubarb could still be had in small quantities up to about the 10th of January, but the quality was poor. We quote Spinach at 8c.; Lettuce, 20c. to 25c. per dozen; Salsify, 8c. to 10c. per bunch; Potatoes, by the sack delivered, $2.00 to $2.50; Onions, $1.50 to $2.00 per cental.

The market has been well supplied with Oranges, the best being from Mexico. The California fruit is still rather too green to be very salable. Poor and medium sized Apples have been and yet are very plentiful and cheap. Pears have been and remain to this time scarce and dear, owing to heavy shipments to the East early in the season. The continued frosty nights have cut off the supply of Strawberries and Grapes for more than three weeks. About the 13th of this month, the frosts began to cease their (for this coast) great severity, and rain seems near at hand, the wind being in the south, where it has not been, except for a few hours, for over a month past. Eastern Chestnuts are retailing at 35c. per lb.; Apples by the box retail at $1.00 to $2.00; Pears, $2.00 to $3.00, delivered.

Continued cold weather has kept back the new crop of Green Peas later than usual, and none are expected for several weeks. New Potatoes have put in an appearance, but are very small, and do not sell readily. Rhubarb is again out of market, and no more will be received until the weather is warmer. Asparagus in small quantities comes forward regularly, and commands high prices. We quote Spinach at 8c.; Lettuce, 20c. to 25c. per doz.; Salsify, 8c. to 10c. per

bunch; Potatoes by the sack, delivered, $2.00 to $2.50; Onions, $1.50 to $2.00 per cental.

Oranges, Lemons, Limes, and Apples are plentiful. Pears of all kinds are scarce, and ripe Easter Beurres are bringing fancy figures. Most of the Oranges in market are from Los Angeles, but none of them are sufficiently ripe to sell readily. Apples by the box retail at $1.00 to $2.00 delivered.

Editorial Gleanings.

The Edible Passion-flower. — Few greenhouse or conservatory climbers are more beautiful than this Passiflora, and yet one meets with it very rarely in modern collections. Planted out in a border of rich moist earth it grows rapidly, often making shoots ten and twelve feet long in a single season. When in vigorous health it gracefully drapes pillars, arches, or rafters, with a profusion of glossy foliage. The flowers, although ornamental, are not so showy as those of many of the other species. Under good culture they are succeeded by bright purple fruits, each the size of a hen's egg, which are favorites with many on account of their fine sub-acid flavor.

Although this is, undoubtedly, the best of all the edible Passion-flowers, *P. macrocarpus* and *P. quadrangularis* are by no means useless additions to the dessert; and those who have not acquired a taste for them in a fresh state rarely fail to relish them when preserved. Even in the absence of fruit *P. edulis* well deserves cultivation, as it is the most beautiful of all the Passifloras in habit, *P.* (*racemosa*) *princeps* not even excepted. Like most of its congeners it is readily propagated either by cuttings, layers, or seeds; and those who require a climber of a deep tint, for the ornamentation of a conservatory or corridor, can not do better than avail themselves of it. — *London Garden.*

Roses for Button-holes. — The following varieties are highly recommended by an English florist for forcing for button-hole flowers. This has become quite a trade in this country, hence this list may prove an aid to some of our readers: Abel Grand, Beauty of Waltham, Duke of Edinburgh, Duke of Wellington, Fisher Holmes, General Jacqueminot, Henri Ledechaux, Jules Margottin, Louisa Wood, Madame Victor Verdier, Virgindale, Monsieur Noman, Princess Mary of Cambridge, Vicomte Vigier, Victor Verdier. Bourbon: Souvenir de la Malmaison. Tea: Abricota, Allia Rosea, Catherine Murnet, Devoniensis, Goubault, Isabella Sprunt, La Nantes, Madame Falcot, Charles Mauvin, Safronet.

The Beauty of Trees. — A tree undoubtedly is one of the most beautiful objects in nature. Airy and delicate in its youth, luxuriant and majestic in its prime, venerable and picturesque in its old age, it constitutes, in its various forms, sizes, and developments, the greatest charm and beauty of the earth in all its countries. The most varied outline of surface, the finest combination of picturesque materials, would be comparatively tame and spiritless without the inimitable accompaniment of foliage. Let those who have passed their whole time in a richly wooded country — whose daily visions are deep, leafy glens, forest-clad hills, and plains luxuriously shady — transport themselves for a moment to the desert, where but a few stunted bushes raise their heads above the earth, or

those wild steppes, where the eye wanders in vain for some "leafy garniture" — where the sun strikes down with parching heat, or the wind sweeps over with unbroken fury — and they may, perhaps, estimate by contrast their beauty and value.

Yellow-jackets.—Every country has its plagues. Ancient Egypt had its locusts; our Western territories have their grasshoppers; and it seems to be reserved for California, or at least this part of it, to have its plague or pest—the yellow-jackets. They seem to be rapidly increasing in numbers year by year, and their ravages, especially among the Grapes, are becoming alarmingly destructive. They eat tons of fruit on the vines, and in some instances make nearly a clean sweep of that part of the crop spread out to be dried for raisins. A friend suggests that about the best way to abate the nuisance, would be for the State to offer a premium with a view to encouraging the destruction of their nests. The nests he thinks could be found quite readily, by watching the little marauders when laden with their pellets, as they then fly in a "bee line" straight to them. This suggestion looks plausible, but to be effective the plan would have to be generally adopted and perseveringly carried out.—*Folsom Telegraph.*

The Gardens of Morocco. — The groves of Rose-trees and the flower-farms of Morocco are said by a recent traveler to exceed in extent and value those of Damascus, or even those of the valley of Mexico. The general climate of the country is very favorable to this kind of culture. Swept alternately by the breezes of the Atlantic and the Mediterranean, and tempered by the snows of the Atlas ranges, the degree of heat is much lower in Morocco than in Algeria, while the soil is exceedingly fertile. To the Date-palm, and to Orange and Lemon trees, the climate appears to be especially suited, the Dates of Tafilat having been famous even from Roman times. The Orange plantations are of great extent in various parts of the country, while Olives and Almonds are also staples exported in large quantities. Seeing that this fertile land, lying within five days' steam of London, produces so much vegetable wealth under the most barbarous cultivation, it appears extraordinary that European enterprise does not, in such a climate, seek profitable employment for its over-abundant capital, in its application to the development of such vast resources, so close at hand, instead of going so far afield as Australia or America.

The plan adopted by most of the Riverside people is this: They purchase twenty acres, build a home, and commence setting out trees. On their line fronting on the street they set out a hedge of Limes, whose bright-green varnished foliage produces a lovely effect. Then some twelve feet outside of that they plant Monterey Cypresses, eight feet apart. The deep sombre hue, and trim, conical shape of these trees contrasts finely with the Lime hedge, and the two together make a boundary line to the farm and an avenue for the street which it would be hard to excel in any country. In place of division fences some set the Eucalyptus, with its leaden-green foliage; others the softly drooping Pepper-tree, whose delicate fronds glint and shimmer in the sunlight as they tremble in

the passing breeze. Each, all, are simply differing forms of beauty, and being evergreens, retain that beauty "the changing seasons through."

California Dried Fruits.—Up to within a short period the United States has been dependent entirely upon the south of Europe for its supply of the luxury of dried fruits, such as Raisins, Zante Currants, Prunes, Figs, etc. The total amount imported by the United States is not less, in round figures, than $15,000,000. Several years ago California started on a large scale the cultivation of the Grape, and it was successful. Succeeding this came the experiment of drying the fruit to a raisin. Samples of these raisins were sent to Europe, and shown to Mr. Clemens, the great raisin factor of Malaga, who remarked that in time the California raisin would supply the United States home market to the exclusion of the foreign product. California is now coming to the front in this matter, and from recent experiments made by the Alden Evaporator it has become evident that the United States is soon to be made independent of foreign supplies in raisins, Currants, Prunes, etc. There is another article of dried fruit that bids fair to become important in the commerce of this country, and that is dried Peaches.—*Boston Traveller.*

Operations in Otto of Rose.—This world-renowned perfume, for which such fabulous prices are paid, even in these modern times, as to furnish grounds for belief in the extent of the disbursements of Oriental potentates for similar luxuries in times long ago, is of no small importance to the peasantry of Turkey, and as regards prices especially, when there is a falling off in the crop of Roses. Such is expected to be the case this season, when the whole distillation, it is thought, will not exceed 1,600 pounds, where last year 2,700 pounds were produced. There has of late been some activity in the market here, based on these reports, and after $6, gold, per ounce had been accepted, the prices advanced to $6.50 and $6.75, gold, and now rule quite firm, owing to this falling off in the crop, and also, it is stated, to an advance both in Paris and London of thirty per cent. within a short time. Nearly 600 ounces have been purchased here within a few days, and the tendency of the market, owing to the influence of this, and the advices from the other side, seems to be toward higher prices. There are eight provinces in Turkey, which in total yield 3,600 pounds ordinarily, the largest giving about 1,900 pounds; but sometimes the aggregate reaches 6,600 pounds, as it was in 1866, while again it may fall off to 1,700 pounds, as was the case in 1872. This will show how variable the yield is. The business is entirely in the hands of peasants and farmers, who have their stills and condensation tubes busily at work during the season. The cultivation requires the greatest care, and a considerable quantity of Roses are required to produce a respectable yield of oil. The crop is variable, but we are told that it requires an average of 3,000 pounds of Roses to produce one pound of otto of Rose.—*New York Commercial Bulletin.*

The Best Time for Pruning.—We have heretofore noticed, in common with many others, that Roses pruned in the autumn and winter are, in many instances, almost bare of buds, whilst those pruned in the spring have a profusion of blooms. We have therefore always advocated spring pruning not only for Roses, but all other out-door shrubs.—*American Garden.*

Rain-fall in San Francisco, Cal., (1849 to 1874) as Recorded by Thomas Tennent.

FROM 1849 TO 1861.

	1849.		1850.		1851.		1852.		1853.		1854.		1855.		1856.		1857.		1858.		1859.		1860.	
	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.
July	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.02	1	.....	..	.05	2	.....	..	.21	1
August	..	..	.....	..	.....	..	.....	..	.04	1	.01	1	.....	..	.....	..	.05	2	.16	2	.02	1	.....	..
September	.....	..	0.33	4	1.03	1	.....	..	.46	4	.15	3	.....	..	.07	2	.....	..	.....	..	.03	1	.....	..
October	3.14	3	.....	..	.21	2	.80	1	.12	2	2.41	9	.....	..	.45	5	.93	3	2.74	4	.05	1	.91	12
November	8.66	8	.92	7	2.12	5	5.31	12	2.28	12	.34	2	.67	7	2.79	9	3.01	11	.69	5	7.28	15	.58	3
December	6.20	12	1.05	4	7.10	14	13.20	20	2.32	11	.81	3	5.76	15	3.75	12	4.14	8	6.14	14	1.57	6	6.16	21
	1850.		**1851.**		**1852.**		**1853.**		**1854.**		**1855.**		**1856.**		**1857.**		**1858.**		**1859.**		**1860.**		**1861.**	
January	8.34	15	.72	5	.58	4	3.92	11	3.88	10	3.67	11	9.40	13	2.45	7	4.36	8	1.28	4	1.64	8	2.47	8
February	1.77	5	.54	4	.14	4	1.42	5	8.04	16	4.77	10	.50	4	8.59	15	1.83	8	6.32	18	1.60	7	3.72	8
March	4.53	7	1.94	9	6.68	14	4.86	6	3.51	11	4.64	12	1.60	5	1.62	6	5.55	8	3.02	11	3.99	13	4.08	8
April	.46	3	1.23	8	.26	3	5.37	8	3.12	9	5.00	10	2.94	6	.....	..	1.55	4	.27	4	3.14	8	.51	4
May	.....	..	.67	3	.32	1	.38	7	.02	1	1.88	6	.76	3	.02	3	.34	3	1.55	4	2.86	11	1.00	3
June	.....	..	.....	..	.....	..	.....	..	.08	2	.....	..	.03	1	.12	1	.05	1	.....	..	.09	2	.08	2
	33.10	53	7.40	44	18.44	48	35.26	70	23.87	79	23.68	67	21.66	54	19.81	61	21.88	56	22.22	68	22.27	73	19.72	70

FROM 1861 TO 1874.

	1861.		1862.		1863.		1864.		1865.		1866.		1867.		1868.		1869.		1870.		1871.		1872.		1873.	
	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.	Quantity.	Days.
July	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	0.03	2
August	.....	..	.....	..	.....	..	.21	3	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	.....	..	0.15	3
September	.02	1	.....	..	.03	1	.01	1	.24	2	.11	2	.04	1	.....	..	.12	1	.03	1	.03	2	0.14	1	.....	..
October	.....	..	.40	2	.....	..	.13	3	.26	4	.....	..	.20	1	.15	3	1.29	2	.....	..	.11	2	0.21	1	0.68	2
November	4.10	12	.15	3	2.55	5	6.68	8	4.19	10	3.35	12	3.41	6	1.18	5	1.19	5	.43	4	3.72	9	2.62	3	1.31	6
December	9.54	16	2.35	9	1.80	8	8.91	18	.58	8	15.16	18	10.69	18	4.34	11	4.31	7	3.38	8	16.74	14	7.25	10	10.12	20
	1862.		**1863.**		**1864.**		**1865.**		**1866.**		**1867.**		**1868.**		**1869.**		**1870.**		**1871.**		**1872.**		**1873.**		**1874.**	
January	24.36	18	3.63	9	1.83	5	5.14	9	10.88	16	5.16	15	9.50	17	6.35	14	3.89	9	3.07	7	4.22	10	2.17	8	4.85	14
February	7.53	10	3.19	10	.....	..	1.34	8	2.12	9	7.20	9	6.13	9	3.90	5	4.78	9	3.76	10	6.97	20	4.24	17	1.83	10
March	2.20	11	2.06	8	1.52	9	.74	4	3.04	12	1.58	7	6.30	12	3.14	12	2.00	8	1.29	8	1.64	10	0.78	4	3.55	15
April	.73	9	1.61	9	1.57	4	.94	3	.12	1	2.36	8	2.31	9	2.19	5	1.53	4	1.93	5	1.10	7	0.52	3	1.04	7
May	.74	5	.23	2	.78	5	.63	2	1.46	6	.....	..	.03	2	.08	2	.20	2	.21	3	.16	3	0.01	1	0.34	4
June	.05	1	.....	..	.....	..	.....	..	.04	1	.....	..	.23	3	.02	1	.....	..	.....	..	.02	2	0.08	1	0.08	2
	49.27	83	13.62	52	10.08	37	24.73	59	22.93	69	34.92	71	38.84	78	21.35	58	19.31	47	14.10	46	34.71	79	18.02	49	23.98	85

Average Rain-fall from the season of 1849-50, to that of 1873-4—25 Seasons—23.9 inches.

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING DECEMBER 31ST, 1874.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M..... 30.22 in.
do 12 M..... 30.22
do 3 P. M..... 30.21
do 6 P. M..... 30.20
Highest point on the 4th, at 9 A.M..... 30.36
Lowest point on the 26th, at 6 P. M..... 29.88

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M..... 43°
do 12 M..... 48°
do 3 P. M..... 50°
do 6 P. M..... 44°
Highest point on the 1st, at 12 M..... 59°
Lowest point on the 28th, at 9 A. M..... 36°

SELF-REGISTERING THERMOMETER.

Mean height during the night..... 38°
Highest point at sunrise on the 1st..... 47°
Lowest point at sunrise on the 26th and 30th..... 31°

WINDS.

North and north-east on 15 days; south-east on 2 days; north-west and west on 14 days.

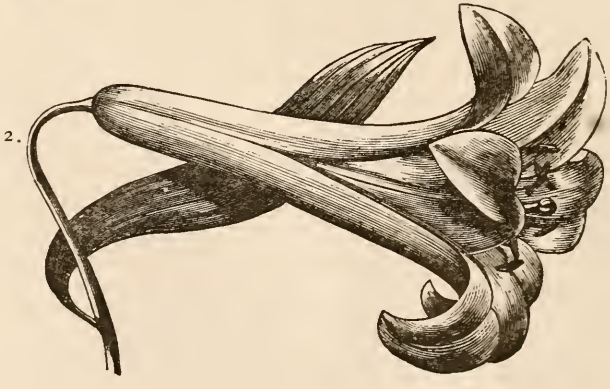
WEATHER.

Clear on 18 days; cloudy on 5 days; variable on 8 days; rain on 4 days.

RAIN GAUGE.

1st..... 0.06
2d..... 0.02
3d..... 0.08
24th..... 0.12

Total..... 0.28
Total Rain of the season to date..... 9.01



Group of Lilies.

1. *Lilium chalcedonicum*
2. *Lilium japonicum longiflorum.*
3. *Lilium auratum.*
4. *Lilium lancifolium.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. V. SAN FRANCISCO, FEBRUARY, 1875. No. 2.

THE TREES OF CALIFORNIA, INDIGENOUS AND EXOTIC.

BY DR. HENRY DEGROOT.

The soil and climate of California are well adapted to the vigorous and healthful growth of a great variety of trees. She had a rich flora of her own to begin with. The varieties of her native trees were numerous, to say nothing of her plants and flowering shrubs. Fifty genera of trees grow between San Francisco and the Columbia River, to which the country south adds a considerable number; the Palm and other numerous families being found only in that direction. Already the exotics—fruit, ornamental, and timber trees being included—outnumber those of native origin; this preponderance being every year rapidly increased through the importation of new varieties. There are now growing in some of the nurseries of this State more than fifty different genera of trees, some of which embrace many species—the entire number well grown, or sufficiently advanced for transplanting, exceeding a million. While these collections are made up mostly of fruit-trees, they contain also a great many forest and shade trees; the whole having been gathered from nearly all parts of the world. A majority of the fruit and forest trees are importations from the Eastern States, though many, both of these and all other kinds, have been obtained from Australia, Europe, China, Japan, and countries on the continent to the south of us. While California has many noble families of forest-trees, she has produced but few native fruit-trees of value, only the wild Plum and a few others being much esteemed as esculents.

The kindly manner in which exotics of every description take to our soil and climate, and the rapidity and vigor with which trees of all kinds grow here, establish that arboriculture must early become one of the leading pursuits of California. In no other part of the world is this vegetable growth so quick and so hardy as here. Trees here advance with the luxuriance of the tropics, combining with these the solidity and strength of the higher latitudes. Apple, Plum, and Cherry trees, one year from the bud, frequently stand ten and twelve feet in height. Cuttings set out in the winter bear Grapes in the fall, and the hardier fruits become prolific

bearers within two or three years from the time they are planted.

It is a singular circumstance, however, that while almost all exotics find in California a congenial home, many of the plants and trees native to this country do not readily thrive elsewhere, and in some instances can not, when sent abroad, be acclimated at all. Seeds and young trees sent to other countries, and planted with care, have refused to germinate, or take root; or, if they did so, were either short-lived, or maintained only a feeble and sickly existence. One reason of this may be that the flora of this coast, owing to its isolated situation, is possessed of inherent peculiarities. Bounded by an immense stretch of ocean on the one hand, and by lofty snow-covered mountains and broad deserts on the other, it remains in its primitive condition, uncontaminated by intermixture with the flora of other lands. Confirmed by centuries of habit, these peculiarities have become constitutional to a degree that unfits these plants and trees for thriving in any but their native soil and climate. On the other hand, some of the vegetable products of California do well when transplanted to a distance, growing with a readiness and vigor unsurpassed in their birth-place. Unquestionably the range within which fruits mature covers a greater variety of products in California than in any other country. In fact, it may be said to reach over both the temperate and the torrid zones, since there is scarcely a tree or plant common to both but what can be successfully grown in the open air at some locality within her limits.

To enumerate the different kinds of fruit-trees now cultivated in California would be simply to catalogue the best varieties of these known throughout the world. Whatever is choice in other countries has been introduced here —sometimes aggregated in a single nursery. Imported trees, valuable for fuel and timber; also, trees and shrubs selected for purposes of adornment— we have in great variety. Thus we count, among ornamental trees, the Palm, the Willow, the Pepper-tree, the Acacia, the Magnolia, the Weeping Elm, and many others, including some of strange and beautiful form brought from China and Japan. Among the useful varieties are to be seen the Locust, Eucalyptus, Ash, Walnut, Poplar, Linden, Maple (including the Rock or Sugar Maple, which it is thought will thrive here), and a great many other trees, valuable in an economical point of view. Some of the Palms and other ornamental trees are very superb, and sell often for high prices — as much sometimes as four or five hundred dollars being paid for a single specimen.

When the arborist turns his attention to the native forests of California, he finds a broad and wonderful field opening before him. Along the northern and central coast he encounters the belt of awful Redwoods; the slopes of the Sierra Nevada being covered to the height of nine or ten thousand feet with a majestic growth of Pine, Fir, and Cedar.

These Redwoods are of two kinds, the *Sequoia sempervirens* and the *Sequoia gigantea*. The former, usually styled simply *Redwoods*, are confined to the foggy belt of the Coast Range, reaching, with some interruptions, from the northern limit of the State down to the vicinity of San Luis Obispo, a distance of more than five hundred miles; while the latter, under the name of the "Big Trees," has a much more restricted habitat, being found only at seven or eight points along the higher foothills of the Sierra Nevada. The *Sequoia*

occurs nowhere out of California, nor is it met with here at any other places than those above stated. From the Redwood forests along the coast many millions of feet of lumber of a very valuable kind are made every year.

There are sixteen species of Pines in California, the most valuable of which is that known as the Sugar Pine. This tree grows to a great size, reaching often a height of three hundred feet, and a diameter of twelve feet. It makes an excellent lumber, being much sought after for inside work, cabinet ware, and various other uses.

Twelve species of the Oak are recognized by botanists as belonging to this State. The most of these are very beautiful, and several of the species are large and picturesque trees, but only one or two are of any value for use as lumber, the wood being soft and brittle. The Oak here does not grow tall, with a straight grain and tough fibre, as in most other countries; consequently it is not a serviceable timber except for the purpose of ship-knees and the like, though every variety burns well. The Live-oak, which grows often in clusters, has a very hard wood, rendering it fit for certain mechanical uses. One species of the White Oak has also a fine grain and tough fibre, rendering it suitable for farming utensils. What are known as the Poison Oak and the Huckleberry Oak are mere shrubs, growing only a few feet high. The White or Long-acorned Oak, very common in California, has wide-spreading branches; its diameter being often greater than its height, which seldom exceeds sixty feet. The wood is crooked and brash, but the acorn it grows is very large, being sometimes over two inches long. When roasted it tastes not unlike the Chestnut, though slightly bitter and astringent. This acorn, like that of the Burr Oak, was formerly much used by the Indians for food.

The Burr Oak has the longest trunk and is the most common of all the Oaks of California, though its habitat is confined to the large valleys, it never being found in the mountains. It is a graceful and noble tree, being the Oak that gives to the country such a park-like appearance. The Pale Oak, which much resembles in its external form the above species, is likewise a very picturesque tree, being the kind that a little way off looks so much like an old apple-orchard. The Chestnut Oak, which grows only along the central portion of the Coast Range in the vicinity of or among the Redwoods, though it affords a worthless wood, is very valuable for the bark, which is extensively used for tanning leather. The Drooping Live-oak, generally diffused but not very abundant, is another very beautiful tree, having long, slender, depending branches.

Several varieties of Spruce and Fir grow on the mountains of California. The largest and most common of this family is the Red Fir or Douglass Spruce, which often has a height of three hundred feet, and a diameter of ten feet. The wood is coarse-grained but very tough, rendering it fit for many common purposes, such as the construction of flumes, fences, ship-building, etc. The Yellow Fir or Spruce grows with and is in all respects a good deal like the Red, while the Black Fir, a smaller tree, is of but little value. The White or Balsam Fir is a large tree, from the bark of which there exudes a resinous fluid known as "balsam of Fir," much esteemed for its supposed curative properties. The leafy-coated Silver Fir has a straight slender trunk, which grows over a hundred feet high, and two and a half feet through, and is

covered with long drooping branches almost to the ground. From this tree the resinous pitch is obtained that in the Catholic Church service is burned as an incense.

Then we have among the characteristic trees of California the Madroña, an evergreen, with lustrous oval leaves, and a bark that peels off every year, showing at first a pea-green color, which afterward turns to a bright red: the Nutmeg, also an evergreen, tapering like the Fir, but more slender and graceful, and reaching a height of only about sixty or seventy feet—it yields a fruit resembling the Nutmeg of commerce, but unfit for use as a condiment, having an unpleasant turpentine taste: the Yew, growing thirty feet high, with slender depending branches and a valuable wood: the Laurel or Bay-tree, a handsome evergreen, fifty to sixty feet high, and two and a half to three feet in diameter—the wood hard, with a spotted and rippled grain resembling curled Maple, and which, being susceptible of a high polish, is largely used in veneering and for making costly furniture: the Horse-chestnut or Buckeye, a low spreading tree or rather shrub, yielding a large nut, which the Indians eat: the Manzanita, and the Wild Lilac, also shrubs: with the Alder, the Willow, and the Cottonwood trees, all too well known to require any description.

ARRANGEMENT OF FLOWER-BEDS.

BY WILLIAM SUTHERLAND.

The planting of flower-beds and borders has of late years attracted a great deal of attention; there has been a number of pros and cons on the subject of how to produce the best display.

Some have advocated the planting of colored leaf plants only, while others equally enthusiastic would have nothing but flowering plants.

But in my humble judgment a proper combination of both kinds produces the best effect. What is more effective than a bed of Scarlet Geraniums, edged with some colored leaf plant, or a bed of Scarlet Sage, ringed with White Sage and edged with Alternanthera?

There is really quite as much art in taking care of the beds after they have been planted, as there is in planting; and here let us remark, that unless the beds or borders are going to be looked after when they are planted there had better be no extra pains taken in setting out the various lines or clumps of plants, as they soon get one confused mass. This applies especially to colored leaf plants. Coleus, Achyranthus, Centaurea, etc., all want the tops taken out very frequently; while the Alternanthera, when used as an edging, requires to be clipped with the shears pretty often to keep it within bounds.

The best flower-beds I have seen this season were at Girard College. I have known this institution and grounds some fifteen or twenty years, and never saw the place look as well, which is saying a good deal for the abilities of the present gardener, Mr. George Huster, who certainly displays great taste in the arrangement of the flower garden. Thinking some of your readers might gain a few hints by knowing how these beds were arranged and planted, I give you a few notes below.

The flower garden of which I am about to speak extends from the gates up to the front of the main building of the College, covering a plat of ground nearly two acres in extent, the curving of the carriage-drive forming it somewhat into a crescent shape, with a walk through the centre. Just within the gates on either side of the straight

walk leading to the main building, are beds 150 feet long by six feet in width, planted in seven distinct lines, beginning with a front edge of *Alternanthera versicolor*, next a line of *Centaurea candidissima*, next the golden Coleus Queen Victoria, next a line of *Coleus Verschaffeltii* which forms the centre line, then a line of Coleus Golden Beauty, next a line of *Achyranthus Lindenii*, and lastly a line of *Alternanthera amabile*, with a fine specimen of *Dracœna tricolor* at all four ends. These long beds add lustre to the garden, but the glory of all are two star-shaped and four circular beds. The star beds are slightly raised, and filled with a fine specimen of the Pampas-grass (*Gynerium argenteum*) in the middle, with General Grant Geranium around it, and *Centaurea gymnocarpa* on the edge. Two of the circles are planted with a standard *Abutilon Thompsonii* in the middle, General Grant Geranium around it, with an edging of the Golden Feverfew. The other two circles are planted with General Grant Geranium, edged with variegated Geranium Brilliant and Mountain of Snow.

The other flower-beds consist of large and small ovals, square and geometrical figures, planted as follows: Some with Tuberoses and Roses, ringed with Stock Gillies; and Cockscombs ringed with Rose Geranium and edged with *Cuphea Platycentra*. Another was filled with Double Petunia Belle of Baltimore, edged with variegated Ageratum. Others were filled with Abutilons in the middle, ringed with double Geranium Gloire de Nancy, ringed with double Geranium Madame Lemoine plunged in pots, (which Mr. Huster finds blooms more freely than when planted out) edged with gold and silver variegated Geranium. Other beds were planted with Tritomas, single and double Tuberoses, Gladiolus and Carnations, edged with Centaurea and Artemisia, with fine standard Lemon Verbenas (*Aloysia citriodora*) in the middle; several beds of *Phlox Drummondii* and Verbenas, with standard Lantanas in the middle, also several beds of *Echeveria metalica*, ringed with *Echeveria secunda*, ringed with *Echeveria secunda glauca*, and edged with *Sempervivum Californicum*, which had a very pretty effect. Two beds were planted with Tea Roses, ringed with Nierembergia and Phlox, and edged with *Peristrophe angustifolia aurea*.

One large oval bed was planted in the middle with *Colocasia esculenta* and *Javanica*, ringed around with some twenty varieties of Caladiums, with an edging of variegated leaf Begonias Rex, Mad. Wagner, Picta Grandis, Grace Fahnestock, Philadelphia, and others. There must have been at least 200 plants in this bed, and what surprised me most, with little or no shade. Another fine bed was planted with Heliotropes, edged with variegated Ageratum; another with Hybrid Perpetual Roses and Tuberoses in the middle, ringed with variegated Rose Geranium Lady Plymouth, edged with *Cuphea platycentra*. There were also two lines of Fountain Plants, (*Amaranthus salicifolius*) and between the flower-beds were some fine specimens of Musas, Cannas, Agaves, and Palms, also some standard Sages, Lantanas, Abutilons, Hibiscus, Coccolobas, Erythrinas, and Ficuses; the whole making one of the grandest displays I ever saw.—*The Gardener's Monthly.*

The ship *Edwin*, sent from Bermuda by Governor Tucker, returned from the West India Islands, in 1616, with figs, pines, sugar-canes, plantains, pawpaws, and other plants, which were immediately cultivated with success.

SEMI-TROPICAL FRUIT CULTURE.

We have long had evidence of the adaptability of the soil and climate of California to semi-tropical fruit culture. We are not quite so certain, however, that we are cultivating the kind of semi-tropical fruit for which the soil is best adapted, and which will return most profit to the cultivator. For instance, we have been, for many years, extensive wine-producers, yet we are undecided as to which is the best variety of Grape-vine to propagate in our yards; and there is a difference of opinion among the most experienced culturists as to which is the best land for the vine—the valley or the foot-hills. The latter is becoming more and more popular, but the verdict is far from being unanimous in its favor. We are only just beginning to learn that we can raise a Grape that will make a tolerably good raisin, but it may be a long while yet before we settle upon any particular variety of Grape as being the one best adapted for curing. The founders of the California missions discovered eighty years ago that the Orange would thrive and bear fruit in a few favored spots in the southern counties, but it has taken all these many years to find out that as good if not a better Orange can be raised within the winter snow-belt of the northern counties. It is only within the last few years that Solano County has demonstrated a capability of producing Oranges nearly two months in advance of the Orange-groves of southern California. We have Date-palms now growing in our soil which have leaved and blossomed profusely and uninterruptedly for a century, but we have yet to learn whether they can be made to bear fruit, like the Palms of Arabia, by artificial fertilization. The fact that the Palms of Arabia would not bear fruit were this artificial fertilization discontinued, may perhaps enlighten us as to the cause of the barrenness of our own. The Banana is successfully raised in Florida, which possesses a climate during winter much more rigid than ours, but it is only a few years since the experiment was first tried here.

The first Banana-tree planted in the State of California was in all probability planted by one of the professors of St. Vincent College, Los Angeles, in the college-grounds; but the first plant to bear is now growing in Paradise Valley, near San Diego. The pods were small, but exceedingly delicious, and this has been the character of the fruit of all the Banana-trees that have since fruited in other parts of this State. Many semi-tropical fruit culturists are of the opinion that we shall find out, by-and-by, that there is a hardier Banana-tree than the particular one with which experiments have been made hitherto, which can be more successfully cultivated in California.

Fruit culturists in this State have been until lately groping in the dark. Some of them are doing so still. They have been to apt to regulate the nature of the trees and plants in latitudinal order, without making any allowances for isothermal changes. The isothermal line does not follow the parallels of latitude on the Pacific Coast, and especially in this State, any more than it does on the eastern slope of the Rocky Mountains. The northerly variation is, in fact, much greater, which unquestionably requires a corresponding modification of the laws governing the culture of fruits. These facts and surmises suggest a wider range to our semi-tropical fruit-producing territory than that which we have been heretofore willing to allow it.

MORAL OF FLOWERS.

BY AN AMATEUR.

——"Not a tree,
A plant, a leaf, a blossom, but contains
A folio volume. We may read, and read,
And read again, and still find something new,
Something to please, and something to instruct,
E'en in the noisome weed."

Flowers have been, to the poets of all ages, and in all countries, a never-failing source of inspiration, and to mankind at large, "a joy, a pure delight," from the creation even to the present time; and will be so, while we have eyes to see and hearts to understand and appreciate the blessings that are scattered around us; for, as Keats says:

"A thing of beauty is a joy for ever;
Its loveliness increases; it will never
Pass into nothingness; but still will keep
A bower of quiet for us, and a sleep
Full of sweet dreams and health."

And is not a flower "a thing of beauty?"—is it not a thing of surpassing loveliness? Who can gaze on its exquisitely perfect form, its unrivaled brilliancy of hue, without a thrill of admiration and a sensation of pleasure—pleasure which passes not away, but dwells in the memory like a pleasant perfume, that remains long after the object has perished. And why is this? Because of its purity, its freedom from aught that is gross and therefore perishable. None we venture to aver can gaze on those beautiful "alphabets of creation," those adorners of earth's bosom, unmoved, but such as have hearts utterly corrupted, and rendered impervious to every sweet and gentle impression, and even such will at times feel stirring within them at the sight thoughts that have long slumbered; and awakened by those "silent monitors," the "still small voice of conscience" is heard, inciting them to shake off the trammels of guilt, and return to the ways of pleasantness and peace, wherein their feet once trod, when

"The flowers in silence seemed to breathe
Such thoughts as language could not tell."

We have called the flowers "silent monitors," and not unadvisedly, for many are the lessons they teach, of patient submission, meek endurance, and innocent cheerfulness under the pressure of adverse circumstances:

"They smilingly fulfill
Their Maker's will,
All meekly bending 'neath the tempest's weight,
By pride unvisited,
Though richly raimented,
As is a monarch in his robes of state."

Many are the moral precepts they inculcate, bidding us admire the wisdom of their Omnipotent Creator, in their infinite variety of forms and colors, and perfect adaptation to the situation they occupy.

——"Not a flower
But shows some touch, or freckle, streak, or stain,
Of His unrival'd pencil. He inspires
Their balmy odors, and imparts their hues,
And bathes their eyes with nectar, and includes
In grains as countless as the sea-side sands
The forms with which He sprinkles all the earth."

They tell us to be grateful for these abundant manifestations of His attentions, not only to our actual wants and necessities, but also to our comforts and enjoyments; opening to us this source of pure and innocent gratification, in order to strengthen us against the allurements of folly, and wean our hearts from the guilty pleasures of sensuality into which they are too apt to be drawn.

"God might have bade the earth bring forth
Enough for great and small,
The Oak-tree and the Cedar-tree,
Without a flower at all.
He might have made enough, enough,
For every want of ours

For luxury, medicine, and toil,
And yet have made no flowers.
* * * * *
"Our outward life requires them not,
Then wherefore had they birth?—
To minister delight to man,
To beautify the earth;
To whisper hope—to comfort man
Whene'er his faith is dim,
For whoso careth for the flowers
Will care much more for Him!"

CULTIVATION OF THE CASTOR BEAN.

A correspondent of the San Diego *Union* furnishes that journal with the following: "Last spring Mrs. M. A. Burton, who is a woman of rare energy and business capacity, decided to put under cultivation about one hundred acres of land on the Jamul ranch. It was too late to plant grain, the land was not fenced, and there was no chance for irrigation. So it was decided to attempt the cultivation of Castor beans.

"The land was plowed and laid off as for Corn, and the beans dropped in the furrows and covered with a plow. It required 250 lbs. to plant the 100 acres. When the plants came up they were thinned out, leaving only one to each hill, about five feet apart one way and three the other. The land was cultivated once, but not irrigated, and needed no fencing, as no stock will touch the plants. About August the beans began to ripen and picking commenced. They grow in the shape of "spikes," from eight to fifteen inches long, containing a large number of pods, each of which contains three beans. The sort cultivated is different from the tree kind grown as an ornamental shrub; it forms a plant about six feet high, and is an annual. The peculiarity rendering it profitable to cultivate is, that when ripe the pod bursts open with such violence that the beans are thrown out to a distance of several feet.

"The method of gathering and preparing for market is as follows: Every day the ripe spikes are gathered by hand, put in sacks, and hauled to the 'popping-ground,' which is a space of about an acre, made smooth and hard like an old-fashioned buckwheat thrashing-ground. Here the spikes are spread, and during the day they pop open from the heat of the sun, throwing out the beans. Each morning the straw is raked off, the beans shoveled up, cleaned in a fanning-mill, and sacked, ready for market. By the time the field is once picked it is ready for another picking. Eight to ten men have been employed picking on one hundred acres.

"The yield is estimated at 1,500 lbs. per acre, worth four cents per pound, or a gross yield of $60 per acre. The expense of cultivation, etc., is estimated this year at one-half this amount, but is greater than it probably will be another season, owing to inexperience and preparing new land. There is probably no crop so easily raised that will yield so large a return."

INCIDENTAL NOTES ON THE FLORA OF JAPAN.

FROM A PRIVATE LETTER.

The approach to Yokohama is very interesting for miles, the shores being sandstone bluffs in plateaus, finally rising into hills; then sharp jagged peaks, sometimes conical, and clothed to their tops (in October) with quite a luxuriant foliage, with frequent Fir-trees of a variety looking from a distance like Palms. Japan is said to be the richest in its coniferæ of any country in the world—The trees in the dense grove back of the temples at Tokio are of great variety—some with soft foliage and graceful drooping branches, others with rich waxen leaves, and many varieties of

coniferæ. The beauty and purity of the greens I never saw equaled. There are several miles of drives winding round in the grove surrounding the great temple, and the trees have been trained in their early growth so as to incline toward each other on either side of the road, so that it gives one a feeling that they are doing homage to the passer-by. They are very tall, and some in the grove are very large, and nearly all the trunks are covered with vines climbing and winding about them. I took a ride of seven miles from Tokio, and climbed a point which gave me an extended view of a large cultivated valley, backed by a range of hills. The whole country is picturesque and varied in scenery. In the spring and summer the country is said to be charming from the richness and variety of its flora. There are large groves of the Japonica, and the Azalea is often seen mixed with the Tea-plant, forming long hedges. That magnificent Lily we sometimes see in gardens and drug-stores to sell is as common here as the Poppy in California.

The hills around the bay of Nagasaki are very picturesque and thickly covered with trees, shrubbery, and vines, and the stone walls and old temples on sunny sides are covered with mosses, lichens, and ferns, and this growth extends over the floors and pathways. Before reaching this place we passed through the island sea. It is so full of islands that navigation is difficult. They are all clothed with verdure, and, although many of them have quite high points, they are terraced and cultivated to the top.

Timber, for durability, is usually cut in midsummer or midwinter, as then the seasoning process is more rapid and perfect.

BLUE GUM AND ITS CULTURE.

The Eucalypti family is rather numerous—there being not less than thirty species, of which the "Blue Gum" or *Eucalyptus globulus* ranks highest in the estimation of Californians. Of all trees, whether of this family or any other, "Blue Gum" is the most rapid grower—besides possessing medical qualities which add much to its value. For a sparsely wooded region, where the temperature does not descend below 25 degrees Fahrenheit, no variety of tree can be grown to the same size in the same period of time. Its wood is valuable for fuel as well as manufacturing. There are, however, other species of the family, but little known here generally at present, that will at no distant day become quite if not more popular than the "Blue Gum," whose wood is harder, closer grained, and better adapted to the thousand uses to which timber is applied. When it becomes known that this family has among its members species whose wood, can be converted into shingles, studding, and weather-boarding, and that buildings constructed of such will not only be remarkable for their durability, but nearly as "fireproof" as are iron buildings, and on which underwriters will willingly issue policies at half the rates common on other buildings, then the value of such species will be better appreciated by tree-growers.

Culture.—Make boxes about two feet long by sixteen inches wide, and from three to four inches deep, allowing small holes in the bottom for drainage. Fill up till within half an inch of the top with fine alluvial soil, moderately rich. Smooth the surface; sprinkle the seed evenly all over it, and cover with an eighth of an inch of soil composed of half sand. To attain the best results

the boxes should be placed in a "cold frame." If sown in summer, shade the glass by a covering of whitewash or light muslin. In the absence of glass, make a frame of boards with a movable cover made of laths nailed from one-fourth to one-half inch apart, under which place the boxes. Water will be needed daily if the weather is warm and little moisture in the atmosphere, and should be applied with a fine sprinkler. Seed will germinate in from eight to fourteen days. When plants are two inches high, begin to "harden" them by allowing more air, increasing from time to time until they have become hardy enough to withstand the hot sun of the day and the cool air of the night. When six inches or more high they may be transplanted to a temporary or permanent place, care being taken to remove the plants with some earth attached to the roots, at least not to allow the roots to be exposed to the atmosphere. For forest culture, the young trees should be planted from eight to twelve feet apart each way, and between the rows should be cultivated for two years, when they will be strong enough in trunk and root to care for themselves.—*Cotton Culture.*

THE KUM-QUAT.

BY A FRUITIST.

The fruiting of the Kum-Quat in various parts of California, especially in the more southern counties of the State, should awaken an interest among pomologists in the fruit. It is a small species of Orange, *Citrus Japonica*, which is found in both Japan and China, as well as in a few places in the Sandwich Islands. It was figured and described in Europe in the last century by Thurnberg, but it was not known in cultivation there in their conservatories until 1842, when Mr. Fortune introduced it into England, and it was cultivated at Chiswick, near London; of course, in a hothouse. Later it has been successfully fruited there, and is likely to become a popular plant. We see specimens of it in some of our gardens in San Francisco and elsewhere, but it requires a warmer climate than most situations on our middle coast near the ocean, and fruits very seldom in the open air in these localities—perhaps, chiefly from their being so much moisture.

In China the Kum-Quat is grown as a shrub about six feet high; but trained to the back-wall of a greenhouse, it has in England reached the height of fifteen feet. The plant resembles a dwarf Orange-tree, but with smaller and thinner leaves; it flowers freely, and is very attractive in bloom. The fruit, which is about the size of a gooseberry, is like an Orange in miniature, having a bright orange rind, which, when scraped, gives off a highly agreeable perfume. Within there are five cells, filled with an exceedingly acid pulp. The fruit picked with its leaves attached makes a beautiful ornament for the dessert, and when preserved with sugar forms a sweetmeat which is highly esteemed. According to Mr. Fortune the Kum-Quat grows in the greatest perfection in a portion of China so cold that the Orange will not thrive, and that in the Orange region of southern China the Kum-Quat does not succeed so well. The Chinese grow it in pots, but it does better in the open ground. The plant requires a warm summer to ripen its wood, and a dry winter, and it would no doubt prove hardy in many localities in the Middle States, as in China it endures a cold of

below 20°. It being an ornamental plant in both flower and fruit, and useful as well, it is hoped that our nurserymen will cultivate it for sale more than they do.

The Kum-Quat will not graft upon the Orange; the proper stock is *Citrus trifoliata*, a small hardy species, which propagates from cuttings. The preserved fruit is to be found for sale in our Chinese and Japanese stores, and also on the stalls in the streets of our "China-town." It is a small, nice preserve, quite sweet, with, for most people, a peculiarly pleasant flavor. It is sold with its dry, brittle, rough rind, which is easily broken by the hand. They must be very plentiful in China, for the price is quite reasonable even here. The stone or seed is hard, and the soft pulp is all around it.

LILACS.

Lilacs are indigenous to a comparatively limited area in Europe, but they have a wide range in Asia. In addition to several distinct species (for the most part well known and widely cultivated), our collections have been from time to time enriched by the accession of a large number of splendid varieties, obtained either by hybridizing or by selection from garden sports. There are few garden soils in which Lilacs will not grow, and even thrive; though they succeed all the better in such as are deep and rich with a cool subsoil. An occasional moderate allowance of well-rotted manure, pointed in among the roots, is always acceptable.

Syringa vulgaris (the common Lilac) is recorded as indigenous to Hungary and Persia, and has been cultivated in British gardens since 1597. It is naturally a many-stemmed broad bush, varying in height from 15 to 25 feet, according to soil and situation; but when trained as a standard it makes an extremely handsome lawn plant, producing its grand panicles of fragrant lilac flowers, about the middle of May, in wonderful profusion. As it grows freely and rarely fails to flower, even amid the disadvantage of dust and smoke in towns, it should never be overlooked in making a selection for planting squares and street gardens. Of this species there are a large number of interesting varieties, of which the following may be noted as very distinct, and, both as regards foliage and flowers, no less beautiful than the parent: *Alba*, the well-known old white-flowered Lilac; *Noisettiana*, also white, but with larger panicles; *Cærulea*, flowers deep blue; *Violacea*, a kind with violet flowers; *Charles X*, purple, panicles very large; *Philemon*, lavender-colored; *Dr. Lindley*, rich purple, panicles very large; *Triomphe d' Orleans*, pinkish purple; *Rubra insignis*, dark red; *Duchesse de Mours*, pale blue, panicles and flowers very large.

S. persica (the Persian Lilac), indigenous to Persia, from whence it was first introduced in Europe in 1640. It is perfectly hardy, and forms a neat dwarf bush of from four to six feet high, with numerous slender branches; its panicles of pale-purple sweetly scented flowers coming out, in May or June, in such abundance as almost to hide the foliage. The leaves are smaller than those of any of the other species, somewhat lanceolate in form, and of a dark-green color. It is invaluable for small gardens or shrubberies, growing vigorously in any kind of good garden soil, and in any situation in which a shrub could be expected to thrive. Of varieties, *alba*, with pure white flowers, and *laciniata*, with leaves more or less

deeply pinnatifidly cut, are both quite as hardy and as easily cultivated as the parent, and well deserving of a place among the choicest dwarf shrubs.

S. Emodi, (the Himalayan Lilac,) is found abundantly on the Himalayan Mountains, and was first sent to England in 1836. It is a broad thick-foliaged shrub of about ten feet high. The leaves are larger than those of the common species; of an elliptic-oblong form; bright green above and slightly glaucous below. The flowers are light purple; produced, like those of the other species, in panicles, and usually in perfection in May. Though thriving best in a moderately sheltered situation, it is a very hardy shrub, quite distinct in appearance from the others. It is ornamental enough for association with the finest of its class, forming a neat standard when properly trained, and is very desirable for small lawns as a single specimen.

S. Josikæa (Josika's Lilac).—This is indigenous to mountains on the Rhine, and was named in compliment to a lady—the Frau Baronin Von Josika—who discovered it on the Siebenbergen Range in 1830. It forms a handsome bush of about ten feet high, somewhat erect in its style of growth. The flowers—which are produced much later than those of any of the other species—are of a very deep color and sparingly distributed over the long panicles. The leaves are similar in size to the common Lilac, but more lanceolate in shape; with a rough leathery texture, and a dark sombre-green color. Though this plant neither produces its flowers in such rich masses or so copiously as the common Lilac and its varieties, it is nevertheless a valuable ornamental shrub. It is hardy enough for the most exposed situation, and so distinct in appearance, from its peculiar habit and foliage, that it produces the finest effect when contrasted with other shrubs of lighter tints in mixed borders. It thrives best in a deep, rich, and moderately damp soil.

S. rothomagensis (the Siberian, or Rouen Lilac).—Some writers assert that this is a native of Siberia, and a distinct species; others that it is a hybrid raised about the latter end of the last century by M. Varin, the then Director of the Botanic Gardens at Rouen, the parents being *S. persica* and *S. vulgaris*. The probabilities seem to be in favor of the latter theory, as in general appearance it is just what might be expected from the blending of the styles of growth, foliation, and flowers of the two species. In any case the same plant is found in collections both under the name we have adopted and under that of *S. sibirica*. It was first introduced into our gardens in 1795, and has since been widely distributed. It is well known as one of the showiest, most beautiful, and hardiest of flowering shrubs. Though more robust in its habit of growth than *S. persica*, it has a general appearance suggestive of a large variety of that species, and is a grand plant either for a shrubbery border or as a close bush for a lawn specimen.—*The Gardener.*

Tree Labels. — The *Massachusetts Ploughman* says that the best and cheapest labels for trees are simple strips of zinc, corroded by contact with the air, and then written on with a black lead pencil. This is said to have been an accidental discovery of Colonel Wilder. When you first write on them with a black pencil, you can not, if you try, rub off the name, and in a few months the name becomes permanent so that it can not be rubbed

off as long as the zinc continues to corrode. Colonel Wilder has many labels that have hung on the trees for thirty years, which are as perfect as ever. Sometimes the labels will get a little coated with a white substance that gathers on them, but a light rubbing with a moistened finger will bring out the name with perfect distinctness.

THE BEECH-TREE.

BY E. J. HOOPER.

The Beech (*Fagus Sylvatica*) grows, as we all know, to a considerable stature, though the soil be rather stony and barren; as also on the declivity of hills and mountains, where they will resist the winds better than most other trees. They would, no doubt, do well on our Coast Range of mountains; but then the nurseries for the young plants ought to be made upon the same soil, for if they are raised on too rich ground and warm exposure, and afterward transplanted into a bleak, barren situation, they seldom thrive; which principle holds true with most other trees, whether fruit or otherwise.

The timber is of great use to turners for making trenchers, dishes, trays, and buckets; also to the joiner for stools, bedsteads, etc., and is esteemed excellent fire-wood. The mast, as is well known, is very good for fattening swine and deer, and affords a sweet oil.

It delights in rather stony ground, where it generally grows very fast. The bark of the tree in such land is clear and smooth; and although the timber is not so valuable as that of many other trees, yet as it will thrive on such soils, where few better trees will grow, the planting of them should be encouraged, especially as it affords an agreeable shade, and the leaves make a fine appearance in summer, and continue green as long in autumn as any of the deciduous trees; therefore in parks and other plantations this tree deserves to be cultivated among those of the first class, especially where the soil is adapted to it.

Thus much for the more practical part relating to the Beech. This tree is a favorite tree with naturalists and poets. Gilbert White, in his charming *Natural History of Selborne*, where he lived and wrote his famous book, pronounces it one of the most beautiful objects in creation. He says: "Find me another tree that looks so much like a gem of emerald when the sunbeams fall full upon its foliage, and the gentle wind steals softly over its branches, producing an effect which no artist could ever represent. Then, again, it has the smoothest and clearest bark in the forest; and many a lover has cut his fair one's name upon its polished rind. There is also a sweeping grace in its drooping branches, hanging in every grand and unimaginable form." "They make spreading trees, and noble shades with their well-furnished and glistening leaves," says old Evelyn; and but few men understood better the beauty of trees.

There is also the Purple Beech, another beautiful ornament for parks and pleasure-grounds, which has been known to grow to the height of thirty feet, although some botanists contend there is only one variety.

Trees are a delightful study, and it is pleasant to be so far acquainted with them as to be enabled to distinguish their different characters at a glance. This is less difficult in winter, when the ramifications or forms of the branches of the deciduous ones are so distinctly outlined; but in summer, when they have put on their full foliage, they are

more alike, and there are some kinds which bear so close a resemblance to others as only to be recognized by a practiced eye. In autumn, too, the pleasure of a country walk is increased by being able to point out every particular tree by the rich color of its leaves, the varied hues of purple, olive, red, gold, green, and even crimson (as in the Scarlet Oaks), which each tree at that time assumes.

Music breathes from the Beech, as from many other trees; its numerous spreading branches, at one time aspiring in airy lightness above the general mass of foliage, at another feathering to the ground, are the haunt of innumerable birds. Then its fine shade—"*Sub tegmine fagi*," as the poet Virgil says.

Summer winds, too — how nimbly they come and go, causing that gentle rustling among the leaves, which sounds in accordance with the rushing of yonder mountain stream or prairie rivulet!

Every tree has its peculiar characteristics. Majesty is developed in the Oak, gracefulness in the Ash, an undefined sense of beauty in the Birch, and cheerfulness in the Beech.

Old Beech-trees in the East are often found covered with gray lichens or tufts of moss, in which field-mice love to nestle.

No other bark equally allures the young enthusiast to carve thereon the name of his beloved:

> "As the letters of our names increase,
> So may our love."

Enthusiasts in all ages confided their thoughts to trees, even before Virgil sung, or Shakspeare haunted the wildwood. Poetry has, also, its imperishable associations, and many a lone tree awakens those deep emotions which are kindled whenever memory recalls the creation of poetic genius. How appropriate, therefore, the elegant effusion of one of our poets, when, wandering in a ravine of Beeches, he thus personified one of those noble trees, which a wood-chopper had marked with his axe:

> "Thrice twenty summers I have stood
> In bloomless, fruitless solitude,
> Since childhood in my pleasant bower
> First spent its sweet and sportive hour;
> Since youthful lovers in my shade
> Their vows of truth and rapture made,
> And in my trunk's surviving frame
> Carved many a long-forgotten name.
> O! by the sighs of gentle sound,
> First breathed upon this sacred ground,
> By all that love has whispered here,
> Or beauty heard with ravished ear;
> As Love's own altar honor me:
> Spare, woodman, spare the Beechen-tree."

All lovers of woodland scenery maintain that no tree is more beautiful when standing in parks and pleasure-grounds. In woods at the East, as already noticed, these favorite trees grow clear of branches to a great height, and hence, as sung the poet:

> "There oft the muse, what most delights her, sees
> Long living galleries of aged trees,
> Bold sons of earth, that lift their arms on high,
> As if once more they would invade the sky.
> In such green palaces the first kings reigned,
> Slept in their shade, and angels entertained;
> With such old counselors they did advise,
> And, by frequenting groves, grew wise."

The stately strong Oak has abundance of acorns, and from year to year scatters millions upon the earth. The Beech's liberality is equally manifested, and its fruit is deserving of brief notice. Observe the ovate form of the inclosing calyx, its silkiness, and pliant prickles, and how beautifully the brown and glossy mast fits within that elegant receptacle.

The Beech's boughs, though comparatively unpeopled during the summer

months, are resorted to in autumn by squirrels. This nimble and light-hearted creature, with his numerous relatives, is here warily laying up a store for winter consumption.

Many a noble tree owes its birth to Beech-mast, which birds and squirrels have dropped in their haste, or perchance forgotten when carefully laid by.

UNHEALTHY PLANTS—THE REMEDY.

BY PETER HENDERSON.

Whenever plants begin to drop their leaves, it is certain that their health has been injured by over-potting, over-watering, over-heating, by too much cold, or by applying such stimulants as guano, or by some other means having destroyed the fine rootlets by which the plant feeds, and induced disease that may lead to death. The case is not usually important enough to call in a "plant doctor," so the amateur begins to treat the patient, and the practice in all probability is not unlike that of many of our household physicians, who apply a remedy that increases the disease. Having already destroyed the, so to speak, nutritive organs of the plant, the stomach is gorged with food by applying water, or with medicine by applying guano or some patent "plant food."

Now the remedy is very nearly akin to what is a good one when the animal digestion is deranged—give it no more food until it re-acts. We must then, if the roots of the plant have been injured from any of the above-named causes, let the soil in which it is potted become nearly dry; then remove the plant from the pot, take the ball of soil in which the roots have been enveloped, and crush it between the hands just enough to allow all the sour outer crust of the ball of earth to be shaken off; then repot in rather dry soil (composed of any fresh soil mixed with an equal bulk of leaf-mold or street sweepings), using a new flower-pot, or having thoroughly washed the old one, so that the moisture can freely evaporate through the pores. Be careful not to overfeed the sick plant. Let the pot be only large enough to admit of not more than an inch of soil between the pot and ball of roots. After repotting, give it water enough to settle the soil, and do not apply any more until the plant has begun to grow, unless indeed the atmosphere is so dry that the moisture has entirely evaporated from the soil; then of course water must be given, or the patient may die from the opposite cause—starvation. The danger to be avoided is in all probability that which brought on the sickness, namely: saturation of the soil by too much water. Other causes may induce sickness to plants, such as an escape of gas in the apartment, or smoke from a flue in the greenhouse, but in all cases, when the leaves fall from a plant, withhold water, and if there is reason to believe that the soil has been poisoned by gas, or sodden by moisture, shake it from the roots as before advised, and repot in a fresh flower-pot. Many years ago, when I used smoke-flues in my greenhouse, some kindling wood, carelessly thrown on the top of one of them, ignited, and the smoke caused the leaves of every plant to drop. There were some 3,000 plants, mostly Tea-Roses, in the greenhouse; it would have been too much of a job to repot all, but by withholding water for some ten days, until they started a new growth again, very few plants were injured.—*American Agriculturist.*

FACTS ABOUT HOME-MADE RAISINS.

We have made a record from time to time of all the important facts within reach about the production of raisins, because there is now a good prospect that this may become an important industry in this State. The early storms this year were very destructive to the raisin crop. But the business in many localities has been advanced beyond the experimental stage. We have noticed both processes of manufacture, viz: that by artificial drying, and by sun-drying.

A correspondent of the *Rural Press* furnishes some important data about raisin production in Yolo County:

"I irrigate my vineyard by covering the ground with water when the Muscats are about the size of small Peas. If irrigated earlier they drop their fruit; if later, the ground remains too wet at the time of ripening and causes mildew. Two years ago I did not irrigate all the vineyard. On some portions that I did not irrigate I raised twenty pounds of first crop and fifty pounds of second crop per vine. But where I irrigated the yield was still larger—so much so that I determined always to irrigate in future. I can raise on larger vines fifty pounds average at the two crops. This will make seventeen pounds of raisins, which, at present prices, will sell for $2.00—this much for raisins from each vine. I set 500 vines per acre, which gives $1,000 per acre for Muscat raisins. I have made raisins of the Flame Tokay Grapes. They are not good. The seeds are too large and too hard. They yield larger crops than the Muscats, but the superiority of raisins from the latter more than compensates for the difference. Besides, my Muscats grow very large. I have measured them five inches in their longer circumference.

"It costs one day's labor for every 250 pounds of fresh Grapes that we pack in boxes for the San Francisco market; but when picking for raisins they do much more than this. Each hand will pick and lay out for drying 800 pounds per day.

"I have only twenty-six acres of vines. They are of all ages—from six years downward. I raised about 100 tons of Grapes this year. Many of them were sent to San Francisco for table use. I am going very slowly in raisin production, and shall not try to do any more than I can do well, but I have already done enough to see that when once master of it, it will be a most pleasant and profitable business.

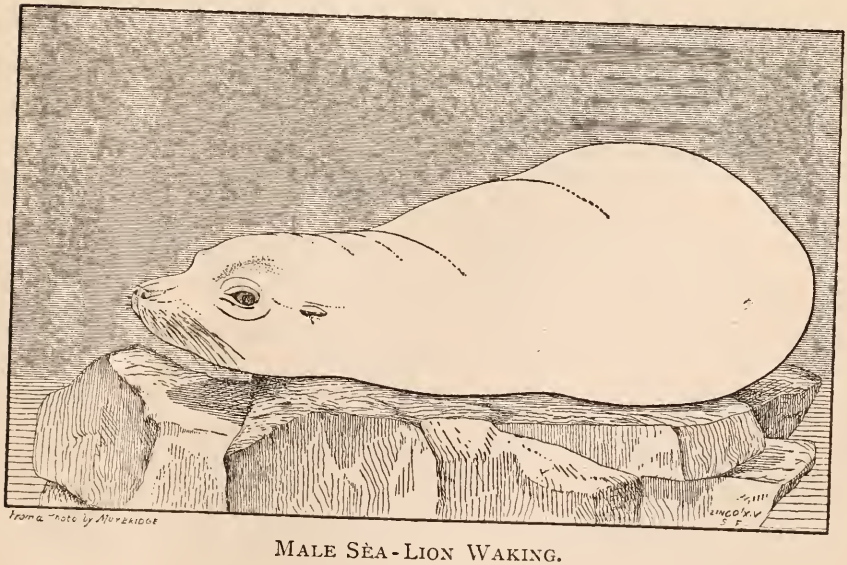
"I lost about 250 boxes this year by the rain. But such a spell of wet weather so early in the season was never known before."

This is one of the few instances which we have noted where irrigation has been resorted to for Grape-growing. Irrigation has been generally discarded where Grapes are grown for wine-making. If the product of an irrigated vine is fifty pounds of Grapes, or seventeen pounds of raisins, worth in the market $2.00, certainly the poorest vineyard would be turned to a better account than rooting it up. The vines can be easily grafted and brought into partial bearing the second year.

The same correspondent reports the following facts about the experiments of Mr. Briggs, of Davisville:

"I have forty acres of Grape-vines in my vineyard. This year I have made 1,750 boxes of raisins, containing twenty-five pounds each. When the rains came on this fall I had about 400 tons of Grapes nearly cured for raisins lying out on the ground drying. The rain spoiled all of them. Had our rains held off this fall as they usually do, I

MALE SEA-LION SLEEPING.



MALE SEA-LION WAKING.

SEA-LIONS, OR SEALS, AT WOODWARD'S GARDENS.

[See page 63.]

should have made this year over $20,000 worth of raisins, but our very early rain destroyed more than three-fourths of them. Last year I made no raisins, on account of the late frost having killed my Grape crop; but year before last I made a quantity that readily sold for ten or eleven cents per pound. My raisins are made from Muscat Grapes. They yield well with me every year. The crop this year was very good. We gathered over twelve tons of Grapes from one acre of vines, many vines producing 150 pounds each, while the average was about sixty pounds per vine—that is, too, without irrigation. I have set a new vineyard of 160 acres, near the Cache Creek Ditch. I have chosen that locality so that I can irrigate them when, from drouth or other cause, there shall be any necessity for doing so. These vines I have set ten feet apart each way. I think they will insure a better growth of vines with larger Grapes.

Names of Plants—English vs. Latin.—My friend asks: "What is this pretty flower?" "*Galasine azurea.*" "What a long name!" "I can not shorten it." "But why have a Latin name? Better call it 'Blue Smiler,' in plain English." "Then you like such names as 'Shamrock,' 'Blue Bells,' 'Eglantine' and 'Culowkeys'?" "Certainly; everyone can understand them." "You can recognize the plants?" "Easily." "Well, I can show you in point endless discussions as to what they are. On the other hand, I defy you to produce two persons who disagree as to what is meant by '*Eucharis Amazonica.*' Paradoxical as it may seem, Latin is, in such matters, more intelligible even to an Englishman than English."—*Journal of Horticulture.*

THE FUCHSIA.

Within the mountain lodge we sat
At night, and watched the slanted snow
Blown headlong over hill and moor,
And heard, from dell and tarn below,
The loosened torrents thundering slow.

'Twas such a night as drowns the stars,
And blots the moon from out the sky;
We could not see our favorite larch,
Yet heard it rave incessantly,
As the white whirlwinds drifted by.

Sad thoughts were near; we might not bar
Their stern intrusion from the door;
Till you rose meekly, lamp in hand,
And, from an inner chamber, bore
A book renowned by sea and shore.

And, as you flung it open, lo!
Between the pictured leaflets lay,
Embalmed by processes of time,
A gift of mine—a Fuchsia spray,
I gathered one glad holiday.

Then, suddenly, the chamber changed,
And we forgot the snow and wind;
Once more we paced a garden path,
With even feet and even mind—
That red spray in your hair confined.

The Cistus trembled by the porch,
The shadow round the dial moved;
I knew this, though I marked them not,
For I had spoken, unreproved,
And, dreamlike, knew that I was loved.

Sweet wife! when falls a darker night,
May some pure flower of memory,
Hid in the volume of the soul,
Bring back o'er life's tormented sea
As dear a peace to you and me.

Wild Tobacco.—The Tobacco-plant appears to be indigenous to Nevada. It grows wild in several parts of this county, and the stalks attain a height of three or four feet in some places, particularly where the soil has been disturbed. The weed flourishes along the railroad embankment near Kemler's Mill, where it may now be seen by those who have any curiosity to examine it.—*Winnemucca Silver State.*

SOME GOOD ROSES.

BY F. A. MILLER.

So many varieties of Roses have been introduced, that it is difficult for an amateur to select from the list in the catalogues issued annually by nurserymen. It is true that every year some excellent acquisitions are made in Roses; but the introduction of new Roses is decidedly overdone, nine-tenths of them being inferior to old and well-known varieties.

The points to be taken into consideration in selecting a collection of Roses are:

1st. Flowering season. The most valuable in this particular are the varieties which produce flowers for the longest period of time. Those which flower with us all the year round will of course be considered the most desirable.

2d. Color. In the selection of varieties, distinctly contrasting and decided colors should receive due consideration.

3d. Form, which is a most important point in the quality of a Rose. While some varieties produce exquisite buds, others are most beautiful when in full bloom.

4th. The habit of the plant in growth, as well as the disposition of the flowers. Some varieties of Roses are very strong growers, while others are of dwarfish habit. Some may be pruned into any desirable form, while others will produce comparatively few flowers if the pruning-knife is used severely.

5th. Fragrance in Roses is also entitled to consideration. However, some of the most beautiful Roses are the least fragrant.

A most important point for us in California is the prevailing mildew, to which our Roses have been subjected during the last five or six years, and which attacks some varieties more than others. The old and well-known Général de Batailles, for instance, is so badly affected that it is of rare occurrence to see a good flower. All sorts of remedies have been suggested for this evil, but none have proved very satisfactory, owing perhaps to our dry atmosphere. This subject should be taken up in good earnest by our practical florists, as the fatal disease has discouraged many persons from planting Roses. I have been informed by some growers that where the Australian Gum-tree is planted extensively, Roses have kept nearly free from mildew; and, so far as my own observation goes, I have at least noticed that Roses within a short distance from the Blue Gum seem to have kept comparatively free from mildew. This may have been due to other conditions, yet some further close observations may throw more light on this subject.

I am inclined to believe that florists will do well to import a new stock of Roses from the East for a few years, in order that clean wood may at least be obtained for the purpose of propagation. Roses budded on Manetti stock seem to be least affected by mildew; but our people object to planting budded Roses, so that the only remedy seems to lie in the importation of new wood of the most desirable varieties.

The varieties of Roses which I may be permitted to call constant bloomers are few in number.

General Jacqueminot (*Pauline*) of brilliant crimson color, is the best everblooming Hybrid Perpetual; it flowers tolerably fair with us during the winter months.

Eliza Sauvage (yellow to white), *La Sylphide* (flesh to pink), *Safrano* (apricot to buff), *Devoniensis* (creamy white) *Delphine Giradot* (white and blush) *Gerard Desbois* (bright red), and *Reine du Portugal* (deep yellow), are, as far as I

have experienced, the best winter-blooming Tea Roses, and flower most profusely during the summer months.

Agrippina (brilliant red), *Cels Multiflora* (blush pink), *Daily White* (pure white), *Mrs. Bosanquet* (clear flesh), and *Tancredi* (deep red), of the class called China Roses, are excellent and constant bloomers, in winter as well as in summer.

Gloire de Rosamene (brilliant velvet carmine), *Hermosa* (bright pink), and *George Couvier*, are well-known Bourbon Roses, which are always in bloom, winter months not excepted.

Of the Noisette (Climbing) Roses, *Lamarque*, *Marechal Neil*, and *Celine Forestier*, are most constant bloomers.

[To be Continued.]

FRUIT CULTIVATION, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

In the raising of all kinds of fruits, except every one of the extremely or purely tropical, and there are some exceptions even with these, California certainly takes the lead of all her sister States of the Union. With regard to Apples and Peaches, there are many states east of us which equal us in the plentiful production of them, but as to Pears, Plums, Apricots, and Nectarines, California is far in advance of them, and also of the Southern States. We have greatly the advantage over the Eastern and Northern States in seldom having any frost sufficiently severe to destroy the crops, Apricots and Grapes being the chief fruits that are at times cut off partially by frosts in some places; therefore our Pears are never injured by freezing weather to any extent worth mentioning. Nor have we any blight, insectivorous or atmospheric, to attack them. With Pears, as with all the other varieties of fruit, everything else in our climate and soil is much in their favor. We have no curculio to destroy our Plums, a fruit so remarkable for its prolific as well as delicious qualities. The stalls in the markets of San Francisco and all our other cities actually groan with the immense abundance of this valuable crop, as indeed they do with all the other riches of Pomona.

All the more hardy, and, also, the most tender-fleshed Cherries thrive well here in most situations, as we seldom have at the season of their ripening rain sufficient to cause them to rot, so frequent in the rest of the States. Nor have we any curculio to puncture them, and render them uneatable. We are not aware of any disease to which they are subject. We do not know exactly the reason, unless it is the enormous quantities of many other fruits at the time the Cherry is ripe, but the early sorts, as the Morellos, and Early Richmond, are but little cultivated in this State compared with the sweet class of Cherries. Some of us who have been accustomed to see the Eastern fruits, especially the Plums and Cherries, so deformed by insects, and so often rotted by the rains, are sometimes almost in ecstasies at the soundness, large size, and beautiful complexions of these, and, in fact, all other fruits here.

Our mountains and valleys, but particularly the foot-hills and slopes of the Sierra (these latter lands being comparatively little occupied as yet), are admirably adapted to fruit-raising, and of these the best lands for the culture of the vine are the least valuable of our hill-sides. It is certainly our opinion that in America there is not a more inviting field for industrious horticulturists than California. And besides the middle and more northern districts of

the State, there are the southern counties, where the semi-tropical fruits are raised in great abundance; and if the markets should be glutted, as they have been sometimes, by the vast quantity of all kinds of fruits, there are the canning and Alden drying processes, that can be resorted to, always ready to enable persons to dispose of the superabundance for home or foreign sales.

In speaking above of the success in Pear-raising in the East in some special localities, we are led here to speak of the continued efforts, energy, and success of the worthy and venerable President of the United States Pomological Society, Hon. Marshall P. Wilder, of Dorchester, near Boston, who we observe has again sent to the *Horticulturist* of New York, as he has done to other horticultural journals for many years, notices of nine new Pears, namely: *Vicar Junior*, *Madame Henri Desportes*, *Docteur Koch*, *General de Bonchamp*, *Dr. Lindley*, *Maurice Desportes*, *Lucie Aubusson*, *Madame Loriol de Baruy*.

About the 22d of last month (January) Oranges were becoming very plentiful, and prices were declining. Solano and Sonoma Oranges figured prominently in the market stalls, and commanded the highest price. While Los Angeles Oranges are badly stained with the exudation of the scale-bug, those of the northern counties bear no signs of its presence, which gives them a decided preference with buyers. A fair quality of Orange is sold by street peddlers at 25c. per dozen; in the markets the same price is asked for the poorest. The range about the end of January was from 25c. to $1 per dozen. Pears were getting to be very poor. Most of the fruit in market was from Oregon. Apples were abundant, and in fine condition. These were then, and are still, the only fresh fruits we have in season, and the only ones that will be until Strawberries are in season.

Dried fruits and nuts are quoted as follows: German Prunes, 15c. to 25c. per lb.; California Plums, 15c.; Dates, 25c.; Butternuts, 25c.; Chestnuts, 35c.; Almonds—California soft-shell, 25c.; imported do, 35c.; Walnuts, 20c. to 25c.; Filberts, 25c.; Cocoanuts, 10c. to 15c. each.

About the last of January there was a notable scarcity of good vegetables. Old crop Potatoes were all more or less affected by the rot. New Potatoes were small, and far from being ripe. An inexorable demand was the only excuse that could be offered for digging them up in their then condition. Pinkeyes were quoted at 6c. per lb. The range of other varieties of new Potatoes was from 6c. to 8c. A small quantity of early Green Peas—the first of the season—found its way into market on the 20th of January, and sold at 25c. per lb. Cabbage Sprouts retailed at 10c. per lb.; Field Lettuce at 35c. to 50c.; Horseradish, 20c.; Mushrooms, 15c. to 25c.; Asparagus, 62½ to 75c.; Okra (dried), 50c.; Kale, 50c. per doz.; Artichokes, $1; Oyster Plant, 75c. per dozen bunches.

There was no particular change in the retail markets since the 20th of last month (January). Early Green Peas and new Potatoes came in slowly in small quantities. Mushrooms were of course much more plentiful after the rain, and a material decline had taken place in the price, being quoted on the 29th of January at 10c. to 15c. per lb. Other descriptions of vegetables were retailing at the same prices as the week before. There was nothing new to note in the fruit market. There were no new descriptions of fruit, nor was there any change in price. Pineapples, Bananas, Oranges, Lemons, Limes, Apples, and

Pears were the only fresh fruits in season about the last of January, and the stalls were largely filled with dried fruits and nuts.

The settled state of the weather the first week in this month (February) improved the condition of the farm, garden, and dairy produce offered for sale in the various retail markets. The supply of new Potatoes continues limited, and the size and quality poor, but the price is still high, ranging from 8c. to 10c. per lb. Puget Sound Kidney Potatoes (old crop) are at present about the best for domestic use in the market, and retail freely for 3½c. to 4c. Mushrooms are very plentiful and cheap, and are, furthermore, in demand. The retail price to day is 15c. per lb. Dried Chili Peppers are quoted at 50c. per lb.; Cabbage Sprouts at 10c.; Horseradish at 20c.; Dried Okra, 50c.; Green Peas, from Warm Springs, 25c., although they sold a few days ago for 35c.; Salsify, 75c. per doz.

Oranges are in good supply, and as the season advances are improving in condition and cheapening in price. Solano Oranges command the top price, 75c. per doz.; Los Angeles and Loreto Oranges range from 25c. to 75c. per dozen, according to size and condition. Excellent samples of sun-dried California Raisins are offering for 20c. per lb; California (dried) Plums, 15c.; German Prunes, 15c. to 25c.; Dates, 25c.; preserved Bananas, 25c.; California Almonds, soft shell, 25c.; imported do., 35c.; Walnuts, 20c. to 25c.; Butternuts, 25c.; Chestnuts, 25c.; Cocoanuts, 15c. each.

Green Peas in considerable quantities are coming regularly forward, and meet with ready sale. Small quantities of Asparagus are brought in by the gardeners, and sell for large prices. The continuance of the present warm weather will, however, soon increase the supply. The best Apples and Pears are scarce, and prices are advancing. By the box, Apples retail at $1.25 to $2.50, delivered.

Editorial Portfolio.

LILIES.

We embellish the present number of the HORTICULTURIST with the pictures of four handsome Lilies furnished us by James Vick, the eminent florist of Rochester, New York. These are *Lilium lancifolium*, *Lilium auratum*, *Lilium Japonicum longiflorum*, and *Lilium chalcedonicum*. The three first-named are from Japan. The fourth is a native of Palestine, and is supposed to be the flower referred to by Christ as the Lily of the field arrayed in glory far exceeding even the glory of Israel's most voluptuous monarch. With regard to Japan Lilies, the elegance of these comparatively new additions to our collections is of such high and chaste order as to meet the taste and admiration of every beholder. No wonder, then, they have so rapidly extended; for they are certainly desired, if not present, in every garden. Added to their universally admitted attractions of stately grandeur and brilliant coloring, may be mentioned their great docility, generally, of cultivation; being, in fact, manageable by the merest tyro, without trouble or other means than thoroughly good soil. They are grown in various ways: a portion are potted and brought forward in a gentle heat, to afford an early bloom for the conservatory; others are also placed in pots, but allowed to grow in a natural manner, so as to bloom after the first named; while a considerable number are planted into the beds of the flower-garden, as permanent or-

naments to that part of the charge. Their culture, therefore, is attainable by anyone, let his conveniences be what they may.

To grow them in pots for the greenhouse is the most usual practice, where their beauty is unquestionably heightened, and preserved for a longer time than can be expected with those exposed to the vicissitudes of even California seasons, or of others influenced by a foreign regimen in the early stages of their growth. Large pots are essential to a vigorous growth; for a full-grown bulb, capable of flowering, the pot should be a foot or fourteen inches in diameter, and, if there are two or three bulbs together, of course a still greater size will be necessary, without being at all disproportionate; for the plants attain a height of from four to five feet, and should there be three or four stems, the foot-stalks of the flowers will extend in a lateral direction and form a large head. The soil most suited to them is a mixture of turfy loam and peaty earth, with a proportion of about a third of thoroughly rotten manure. This compost should be used in as rough a state as possible, with a proper regard to its being well mixed, leaving all the roots, sticks, and similar matters in it, and a good drainage being placed in the bottom of the pot. The soil must be pressed firmly round the bulb, leaving its crown about two inches below the surface. A liberal supply of water should be given daily while the plants are growing, and an occasional soaking of liquid manure will add to the general vigor. At the ripening of the season's growth a gradual reduction of the supply of water should take place, until, by the end of autumn, the soil in the pots is left dry, and the roots in a dormant and fit state to pass through our short season of rest.

Those which are grown entirely out of doors—and the whole of them are perfectly hardy—should be planted in soil similar to that recommended for potting, and must have attention to staking and watering in dry weather, though the trouble they occasion is scarcely worth mention, until the season of comparatively small growth here: and a layer of fresh leaves or other litter may be

No. 1.

No. 2.

thrown over the beds to preserve an equal temperature, lest they make too early a growth and then suffer from adverse weather.

Frequent removals of them are injurious, by destroying the roots. All Lilies, but especially the California, require quite deep planting. The Japan Lilies are very fragrant.

No. 3.

No. 4.

Lilium chalcedonicum, or Scarlet Martagon, grows wild in every country from Galilee to Greece. But whether the blue Lily *Ixiolirion montanum*, or the *L. chalcedonicum* was the true Lily of the field, according to Scripture? Dr. Lindley, on the authority of Sir John

Bowring, came to the conclusion that the Scarlet Martagon was the Lily of the field, because that traveler happened to pass through the country when the Martagon was in bloom. But Sir E. Smith, the traveler, was of the opinion, with the traditional idea of some shepherds, that the reddish-blue and azure Lily—*Ixiolirion montanum*, the only Lily in all Syria, was the one referred to in the Sermon on the Mount. Some have thought the *L. chalcedonicum*, like the Potato, may have overrun the countries of the old world, through being so gay, as the Potato has for its usefulness. It may have been a stranger in Galilee in the time of Christ. After all, probably, no particular Lily was meant at all. The *Ixiolirion montanum*, the Blue Bells of the Holy Land, Mr. Beaton the florist says, once and once only flowered in England: he had the opportunity of seeing it in bloom, about the middle of May. It is a slender-growing plant, very much like the growth of a long-leafed Ixia.

P. Hanson, Esq. of Brooklyn, L. I., has one of the largest collections of Lilies in the United States. His collection numbers over 150 sorts, if the sub-varieties are included.

In addition to the very fine representation of the bloom of four Lilies in the frontispiece of the present issue of the HORTICULTURIST, we have given space to miniature illustrations of the plant and flower of each of them, so that they may be the more easily recognized; the numbers here given corresponding with those placed underneath each figure in the large plate, as follows: 1, *Lilium chalcedonicum;* 2, *L. Japonica longiflorum;* 3, *L. auratum;* 4, *L. lancifolium.*

We again take this opportunity to acknowledge an indebtedness to James Vick, the great seedsman of Rochester, N. Y., for his kindness in furnishing us these and many other plates for illustration and description.

SEA-LIONS, OR SEALS, AT WOODWARD'S GARDENS.

In addition to our cuts of flowers this month, we present to our readers four chiefly outline but handsome engravings of sea-lions in their varied natural attitudes; animals for so long a time such attractive objects in that most popular place of public resort, Woodward's Gardens. These life-like pictures of seals are taken from that most valuable and interesting work, *Marine Mammals*, by Capt. Charles M. Scammon. The sea-lion is known among naturalists as belonging to the sub-family *Trichophocinæ*, of which there are three genera and several varieties distributed in various parts of the world. Two species at least inhabit the coast of California; at any rate, quite as far south as the Farallones. The largest specimen found disporting in the pond and often climbing the large central rock, at the Gardens, must be twelve feet in length, and correspondingly gigantic in form. He is indeed a noble fellow, and a great favorite with the public. These wonderful animals are found to be rather migratory in their habits, changing from the cold latitudes to the tropics; as arrows or spear-heads, such as are used by the northern sea-coast natives, have been found in the bodies of those killed upon the southern coast of this State.

Our zincographic illustrations exhibit well the facial expression of some of these creatures when sleeping, waking, and when in a state of excitement, which is manifested by howling or roaring. The young pups, or whelps, are of a slate or black color, and the year-

lings of a chestnut brown. Great numbers of seals are to be found almost at any time during a clear warm day, upon the rocks adjacent to the sea (sometimes also in our bay), where they keep up a plaintive howling, croak hoarsely, or send forth sounds like the bleating of sheep or the barking of dogs. They show the fondest regard for their young calves, over which they keep the closest watch. Some of the older ones appear, at first, to be very brave, and often, when teased, make toward you with open mouths, displaying at the same time their tusks. But we have discovered them to be, as a general thing, great cowards. The simple wave of your hand will often make them "take water." Still, should they be so pressed as to render a fight inevitable, they would, in our opinion, prove very ugly customers to handle. At all events they fight almost like tigers among themselves. They live upon fish, mollusks, crustaceans, and sea-fowls. When in pursuit of the last, chiefly the penguin, Capt. Scammon states that the seal "dives deeply under the water, and swims some distance from where it disappeared; then rising cautiously, it exposes the tip of its nose above the surface, at the same time giving it a rotary motion, like that of a water-bug at play. The unwary bird on the wing, seeing the object near by, alights to catch it, while the sea-lion, at the same moment, settles beneath the waves, and at one bound, with extended jaws, seizes its screaming prey, and instantly devours it."

CATALOGUES RECEIVED.

From Ellwanger & Barry, Mount Hope Nurseries, Rochester, N. Y., No. 1: "Descriptive Catalogue of Fruits, 21st edition," from the nursery established as early as 1840. Some new Pears which promise to be of value are placed in a separate list under the head of "Select New Varieties." Mr. Rivers' "New Seedling Peaches," which have attracted so much notice in Europe, are placed in a separate list. There is also a more extended list of varieties of the Fig. Every new fruit is tested on their specimen ground; and there is this to be said of California, that if any kind of fruit will succeed anywhere, it is most likely to do so here. Messrs. E. & B. cultivate in every department over 600 acres of ground.

Also, from Ellwanger & Barry, No. 2: "Descriptive Catalogue of Ornamental Trees, Shrubs, Roses, Flowering Plants, etc." In this Catalogue are handsome engravings and descriptions of weeping and drooping trees, purple-leaved, cut-leaved, and variegated-leaved trees. Much attention is now given in Europe, as well as in our own country, to these kinds of very ornamental trees. Messrs. E. & B. are, of course, obtaining all the new varieties of every family of flowers, hardy perennial border-plants, and evergreens.

Also, from the same proprietors, No. 4: "Spring of 1875. Wholesale Catalogue of Fruit-trees, Small Fruits, Ornamental Trees, Climbing Shrubs, Hedge Plants, Tree Pæonies, Phloxes, Dahlias, Hardy Border Plants, Roses, Bulbous Roots, etc., etc."

From Peter Henderson & Co.: "Seed Catalogue for 1875," with splendid colored engravings of a group of Dianthus or Pinks, and a colored engraving of Henderson's Summer Cabbage. This

C.M. Sammon, del.

APPEARANCE OF A MALE SEA-LION WHEN ROARING.

FROM ELLIOTT

FEMALE SEA-LIONS OF ST. PAUL'S ISLAND.

SEA-LIONS, OR SEALS, AT WOODWARD'S GARDENS.

[See page 63.]

handsome catalogue contains many engravings of the choicest flowers and vegetables.

Also, Peter Henderson's No. 27: "Spring Catalogue of New, Rare, and Beautiful Plants for 1875." This fine nursery was established in 1848. The catalogue contains a most beautiful colored engraving of the rarest and choicest Verbenas, with splendid wood-cuts of many of our most highly prized flowers.

From J. M. Thorburn & Co.: "Annual Descriptive Catalogue for 1875, of Flower Seeds," with practical directions for their culture and treatment; also, a choice list of beautiful French Hybrid Gladiolus, and other spring bulbous roots.

Also, from the same nursery and establishment, for 1875: "Annual Descriptive Catalogue of Vegetable and Agricultural Seeds, Garden, Field, Fruit and other Seeds," embracing every standard and improved variety.

From J. B. Root, Rockford, Ill.: a neat "Garden Manual and Seed Catalogue for 1875," containing directions for many operations in the flower and vegetable garden, such as hot-beds, soil, tools, Sweet Potato culture, etc.

From A. Bryant, Jun.: "Catalogue of his Nurseries, at Princeton, Ill., for 1874-5."

The Monthly Report of the Department of Agriculture, for November and December, 1874, filled with valuable statistics and correspondence relating to the crops from all parts of the United States, Entomological Record, Chemical Memoranda, Botanical Notes, Microscopic Observation, etc.

The new conservatory in Central Park, New York, is to be 230 feet long and 50 feet wide.

Victoria Regia.—*E. S., San Francisco, Cal.*, says: "The *Victoria regia* has been grown successfully during the past fifteen years at the Insane Asylum, Nashville, Tennessee. Mr. Blair, late gardener at the above institution, informs me that the plants were doing finely when he saw them in September last; but whether seed has, or will ripen this year, can only be ascertained by applying either to the superintendent or the present gardener."

The above notice in the *Gardener's Monthly* reminds us that Mr. Miller, of Miller & Sievers' nursery of this city, informs us that he intends if possible to exhibit the *Victoria regia* Lily at our coming Mechanics' Institute Exhibition.—Editor.

The Camellia Blooming Out-Doors in this City.—Mr. J. Henry Applegate, Jr., has handed to us a beautiful and perfect white Camellia, from a plant which has bloomed and is still blooming finely in the open air at his residence in this city. This plant has been exposed all winter to the north winds, having been but slightly sheltered.

NEW AND RARE PLANTS.

Adiantum Farleyense.—We had the pleasure of seeing in the greenhouse of Messrs. Miller & Sievers, at their floral establishment, on Chestnut Street, a variety of Adiantum, the Maiden-hair Fern (*Adiantum Farleyense*), a very exquisite and rare species. This Fern is exceedingly graceful and lovely—a native of Jamaica. Its leaves are large and perfectly and beautifully fringed, and their color vividly green. The Maiden-hair Ferns may be grown without Fern or Wardian case, in one's parlor.

CALIFORNIA RAISINS.

Samples of raisins made at Los Angeles, from the White Muscat and the Los Angeles Grape, have been received here. The raisins of the former variety are large, handsome, and of excellent flavor; those of the latter are small, but good in flavor and well adapted to cooking purposes. Both qualities find a ready sale for the markets of Arizona, Cerro Gordo, and Panamint. One purchaser for Arizona took three tons of the smaller kind, at fifteen cents per pound. The Los Angeles Grape is little inferior in size to the Muscat; but containing less pulp, it loses more in drying. The Muscat is preferred for raisins to any other variety now grown in the State; nor is there any danger that it will ever be superseded. Inquiries are made for Huasco cuttings, and if they could be got, many thousand of them would be set out immediately; but it is uncertain when they can be obtained, and their value for cultivation in California is yet to be demonstrated. We do not even know whether the Huasco Grape would be a favorite for table use or wine; but no such doubt attaches to the White Muscat, of which a large number will be set out this winter in the southern part of the State, and much grafting will be done with it on the Mission stock. The establishment of the Alden drying-house in Los Angeles has convinced the vineyardists there that raisins are to take a prominent place among the productions of their region, and that the time has come for undertaking the business with a profit.

The experience of Yolo in raisins is encouraging. G. G. Briggs, who lost 400 tons of Grapes when nearly dry, by the rain, has set out 160 acres of Muscat, ten feet apart each way, in addition to 40 acres which he had before. His vines yielded 60 pounds each on an average, and some of them 150 pounds. A letter in the *Rural Press* quotes as follows from some remarks made by B. B. Blowers, who makes raisins from 26 acres of vines near Woodland:

"I irrigate my vineyard by covering the ground with water when the Muscats are about the size of small Peas. If irrigated earlier they drop their fruit; if later the ground remains too wet at time of ripening, and causes mildew. Two years ago I did not irrigate all the vineyard. On some portions that I did not irrigate I raised 20 pounds of first crop and 50 pounds of second crop per vine. But where I irrigated the yield was still larger; so much so that I determined always to irrigate in future. I can raise on larger vines 50 pounds average at the two crops; this will make 17 pounds of raisins, which, at present prices, will sell for $2—this much for raisins from each vine. I set 500 vines per acre, which gives $1,000 per acre for Muscat raisins. . . It costs one day's labor for every 250 pounds of fresh Grapes that we pack in boxes for the San Francisco market; but when picking for raisins we do much more than this. Each hand will pick and lay out for drying 800 pounds per day."

The Muscat vine is, we believe, alone in producing a second crop in this State, but in most counties the second crop Grapes do not ripen, and they are sometimes plucked off.—*Alta.*

An English writer gives a plan for protecting all kinds of fruit from birds. It is simply crossing threads from twig to twig in various directions, so that the birds will strike against them, when seeking the fruit. He says it never fails to scare them away.

Editorial Gleanings.

Almond Culture in Santa Barbara.—Mr. Olmsted, of Carpenteria, has finished picking his crop of Almonds. He will have from his orchard this season over five tons of the Languedoc or Soft-shell Almonds. Mr. Olmsted's orchard is only four years old, and, of course, is not yet in full bearing. His trees bore a few nuts when two years old. The third year the average yield to the tree was about five pounds. Two rows in the orchard, covering ground equivalent to two acres, that received great care in planting, and special culture, produced 2,000 pounds of dried Almonds. This yield, at the wholesale San Francisco market price for the Soft-shell Almond, will give Mr. Olmsted about $230 per acre, after paying all expenses of the year's culture, gathering, sacking, and marketing. One reason of Mr. Olmsted's success in the cultivation of the Almond is the fact that he keeps the ground clear, cultivating nothing between the trees, nor allowing weeds to grow up to rob them. Thorough cultivation is required for the Almond, and the trees should be at least twenty feet apart each way.—*Santa Barbara Index.*

Camphor in Formosa.—As the gigantic Laurels from which the camphor is obtained are found only on the mountains in the possession of the aborigines, the acquisition of a constant supply is somewhat difficult. Only from those tribes which are on friendly terms with the Chinese can leave be obtained to cut down the trees. With such, a present given to the chief gains, as a rule, the required permission. The Chinese woodman then makes a choice of the trees which appear to be well supplied with sap, and, having felled them, he keeps the best parts for timber, and reserves the remainder for the iron boiling-pots, by means of which is evolved the sublimated vapor which yields the camphor. In the neighborhood of Tamsuy alone 800,000 pounds of this valuable commodity are produced annually. Petroleum also adds to the riches of the island, which, both from its natural and artificial products, is well worthy a struggle on the part of the Japanese to obtain, and on the part of China to defend.—*Cornhill Magazine.*

Growth Force in Plants. A correspondent of the *Country Gentleman* has the following interesting note on growth force in plants:

"Those who have never given the matter much attention, will be surprised at the force which growing plants exert. At a recent meeting at the Academy of Natural Sciences in Philadelphia, Mr. Thomas Meehan exhibited a root of the common Pæony with a stolon of common couch-grass (*Triticum repens*) growing through it from one side to the other. He also stated that he had found Potatoes with the stolons of grass growing through them in the same manner. A short time ago, while inspecting a fine asphaltic drive, I noticed that within a diameter of four or five feet there were several spots where repairs had recently been made, and on inquiry as to the cause, was informed that after the drive became hard enough to use, these spots were observed to rise up, and continued to do so until the raised part burst open. On making repairs it was found that the trouble was caused by a few roots of the common plantain, which had not been removed when the asphalt was laid down. As the pavement was hard, and several

inches thick, the steady force of growth must have been very great. Near by, a large slate slab, four feet by six, was observed to rise steadily at one end without any corresponding depression at the other. Examination showed a root of plantain growing under the raised end, and supporting the whole weight of the stone."

The Sunflower as a Preventive of Fevers. — We continue to see favorable mention made of the virtues of Sunflowers as preventives of bilious fever, chills and fever, etc. A correspondent of the *Soil of the South*, writing from a place in Alabama which he says was peculiarly subject to fevers, gives the results of his experience in the premises, and in not a single instance where he planted Sunflowers around his negro cabins, did their inmates suffer from fevers, while his wife, two children, and two house-servants, all had fevers, he not having planted any of the Sunflowers around his own dwelling, which, in his opinion, accounted for the difference in the results. We trust that next spring New Orleans may be surrounded by a cordon of Sunflowers, that they may be scattered through every garden and cover every vacant lot in the city. Who knows but they may prevent yellow fever also? The correspondent of the *Soil of the South* says:

"My opinion is, that the Sunflower in its rank growth absorbs the very elements in the atmosphere that produce fever, or chills and fever, and what is the life of the Sunflower is highly obnoxious to the health of the human family; nor do I believe that a man could ever have a chill who would sleep in a bed of rank Sunflowers. This, too, seems to be no new theory, as Lieut. Maury states that his gardener — a Frenchman — informed him that their sanitary influence had been long known in France."

Bees and Honey in Los Angeles. — A. J. Davidson, a successful apiarist of this county, writes as follows: "The finest grade of honey is gathered from elevated lands where the vegetation seems peculiarly adapted to this industry. The brush lands are unavailable for the pasturage of sheep, and those animals are a great enemy in the destruction of flowers yielding honey. Hives of various sizes are in use, and from the fact that many persons regard their hives as most men do their wives—*i. e.*, that each for himself has the best—we withhold our opinion. The yield of honey in 1874 for this county, taken from reports only relatively correct, is as follows, namely: 178,000 pounds strained honey, 92,000 pounds extracted honey, 34,000 pounds comb honey. The average production of different apiaries ranges from 50 to 240 pounds per swarm, the estimate being made from the parent stock of last spring. Comparatively few who are engaged in this industry have tried to improve their breed, either by the introduction of the Italian or breeding from the most productive common stock. The main aim of most has been to accumulate in numbers without regard to excellence. The advantage we possess in not being compelled to "winter bees," and the peculiar honey-yielding plants which abound in the vicinity of the mountains, have caused this to become a leading industry of this county."

Cultivating Truffles in France. — Large tracts of land in the south of France, not hitherto cultivated, are being planted with the kind of Oak-trees beneath which truffles are generally

found, and it is expected that each acre of this land, lately sold as low as $25, will yield a crop of truffles worth $100 per year. The experiment has already been tried in the department of the Vaucluse, and in the course of the last twenty years, 150,000 acres which were absolutely unproductive have been planted, and are yielding a rich return. The cost of plantation, which is borne by the commune, does not exceed twenty francs per acre on hilly ground, and though rather greater in the lowlands, the crops are proportionately heavier. Acorns only are planted on the hilly ground, but saplings of five or six years' growth, placed in rows about forty feet apart, are found to answer best in the lowlands. The ground between each row of trees is planted with vines, which, after five or six years, repay the cost of the plantation and its culture.

Traveling on Foot.—Nothing to me is more pleasing than traveling on foot. We are free and joyous. No breaking down of wheels, no contingencies attendant on carriages. We set out; stop when it suits us; breakfast at a farm or under a tree; walk on, and dream while walking, for traveling cradles reverie, reverie veils fatigue, and the beauty of the scenery hides the length of the road. We are not traveling—we wander. Then we stop under the shade of a tree, by the side of a little rivulet, whose rippling waters harmonize with the songs of the birds that load the branches over our heads. I saw with compassion a diligence pass before me, enveloped in dust, and containing tired, screwed-up, and fatigued passengers. Strange that those poor creatures, who are often persons of mind, should willingly consent to be shut up in a place where the harmony of the country sounds only in noise, the sun appears to them in clouds, and the roads in whirlwinds of dust. They are not aware of the flowers that are found in thickets, of the pearls that are picked up among pebbles, of the Houris that the fertile imagination discovers in landscapes—*musa pedestris*. Everything comes to the foot-passenger. Adventures are ever passing before his eyes.—*Victor Hugo.*

Another New Fruit-dryer.—We have just been shown by J. B. Howed the model of a new-fashioned dry-house for drying fruit, designed by J. Lewelling, of St. Helena, and on which a *caveat* has already been filed. The arrangement consists of a furnace over which are moving trays of wire-screen for drying fruits in various positions until thoroughly prepared. The heat is generated in a furnace; passing thence through a pipe into a large drum, and thence again through two other pipes to the chimney. The arrangement of the fruit is such that it receives the heat of the sun, as well as the fire, the trays being covered with glass. The trays are to be three feet square each, and are thirty-six in number, eighteen on a side, occupying a sliding space of sixty feet in length. Mr. L. has already a working model in operation, from which he dried much fruit this past season, and found it very successful—so much so that he was encouraged to have two more furnaces put up after the first one.—*Napa Register.*

The Snowball.—This old-fashioned flower is rarely seen in modern grounds, though in old ones it is usually among the most prized treasures, as it deserves to be. There are few objects more

striking than a large bush of Snowballs in flower. It may be that the scarcity is owing to the difficulty often found in striking cuttings. Sometimes they grow, and sometimes not, just as they seem to take a notion to. We old folks used to increase them by taking them apart. In old plants they can be often so divided as to make several dozens. A certain and sure way, however, to raise Snowballs is to lay down some of the branches. If these are given a gentle twist so as to partly split the wood at the place where the branch is put under the ground, roots will come out of the split part, and in a year the rooted portion can be taken off as an independent plant.

The Snowball can not be raised from seeds, because it never produces any. It is in fact a male form of the Guelder-rose Viburnum. The female form has very insignificant flowers. In this the male Guelder-rose or Snowball follows the same law that birds follow, in which the male has generally the most showy and the most striking colors.

Of late years a new Snowball has been introduced from Japan, known in catalogues as the Japan Snowball— *Viburnum plicatum*—but we believe it is still scarce. This also is a male form of some Japan thing, but the balls are larger and of a purer white than the common Snowballs are. The leaves are also said to be beautifully plaited, or plicate, whence its scientific name. It will probably increase by laying down, as the common Snowball.— *Maryland Farmer.*

Tomatoes were first used in this country as an edible in the year 1819, by the late Hon. Bailey Bartlett, of Haverhill, Massachusetts; but they did not come into general use until more than twenty years subsequent to that date.

Co-relations of Bees and Flowers.— The bees, Mr. Darwin says, have solved a difficult problem. They have made their cells of a proper shape to hold the greatest possible amount of honey, with the least possible consumption of precious wax in their construction. No human workman is skillful enough to do what a crowd of bees can do—working in a dark hive—make cells of wax of the true form.

The number of bumble-bees in the country will depend upon the number of cats. How can that be? Because the number of bees is dependent upon the number of field-mice, which eat the bees. Hence, the more cats the fewer mice, and the fewer mice the more bees.

If the whole genus of bumble-bees became extinct, or very rare, the Heart's-ease and Red Clover would become rare or wholly disappear. How is that? Because bees promote the growth of those flowers. The visits of bees are necessary to the fertilization of some kinds of Clover, and almost indispensable to the Heart's-ease. Bumble-bees alone visit the Red Clover, as other bees can not reach the nectar.

In a word, no bees, no seed; no seed, no increase of the flower. The more visits from the bees, the more seeds from the flowers; the more seeds from the flowers, the more flowers from the seeds.

Nearly all our orchidaceous plants absolutely require the visits of these insects to remove their pollen-masses, and thus to fertilize them.

Twenty heads of unprotected Dutch Clover yielded 2,990 seeds; the same number protected from bees produced not one seed. One hundred heads of unprotected Red Clover yielded 2,700 seeds; the same number protected from bees, not a seed.—*Ohio Farmer.*

The Date-palm Tree has not yet come into favor in California, though several hundred are growing in various parts of the State, from San Diego to Cache Creek Cañon. It should and doubtless will be planted more and more every year. As an ornament no other plant is equal to it in California; it is tall and exceptional in form, and gives a sub-tropical look to the scenery. No tree in Los Angeles impresses the tourist from a cold clime more than the Palm. Not half-a-dozen have yet come into bearing, but if they were barren a few should still be set out in every town. But they bear and will bear. In Syria and Mesopotamia, which have the climate of the Sacramento and San Joaquin valleys, the Date is cultivated extensively and with much profit. Egypt has 5,000 trees, and after they are thirty years old the annual yield of each is estimated at 300 pounds. Two trees are sufficient to feed one person, and an acre will hold two hundred. The value of the trees is so firm that the tax on them is a considerable item in the Egyptian revenue. The young sprouts are cooked and served like Asparagus, and might be a fine source of profit here until the tree should come into bearing.

The Absorption of Ammonia by Plants.—It has been generally believed that the ammonia present in the atmosphere (proceeding from animal and vegetable decomposition, etc.) might be directly absorbed by the leaves of plants, and might thus furnish them with nitrogenous aliment. M. Schoesing, in a note to the French Academy of Science, claims to have demonstrated, experimentally for the first time, that this is actually the case. His experiment consisted in cultivating two plants of the same species under conditions exactly similar, except that one of them was allowed to develop its foliage in an atmosphere pervaded with ammoniacal vapors, and the other in an atmosphere free from such vapors. Analyses subsequently proved that every part of the former plant was "richer" than the corresponding part of the latter—the "enrichment" of the leaves having extended to the stem and root. The significance of the experiment is apparently not the proof that plants do obtain nitrogen and ammonia; but the proof that they absorb it directly through their leaves. But they may, and probably do, also absorb it through their roots, when it is washed from the atmosphere by descending rains and presented to the plants in the soil as *aqua ammoniæ*. The experiment above does not disprove this, and a similar direct experiment on the roots of growing plants would undoubtedly demonstrate it.

Don't Destroy your Grape-vines.—We learn that many persons in different portions of the State who have small vineyards, and who do not wish to make their Grapes into wine or brandy, for the reason that wine and brandy can not be made to pay on a small scale, are talking of digging up their vines. Such persons generally have the Mission or native California Grape, and perhaps no other in cultivation, and we are fully aware that the past experience of such is anything but encouraging for the future, without some change that will promise and bring better remuneration for the use of their land, and the labor necessary to cultivate the vineyard, pick and market the Grapes. We also know that at this time a very little additional outlay will bring this desired change. Let these native vines be grafted with the White Muscat of Alex-

andria or White Malaga Grapes, and the second year after grafting the crop will very nearly equal in amount the present crop of native Grapes. Instead of having on hand then a Grape valueless to you for wine-making purposes on account of your situation, and good for no other paying purpose, you will have a crop valuable for raisins.

Then the objection that you have but a limited quantity will not apply, for you can make a small quantity of raisins just as cheaply and with just as much certainty that they will be of good quality as though you had the largest vineyard in the State; you can make them, too, when you would be doing but little else, when your labor and time can not be better or more profitably employed. No farmer should be so short-sighted at this time, when we all know the great curse and drawback to California agriculture is want of variety in production.

Again, raisins have been made in many localities by the Alden process, and we believe in every instance those making them are well satisfied with the results, both financially and otherwise, and many of them are preparing to increase their vineyards instead of decreasing them. Alden machines will be erected in nearly every locality in the State within a few years, and it would be a pity, just as circumstances are so promising to render your vines valuable, to root them out, and thus throw away all the labor and expense of cultivating them up to the present time, and the good prospects for profits in the future.—*Sacramento Record.*

The Early Normandy Plum.—Says the *American Garden*: A new Plum bearing this name has been originated in France. The early season at which it ripens may render it worth cultivating in this country. It is thus described: Tree a very vigorous grower, with long branches somewhat divergent. Fruit large or very large—as large as a Green Gage—divided on one side by a very slight furrow. Skin fine, transparent; separating readily from the fruit when ripe; of a clear purple color on the sunny side, and light flesh-colored on the shady side; covered with a light, bluish bloom. Flesh fine and melting; of a greenish color; somewhat firm; filled with a very abundant, sugary, refreshing juice. It ripens from the middle to the end of July, and this, together with its size, handsome appearance, and good quality, render it valuable. We have no large Plum of the same character which ripens so early.

METEOROLOGICAL RECORD,

For the Month ending January 31st, 1875.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.12 in.
do 12 M	30.11
do 3 P. M.	30.11
do 6 P. M.	30.10
Highest point on the 2d, at 9 A.M.	30.34
Lowest point on the 25th, at 6 P. M.	29.74

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	45°
do 12 M.	50°
do 3 P. M.	51°
do 6 P. M.	47°
Highest point on the 24th, at 3 P M.	60°
Lowest point on the 15th and 16th, at 9 A. M.	37°

SELF-REGISTERING THERMOMETER.

Mean height during the night	40°
Highest point at sunrise on the 19th	56°
Lowest point at sunrise on the 6th	32°

WINDS.

North and north-east on 8 days; east and south-east on 13 days; south-west on 8 days; west on 2 days.

WEATHER.

Clear on 9 days; cloudy on 18 days; variable on 4 days; rain on 11 days.

RAIN GAUGE.

11th	0.04
13th	0.18
14th	1.01
16th	0.19
18th	2.76
19th	0.37
20th	0.02
22d	0.82
23d	1.47
24th	0.07
31st	0.04
Total	6.97
Total Rain of the season to date	15.98

OLD DATE-PALM TREE *(Phœnix dactyliferæ).*

GIANT FIG TREES *(Ficus carica giganteus).*

TREES OF SEMI-TROPICAL CALIFORNIA.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. V. SAN FRANCISCO, MARCH, 1875. No. 3.

SEED-PLANTING.

BY F. A. MILLER.

One of the most important items in Horticulture is "seeds." Old varieties are perpetuated by seeds, and new varieties are produced. Whoever takes an interest in the cultivation of the soil will resort to the planting of seeds. Though the experiments of raising plants from seed are highly gratifying in some instances, the disappointments are by no means few, I regret to say.

Seed-raising has become popular; thousands risk their money in purchasing seeds every season, and fortunes are built up by dealers, who are always pleased to serve their customers with the "right article." While some succeed in making their seeds grow, others fail entirely; and in the latter case it is usual to put all the blame on the dealer, who furnished anything but the right article. In many cases, no doubt, seedsmen deserve blame, as there are some who care little about the quality of seed they sell, so long as they make the money; but decidedly the most cases of failures in making seeds grow, are due to ignorance and bad treatment. There are some very reliable seedsmen in the United States, who would not knowingly sell bad seeds; these are the men to purchase seeds from.

The dangers which one encounters in selecting seeds are, first, in selecting varieties which are not at all adapted to this coast; and, second, in choosing kinds which are positively not worth cultivating. To point out the varieties which are either adapted to our climate, or worthy of cultivation, I will not undertake here, but make it a special subject at some future day.

Seeds of annual and herbaceous plants, with a very few exceptions, germinate freely under ordinary treatment, but mistakes are often made in planting these seeds too shallow or too deep. To lay down strict rules as to how much these seeds should be covered is next to impossible; but, as a general rule, coarse-grained seeds should be planted deeper than very fine seeds. For example, Sweet Peas had better be covered from one to one and a half inch, while Portulacca should not be covered more than one-eighth of an inch; in fact it would be much better to sow the latter upon the surface without covering at all, as a timely rain or watering will carry the seeds sufficiently deep in

the soil to vegetate. But here arises a difficulty: our atmosphere is dry, our winds are sharp, our sky is clear, and these circumstances combined dry up the surface of the soil so quickly, that young tender plants, merely existing upon the surface soil, are apt to dry up in a very few hours. Again: where irrigation is resorted to, seeds sown upon the surface are apt to be washed away entirely, or the young tender plants will be broken or washed away. All this makes shallow seed-planting very uncertain. The safest plan here, undoubtedly, is for us to sow seeds early in pots or boxes, placed in a warm situation and covered with a pane of glass, slightly painted or whitewashed. Seeds will germinate much better in partial shade. After sowing, water thoroughly with a fine sprinkler; perhaps no more irrigation will be required until the seeds are up. As soon as the young plants make their appearance, they will require airing, by raising the glass cover on one side of the pot or box, say one or two inches. After two weeks more the glass may be taken off altogether in order to harden the plants. When the young plants have made from four to six leaves, they may be carefully taken up and planted in well-prepared ground, wherever they are required. After transplanting, give them a gentle watering, sufficient to moisten the ground well down to the bottom of the roots. During bright warm days they will require shade, say from 9 A. M. until 3 P. M., for about three or four days, after which time the plants may safely be left to themselves. Of course, it is expected that the plants should be kept clear from weeds. An occasional hoeing if the ground becomes hard, and in case of dry weather a watering twice a week, will be all that is required. Such seed as Mignonette, Sweet Alyssum, Wallflower, and the like, are better planted in the open ground, as they germinate freely in this way.

The sowing of seeds in pots or boxes with glass covers is more imperative in San Francisco and its immediate vicinity than in other parts of the State, when we take into consideration that the climate is never warm enough for the germination of seeds in the open ground, while on the other hand, the climate of Stockton, Sacramento, and other inland districts is so hot, that seeds and young plants must be shaded, to keep them from perishing.

The germination of all kinds of seeds may be facilitated very much by steeping them in pure lime-water, say for eighteen to twenty-four hours. This is done simply by dissolving a little lime in water, allowing the solution to settle, pouring off the clear solution, and steeping the seeds in the latter, as aforesaid. Most of the seeds of annuals and herbaceous plants will vegetate in from five to fifteen days, under this treatment, and there will be no anxiety occasioned by waiting for their germination for weeks and months.

[To be Continued.]

FORSYTHIAS.—Plants producing yellow flowers are not so generally admired as others, although it must be admitted that the golden is nature's favorite color. Still on account of the earliness of the Forsythias, or "Golden Bells" as they are sometimes called, a plant or two should be admitted into the garden. The *F. suspensa* is probably the best for planting among the smaller kinds of shrubs, as the plant is a slender grower, of a half-trailing habit. The flowers are among the first to appear in spring.

RATHER.

BY RUNE BLUFF.

A little Dandelion
Was sitting in the grass,
Down by a narrow pathway where
I very seldom pass.
It tried to swing its golden locks
Upon the wooing breeze;
It smiled right up into my face,
As if 'twere bound to please.

It was not beautiful nor sweet;
It had no gift of grace,
Nor any charm was there to see
In the common little face,
Save that 'twas modest in its way,
Blooming half hidden there—
Trying its best to smile and shine,
And make the earth more fair.

And yet I could not pass it by,
It was so plain and small.
But as I looked it seemed as if
A star did sometime fall,
And lie there in the leaves and grass—
A tiny, golden thing—
And pass itself off as a flower,
One balmy day in spring.

I could not careless pass it by
Without an answering look,
But, bending down, the simple flower
From out its place I took.
Gathered in my caressing hand
I knew 'twould rather die,
Than still unnoticed there to bloom,
Between the earth and sky.

—*Rural New Yorker.*

ALTERNANTHERA.—Of the various forms of the Alternanthera, now in cultivation, *The Gardener's Chronicle* thinks the palm must be given to *A. amabilis latifolia*, or *amabilis bicolor*, as a bold-growing, showy variety. Free in growth, and handsome in color, standing alike in rain and sunshine, it is also sufficiently hardy in character to stand exposure in positions where others would fail. For massing or working out bold ribbon lines, or central designs, it can not be excelled.

INFLUENCES OF VEGETATION.

Vegetable matter, whether in the fresh or dried state, exerts various effects in the propagation, absorption, or destruction of malaria. According to Dr. Hammond, he contracted intermittent fever from inspecting musty hay, and symptoms of pyrexia from examining old books. Dr. Salisbury considers that measles and some other affections are readily conveyed by means of straw, and that epidemics may thus be propagated among troops in camp. Plants in a state of decay or decomposition give rise similarly to malaria, or at any rate produce in man the diseases usually attributed to such a cause. Old trees undergoing the process of dry rot, more especially *Cruciferæ*, and those generally of a succulent nature, have this effect. Dense vegetation, as low jungle, especially containing trailing plants and of a nature to interfere with free perflation of the locality, is conducive to the concentration of malaria. C. A. Gordon, M. D. C. B., in an interesting paper on the "Hygiene of Malaria," published in the *Medical Press and Circular*, enters at length upon the subject, and furnishes the data from which the present article is compiled.

Under some circumstances trees and growing plants are valuable as protectives against malaria. The excellence of a belt of trees between a barrack and a pestiferous marsh is fully acknowledged, and the circumstance of planting a marsh with evergreen trees has, in many instances, converted a malarious into a healthy locality. On the other hand, as in the case of St. Stephano and Campo Salina in the Pontine Marshes, places have become unhealthy by the forest being cut down. The precise process by which these trees and some of the plants exert their de-

structive effect upon the poison is as yet unascertained.

The Romans, whenever practicable, established their camps under the shelter of woods, and in India it has from time immemorial been the custom of the natives of malarious districts to form villages in the denser parts of the jungles, where, according to recent observations, they are relatively exempt, not only from intermittent fever, but from cholera. In America, the Dismal Swamp, where ague is never met with among the inhabitants, is covered with trees of large and lofty stature.

With regard to water as a vehicle for ague producing malaria, it may be said that not only that which is stagnant, but in some instances that of rivulets impregnated with vegetable matter, fresh or decaying, may convey the poison. In some instances it has been found that although health may not suffer in residents in such localities so long as they refrain from making use of the water, yet they become affected when they neglect this precaution.

If, however, there are plants the presence of which in water renders it deleterious, there are many others which act as purifiers, and render that which otherwise would be deleterious, wholesome. Among such are *Hydrocharis*, or frog-bit, *Stratiotes*, or water-soldier, *Myriophyllum*, *Vallisneria*, and *Anacharis alsinastrum*, which, since 1834, when it is believed to have been introduced from North America, has flourished abundantly in marshes and canals in England. Among other plants which have a similar action are *Sagittaria*, or arrow-head, *Alisma plantago*, or water-plantain, *Butomus umbellatus*, or flowering rush, *Lemna*, or duckweed, *Pistia*, or gigantic duckweed, *Montia*, *Potamogeton*, or brookweed, *Callitriche*, or starwort, *Hippuris*, or marestail, *Equisetum*, or horsetail, besides various rushes, carices, grasses, flags, and cresses; while *Œnanthe*, although itself poisonous, purifies water in which it grows. Notwithstanding the undoubted acrid properties of the natural order *Ranunculaceæ* generally, there are at least four genera whose presence in water is beneficial—namely, the *R. aquatilis*, *Nelumbium*, *Victoria*, and *Nymphæ*, as are also the members of the natural orders *Ceratophylleæ* and *Podostemaceæ*, and some of the *Algæ* among the cryptogamic plants. Some of these plants being provided with leaves which float upon the surface of the water, directly decompose the otherwise noxious vapors under the influence of the solar rays, and in their stead produce respirable air; others, more submerged, themselves give out a supply of oxygen, thus purifying the water and rendering it fit for the support of life.

In past ages there appear to have been instances of a sort of instinctive resort to certain plants as disinfectants. Herodian relates that during a plague in Italy, in the second century, strangers crowding to Rome were directed by the physicians to retreat to Laurentum (now San Lorenzo), a place so called from the abundance of *Laurus nobilis*, or Sweet Bay-tree, which then grew there, and by inhaling the odor of which they would in a certain measure be guarded from infection. And long before the time alluded to, the disciples of Empedocles had been accustomed to plant aromatic and balsamic herbs in the neighborhood of their dwellings, in the confident belief that by so doing they were providing means of defense against fevers, etc. To this day we have the name of "Feverfew" as the appellation of one of the strongest-scented *Compositæ*, with traditions of its abounding febrifugal powers.

Besides all these, some resin-yielding and aromatic blants have the reputation of destroying malaria. There is reason to believe that several species of the natural order *Myrtacœ* possess this property besides the *Eucalyptus globulus*. Of late years this plant has obtained a high reputation for its assigned power, and some writers have recommended its introduction with a similar object on the Gold Coast. Various examples of its success in Algeria are recorded. At Pandook, on the banks of the river Hamyze, where fever was extremely prevalent, in 1867, several thousand plants of the Eucalyptus were introduced, with the immediate result of rendering the locality healthy. A similar result was obtained at Ben Machydon and Gue de Constantine, in the island of Corsica; in Cuba; in the Australian colonies; at the Cape of Good Hope; and other places. Probably other trees which yield aromatic gum resins would have a similar effect, and it is not known that malarious diseases prevail in places where trees of the natural order *Coniferæ* grow abundantly.

Various other plants have obtained a reputation as being capable of destroying malaria, or at any rate rendering that influence innocuous. Thistles had rendered some parts of the Campagna near Rome healthy, and on the plants being cut down, those districts became again malarious. Sunflowers (*Helianthus*) appear to have been first planted successfully for a similar purpose in America. Baron von Alsten, whose property was situated on the banks of the Scheldt, and liable to be flooded by that river, planted several patches near his house, and with the result that for ten years his family continued exempt from fever, while in other places, where no similar precaution was taken, the disease continued to prevail. The plant has of late years been sown in the Mauritius for a similar purpose, and in further recommendation of its good qualities, the observation has been made that it yields 40 per cent. of good oil; that the leaves from it are excellent fodder, and the stems, being rich in saltpetre, make good fuel.

Marshes may also be rendered healthy by the presence of certain plants. Among those that conduce to this happy result is the *Pistia Stratiotes*. In India, the West Indies, and Africa, the power exerted by this plant in absorbing the deleterious gases of muddy marshes is well known, and probably it is on this account that in the latter country the plant is held sacred. The *Pistia* is believed to possess this power in a greater degree than any other plant, being capable in a few days of rendering stagnant water sufficiently pure for fish to live in; although it by no means follows that the water is thus rendered suitable for use by man. The contrary is indeed the case. In Jamaica, water in which this plant grows acquires so acrid a character as to give rise to intestinal fluxes in those who use it.

The Toolsee plant, or *Thymus capitatus*, is in India held to exert the power of largely increasing ozone during sunlight, and this to such a degree that the plant has become sacred to Vishnu (the preserving principle). Other plants have more or less the same character, as the Cherry Laurel (*Cerasus lauro-cerasus* (although both its flowers and fruit contain, as is well known, a poisonous principle). So also with Cloves, Lavender, Mint, Lemon, Heliotrope, Hyacinth, and Narcissus, although the odor from the latter is, under certain circumstances, capable of producing unpleasant effects. Certain prepared perfumes, similarly exposed

to the sunshine, add further to the atmospheric stock of ozone—the well-known eau de Cologne for instance, oil of Bergamot, extract of millefleurs, essence of Lavender, and some of the aromatic tinctures. The oxidation of certain essential oils obtained from plants and flowers, such as the oils of Nutmeg, Aniseed, Thyme, and Peppermint, is likewise indicated as a source of ozone, though the supply of this aerial condiment is in the case of these less considerable. Perhaps, indeed, the influences of such natural destroyers of malaria are less studied and willingly recognized at the p resent day than they were in former times.

Some trees and tree-like plants have, with greater or less reason, the reputation of themselves evolving malaria, and consequently the natives of the countries where they grow avoid sleeping or resting under them at night. Those that give off their branches at an inconsiderable distance from the ground, or the foliage of which is dense, have this reputation in the highest degree, and among them the Tamarind and Neem trees (*Melia azadarach*). A similar influence is said to arise from the Papaw tree (*Carica papaya*), and Dr. Livingstone states that in East Africa, near the Zambesi River, tracts are covered with the plant *Pœderia fetida*, a member of the Guettarda group of the *Rubiaceæ*.

Many people suffer inconvenience in various ways from odors arising from certain plants, although the effects are not in the nature of disease of recognized malarial origin. In these cases the matter evolved, so far from being an invisible aura, is a substantial exhalation. Thus, besides the unknown effects of ipecacuanha in inducing sickness in certain persons even when brought no nearer to them than an adjoining room, and flowering plants in producing "hay-asthma," nausea, sickness, and even death has been attributed to the odors of some, as the Narcissus and the Cheiranthus or Wallflower, not to mention the fraction of truth there no doubt is in the story of the Upas-tree (*Antiarus toxicaria*). The Manchinel tree (*Hippomana mancinella*, *N. O. Euphorbiacea*) of the West Indies, and certain American and Chinese species of Rhus (*N. O. Anacardiacea*), not only produce severe irritant effects upon the skin, but affect very severely such persons as are predisposed to suffer from malaria. The flowers of the *Daphne Mezereum* also evolve odors which are more or less injurious to particular persons, and a similar property is attributed to the Oleander (*Nerium Oleander*). The Mangrove, or *Rhizophora*, has ever had an unenviable notoriety, on account of the malaria-producing properties assigned to it. As a rule, probably without exception, localities where this plant flourishes, being for the most part marshes and low-lying tracts, liable to inundation, are notoriously unhealthy, but in all probability this reputation arises altogether from paludal causes.

Tuberose.—The Pearl variety is much superior to the common double sort; the flower-stem is much shorter, and the plant is altogether of a more vigorous growth, both out of doors and also when grown in heat during the winter. The variegated-leaved variety we consider of no value—the plants being grown exclusively for cut-flowers, the leaves are made no use of, and if they were, it is no improvement to have a white flowering plant with white-striped leaves, and white-leaved plants are said to be of a more delicate constitution than those with green leaves.

ALDEN PROCESS OF DRYING FRUITS.

The Alden process of preserving fruits and vegetables has come to be recognized as one of the important industries of this State, and the products of the factories are increasing in favor each year. The circular of the Alden Fruit Preserving Company for 1875 shows that the business is in a healthy condition, and not many years will elapse before this interest will be one of the most promising connected with the agriculture of this State. During the past four years more than 200 Alden factories have been established in the United States, all of which are in full operation during the proper season, and this method of the preservation of fruits is the only one that has risen to sufficient dignity and importance to command a distinct recognition and remunerative prices in the markets of the world. The company is prepared to show that all the valuable qualities of a ton of Apples can be delivered in Liverpool in an imperishable condition at a gross cost of not more than $20 per ton, while fresh Apples sent from the Atlantic sea-board to the same destination can not be laid down at less than $52 per ton, without figuring the loss by decay, etc. Already the fruits prepared by the Alden process have far outstripped the sun-dried fruits, the only real competition being with canned goods, while the cost of the cans, the heavy freights, and the leakage of canned goods give the Alden products a great advantage in shipping to distant markets. Littlefield, Webb & Co., agents for the Alden Company, whose report is embodied in the circular, state that the best markets for this class of California products have been in the Territories and mines, though considerable business has been done in this State and in filling orders for the eastern and southern markets, while, to a limited extent, they have been used for vessels going on long sea-voyages, and are slowly being introduced in foreign countries. One of the greatest drawbacks to sun-drying ever being largely practiced in this State is this: All sun-dried fruits are covered with the minute eggs of insects. In colder countries these eggs lie dormant all winter, and the fruit is generally consumed before they hatch out. In California the eggs deposited during summer hatch out in autumn and destroy the fruit. In the Alden evaporating process there is no opportunity for insects laying their eggs, and the fruit is not only cleaner but is sound, and will keep so under any changes of temperature.

The Golden Arborvitæ is destined to become most popular. It keeps its bright golden tint throughout the year, gives a lawn a very bright appearance, is admirably adapted to small house fronts and cemetery lots, and is equally valuable for potting purposes and window decoration. For edging, it is superior to Box; and for low hedges, not desired to be impervious, it would be very beautiful.

The orchards of California will have thousands of tons of their delicious fruits to feast the people of New York, Boston, Philadelphia, and Baltimore, and the present year they will be regaled with our Oranges, Lemons, Limes, Figs, Raisins, orchard fruits, and nuts, superior to any ever before seen. What need we say more for a State that is destined to lead the Union in wealth and influence?

TEACHINGS OF FLOWERS.

BY AN AMATEUR.

Flowers admonish us of the instability of earthly grandeur and beauty, by their fragility and shortness of duration; saying in the language of the Psalmist: "As for man, his days are as grass; as a flower of the field, so he flourisheth; for the wind passeth over it and it is gone, and the place thereof shall know it no more." They teach us the utter foolishness of that pride which delights almost entirely, as some do, in personal adornments and gaudy trappings; for be our dress ever so rich, the simplest flowers of the field, that neither toil nor spin, are arrayed much more sumptuously:

"Along the sunny bank or watery mead
Ten thousand stalks their various blossoms spread:
Peaceful and lowly in their native soil,
They neither know to spin, nor care to toil,
Yet, with confessed magnificence, deride
Our vile attire and impotence of pride."

It is thus they admonish the prosperous, the proud, the uplifted in spirit; but to the poor, the lowly, and the fallen, they are as sympathizing friends, whispering words of comfort and hope, sharing their sorrows, and thus rendering the burden easier to bear. And by making them participators in our grief, we lose that painful sense of loneliness and desolation which ever accompanies the blighting of our earthly prospects, and consequent desertion of friends, (falsely so called); our minds are insensibly drawn to the contemplation of His infinite goodness and mercy, who ordains all things for the best, and suffers not a sparrow to fall to the ground, not a hair of our heads to perish unnoted.

We reflect on the many blessings He has poured upon us, all undeserving as we are, and taught by the example of the flowers, whose tiny hands are ever clasped in adoration, whose breath is ever exhaled as an offering of praise at the footstool of their Maker, we become resigned, nay, even cheerful; and prompted by feelings of gratitude, our thoughts involuntarily shape themselves into words similar to the following, perhaps:

"O flowers that breathe of beauty's reign
In many a tint o'er lawn and lea,
And give the cold heart once again
A dream of happier infancy;
And even on the grave can be
A spell to weed affection's pain—
Children of Eden, who could see,
Nor own His bounty in your reign."

Yes! *silent* monitors though they be, they are not *voiceless*, but gifted with an eloquence divine that appeals alike to the heart and understanding; and would we but hearken to their preaching, our bosoms would become as well-springs of mutual piety, peace and good-fellowship would prevail upon earth, and men would be no more shedders of each other's blood, and perpetrators of the blackest crimes. But alas!

"Many in this dim world of cares,
Have sat with angels unawares;"

and few, very few, are they who can behold the bright countenances of heaven's messengers, and listen to their discourse with an understanding spirit, for ambition, and avarice, and pride have obscured our powers of vision, and choked up the avenues to that treasure-house wherein lie hid our finer sensibilities and aspirations after the only intrinsic good.

"The world is too much with us; late and soon,
Getting and spending we lay waste our powers,
Little we see in nature that is ours;
We have given our hearts away, a sordid boon."

But let us tear the film from before our eyes. Let us endeavor to eradicate

from our bosoms envy, hatred, and all evil passions. Let us practice meekness and charity, and, as far as in us lies, obey those holy impulses and divine incitements which the Maker has implanted in every human bosom, and thus furnished us with the means of working out our moral improvements, if we do not ungratefully reject what is intended for our benefit.

"There is a lesson in each flower,
A story in each stream and bower;
In every herb on which we tread
Are written words which, rightly read,
Will lead you from earth's fragrant sod
To hope, and holiness, and God."

Let us then peruse those lessons; let us "read, mark, learn, and inwardly digest" those written words. So shall we profit by them, and lay up in our hearts treasures whose value is far above the silver and gold of the mines even of the great Comstock, or Golconda's jewels; treasures which neither moth nor rust may corrupt, nor thieves break in and steal.

"Flowers, the sole luxury that nature knew,
In Eden's pure and spotless garden grew.
Gay without toil, and lovely without art,
They spring to cheer the sense and glad the
human heart."

"God made the flowers to beautify
The earth, and cheer man's careful mood,
And he is happiest who hath power
To gather wisdom from a flower,
And wake his heart in every hour
To pleasant gratitude."

"To me ye seem
Like creatures of a dream—
Aerial phantoms of delight;
I can but deem ye much
Too pure for mortal touch,
Ye are so very fair, so passing bright."

"Sweet nurslings of the vernal skies
Bathed in soft airs and fed with dew,
What more than magic in you lies
To fill the heart's fond view!
Relics are ye of Eden's bowers,
As soft, as fragrant and as fair
As those that crown'd the sunshine hours
Of happy wanderers there!"

"Floral apostles! that in dewy splendor
Weep without woe, and blush without a crime,
O! may I deeply learn, and ne'er surrender
Your love sublime."

"O, put away thy pride,
Or be ashamed of power
That can not turn aside
The breeze that waves a flower."

THE FRENCH VINE-MOTH.

A correspondent of the London *Daily Telegraph* writes:

"Meantime the *phylloxera vastatrix*, or French vine-moth, would seem to work a distinctly appreciable and even serious amount of mischief. It was toward the end of the sixteenth century that this little pest first showed itself at Argenteuil, in the immediate neighborhood of Paris. The mature insect is a tiny yellowish moth, shot with gold, which passes its little life of ten days flickering to and fro from vine to vine. It deposits its eggs on the lower surface of the leaves, and before long there emerges from each egg a small emerald caterpillar that at once hides itself in the crannies of the vine-stocks or the props which support them. Here it weaves a minute silken cocoon of ashen gray, in which it lies snugly covered up till the winds and showers of April have passed over into the blue and green of May. Then, issuing forth, it covers the young leaves with a hideous web of clammy threads that entangles the tender shoots in one foul mass of unwholesome blight, while, at the same time, it fixes with its powerfully armed jaws upon the delicate blossom, and leaves it seared as with a hot iron. Day by day the noisome creature eats and grows, and grows and eats, till, from a minute grub, not the thirty-second of

an inch in length, it has become an ugly worm, the length of a man's finger-joint. Then, clinging tightly to the tendrils, it metamorphoses itself into a dull-brown chrysalis, from which, in process of time, the moth breaks its way, again to scatter eggs broadcast over next year's vines. For the past 300 years, the vineyards of France, which are the main-stay of her national wealth, have never been entirely free from this terrible pest.

It seems that this year the plague is even more than usually virulent, and that the vine crop, which under the genial influence of the comet, ought to have far exceeded the usual average both in quantity and in quality, is past all hope. So serious indeed is the prospect, that the government of Marshal MacMahon has offered a prize of 300,000 francs—or about $60,000—for the discovery of an efficacious and economical way of either destroying the insect or preventing its ravages.

EFFECT OF CARBONIC ACID AND OXYGEN ON THE GROWTH OF PLANTS.

The effect of carbonic acid upon the germination of seeds and upon the development of chlorophyll in young plants has been made the subject of investigation by Boehm. Seeds of Sunflower, Garden-cress, Flax, Poppy, Oat, Barley, Rye, Knot-grass and Maize were allowed to germinate and grow in flasks containing mixtures of atmospheric air and carbonic acid, the amount of the latter varying from two to fifty per cent. in the different flasks. The latter were exposed to diffused daylight, at a temperature of 15° to 22° centigrade. The injurious effects of carbonic acid on germination, observed by Saussure, were here confirmed. As regards the effect upon the development of chlorophyll in the young plants, the author concludes as follows:

"The experiments described suffice, as I believe, to show the remarkably injurious effect of carbonic acid gas on the verdure and growth of the plants. The presence of only two per cent. of carbonic acid in the air becomes noticeable, especially by its effect on the formation of chlorophyll. * * * In an atmosphere which, with an amount of oxygen equal to that in the air, contains one-half carbonic acid, not only was there no growth, but the plants after a short time perished."

This effect of carbonic acid upon the plantlet while living at the expense of the reserve nutriment in the seed, the author regards as very remarkable, in view of the fact that green leaves in such a medium decompose the carbonic acid with considerable energy. He remarks:

"Since the green plants are, in virtue of their capacity for decomposing carbonic acid, in condition to build up their substance from inorganic material, they create for themselves at the same time the condition of growth at the expense of material already assimilated."

These observations have, in the opinion of the author, an important bearing upon the theory that before and during the period of carboniferous deposits on the surface of the earth, the atmosphere contained very much more carbonic acid than at present. He says:

"In view of the fact that plants visibly sicken in an atmosphere which contains but a small percentage of carbonic acid, we must conclude that in an atmosphere not much richer in carbonic acid than that now existing, a part, at least, of the present vegetation of the earth would perish. But from this, one of two things must follow. Either

the composition of the terrestrial atmosphere must always have remained the same, as must necessarily be inferred from its boundlessness; or as it seems to me more probable, plants must have existed in former geologic periods capable of enduring larger amounts of carbonic acid in the atmosphere."

Boehm has also studied the effects of pure oxygen upon the germination of seeds. Seeds moistened and placed in pure oxygen, at ordinary atmospheric pressure, failed to pass beyond the first stages of germination. When, however, the oxygen was diluted with four-fifths of its volume of hydrogen, and likewise when its tension was decreased by the air-pump to about one-fifth of the ordinary atmospheric pressure, the seeds germinated as well as in ordinary air. These observations are quite in accord with others lately made by Bert upon the influence of variations in atmospheric pressure upon the vital phenomena of plants. The experiments of Bert showed that the germination of seeds in ordinary air was hindered when the pressure was increased to five atmospheres, and that it failed entirely in an atmosphere of pure oxygen at ordinary pressure (a nineteenth to a seventeenth of one atmosphere). Too large a quantity, or too high a tension of oxygen in the atmosphere seems to be unfavorable to germination of seeds.

THE KALMIA — our native *Laurel* — is often admired when seen in masses in our forests; but few know its beauty when grouped upon the lawn. Its foliage alone would suffice to charm, and nothing can surpass the beauty of its clusters in early June, when each flower is a picture whether in bud or in bloom, for the delicate rose tint of its opening or the pale blush of its maturity.

TRAINING PLANTS AS STANDARDS.

BY WILLIAM SUTHERLAND.

The training of plants suitable to the decoration of lawns, walks, etc., particularly for city gardens, has of late years attracted a great deal of attention. What is wanted is such plants as are susceptible of being trained as standards (for that seems to be the favorite shape) that will flower freely during the summer and are easily lifted in the fall. There are a number of plants possessing these qualities. First in the list comes the Lantana, which, for profusion of blossom and variety in color, is one of the most gorgeous plants we have in the garden, and if a little pains is taken to train them at first, they soon amply repay for all the labor spent on them.

The first Lantanas I ever saw trained as standards were at Isaac Buchannan's, in Astoria, L. I., about eight or nine years ago. He had some specimens with three or four feet clear stems probably two inches in diameter, with heads three to four feet through, planted out each side of his main walk. They were one blaze of flowers, forming one of the most attractive features of his garden.

As the Lantana is not at all fastidious as to soil or situation, it will do at almost any place, if there is plenty of sun; but if large flowers are wished for, the soil can not be too rich, blossoming as it does all through the summer. If it has been planted out, its branches should be well shortened back a few days before lifting.

My plan for forming standards has been to choose only the strongest cuttings when potted off, and train them up to a single stem, carefully pinching back all the side shoots, and when four or five feet in height allowing them to

branch out, and so form symmetrical dwarf trees.

All the strong-growing Lantanas readily form good stems, and the weaker varieties, such as *Sellowii*, etc., can be grafted or inarched on some of the stronger kinds.

Heliotropes can be trained in the same manner, and either plunged or planted out. By cutting them well back in spring and watering them in dry weather, they flower freely all summer, and by lifting and potting them early in fall and cutting the branches well back, flower freely all winter.

Cupheas grown in this manner form splendid specimens, doing very nicely on their own stems; but grafting *Cuphea platycentra* or any of the small-growing kinds on *Cuphea eminens* forms specimens very quickly.

Abutilons trained as standards, if the strong branches are kept pinched back all the summer, flower freely all winter. The small growing varieties of *Mesopotamicum* or *vexillarium* make splendid specimens trained in this manner on their own stems, or grafted —*vexillarium* grafted on Malakoff and *vexillarium variegata* grafted on *Thompsonii*. I had a specimen of *Abutilon vexillarium* thus in an eight-inch pot with a stem four feet in height, its branches drooping down to the rim of the pot, forming a neat little weeping tree, on which I counted 450 blossoms out at once. It continued to bloom almost without intermission. Mr. John Sherwood, the well-known florist, informed me that he had excluded this plant from his collection, as, on account of its habit, its flowers did not show to advantage, but when he saw my specimen he thought this plan was the only way to grow it.

Erythrinas, Hibiscus, Fuchsia, Salvias, Aloysia, Lemon, Orange, Oleander, Myrtle, Ficuses, Azaleas, etc., in fact almost any of the hard-wooded plants, can be trained in this manner, and either grown in pots or planted out in summer, soon form splendid decorative plants, either for the garden or conservatory.—*Gardener's Monthly.*

THE PROFITS OF FRUIT-GROWING.

A great portion of the land in Napa Valley is well adapted to the growing of the finest fruits, such as Prunes, Plums, and raisin Grapes. Now that these fruits can be preserved by artificial means cheaply, and in a manner far superior to the sun-dried article, it might be well for our farmers and others interested to look into this matter, and see if it is not well to plant a portion of their lands with these profitable fruits. They can not be successfully raised east of the Rocky Mountains, where there is and always will be an unlimited demand; and, to show the profit of the culture of such commercial fruits in connection with the artificial process of preservation, we respectfully submit the following estimate, clipped from a pamphlet published by the Alden Fruit Preserving Company of California: "Take the Prune for example. At fourteen feet apart, 222 may be planted to the acre. The writer has seen trees, of the Petite Prune d'Agen (an excellent variety) five years old from the bud, bear 200 pounds to the tree. These Prunes can be made into an article far superior to any imported Prunes, at a cost not exceeding three cents per pound. This would give 15,200 pounds to the acre, of preserved Prunes, which, at twenty cents per pound, would give $3,040 per acre, or about $14 per tree. Deduct from this the cost of curing, three cents per pound, or $456 for the product of one

acre, less the cost of raising. Those who consider these estimates too high may reduce them one-half, and still it will leave a handsome return for the labor and capital invested."—*St. Helena Star.*

OSAGE ORANGE.

The agricultural editor of the Sacramento *Record* advises farmers to plant Osage Orange for hedges on land moist enough to support that plant; and adds that he speaks from experience, having a hedge which is four years old, and has not cost more than half as much as board fence, and will not cost so much hereafter as the repairs of a board fence would. These statements are, we presume, true; but that they justify his advice we doubt; and it is to be hoped that the *Record* will, in a future article, give a detailed explanation of the soil, growth, and expenditures, so as to enable us to form our own judgment from the facts. The fences of California have cost about $30,000,000, and the annual expense of interest and repairs is estimated at $5,000,000; so that the question is one of much importance. The Osage Orange hedge is not new in California. It has been cultivated for twenty years; and we have yet to find a man who has used it for inclosing a large farm. Some of the plants die in the first start; others are killed by the squirrels and gophers; the new plants set out to fill vacancies are stunted by the older ones; the hedge is of no value for several years; it may die out in dry years, and so on, through a number of objections, including one that the training and trimming are considered far more expensive than the repairing of a board fence. This objection against the Osage Orange may be erroneous, but it is not to be upset on the authority of a single person who does not undertake to show the errors, if any, on which the general opinion is based. The *Record* adds:

"It is true there are portions of our State where the Osage Orange would need irrigation to render it available or valuable for fencing, but we are assured that for all such localities we have a native shrub growing on all our foot-hills that may be substituted for the Osage Orange. This shrub is the native Box or chaparral. This shrub has been experimented with on the rolling lands of Placer County by a gentleman of great experience, and very careful and correct habits of observation, and he pronounces it a complete success as a hedge-plant on all the foot-hill and dry agricultural or wheat lands of the State. He has a hedge now, four years old from the seed which were planted where the hedge now stands, which he says will turn any stock, from a rabbit to a Spanish bull or California mustang."

This advice is worthy of consideration. The native Box seems to be designated by nature as a hedge-plant for our foot-hills, where fencing is more expensive than in the valleys.—*Alta.*

Fruit-trees in Bloom.—The rapid development of the season is now seen in all warm and sheltered districts in this region. In Solano, Suisun, Napa and Sonoma, since the rains, the grains and grasses have grown as rapidly as "Jonah's gourd," and in these regions the Almond and Plum trees are bursting into bloom. Most fortunate has it been for our fruit crop, that we have had cold weather and no rains till recently. Now we trust we may escape later frosts, and thus our fruit may be saved from a check. Thus far everything bids fair for an immense crop of fruit of all kinds.

ISLANDS OF JAPAN.—PLANTING TREES.

The bluffs, hills, and mountains in every part of the Japanese empire are covered with forests of Pine, Cedar, Fir, Cypress, Beech, Birch, Maple, Oak, Bamboo, Palm, and in fact almost every variety of tree or shrub known in the temperate and tropical climates, which meet and blend so perfectly there that their influence upon the climate and rain-fall must not be overlooked. In this connection it may be proper to say that these uncivilized people, as they are called, have adopted a policy the very converse of that followed in America and Europe in relation to these protecting coverings of nature. The Japanese government has preserved the forests, and in fact insured their increase. No license to cut down a tree is granted, except upon condition that three more shall be planted and grown in its stead. If we can not do this in America or in this State especially, let us at any rate take the next step best in the matter—that is, for the legislature to offer an adequate premium to our farmers for planting out and cultivating a certain number of acres in the finest and most valuable timber trees; and none, perhaps, would answer better for shelter and wood and all purposes than the Blue Gum or its congeners. It is a great pity that something can not be done immediately to cover so many bare tracts that we have, with incipient forests and rows of useful ornamental trees. One feature in tree-planting needing legislative encouragement, which we trust will receive proper attention at an early day, is the planting of trees along the highways. Nothing would add so much to the beauty of our many barren landscapes, as avenues of lofty trees and hedgerows. The grateful shade the trees would afford would be appreciated by every traveler, and growing as they would on land that otherwise would waste or grow up in weeds, the return from the only expense, planting, would be certainly most satisfactory.

THE CATALPA AS A TIMBER TREE.

There appears to be no doubt, from all the evidence, that the timber of the Catalpa is of the most durable kind. Some which has been in use for many years in Delaware and other places, has proved the equal of Chestnut when used as posts, and in other particulars it has been found of great value. It is remarkable that in the great talk of a few past years on valuable timber trees, the Catalpa should have had very little said about it, and yet it is almost equal to a Cottonwood in rapidity of growth, and will grow and do well in almost any soil.

In books on trees it is often said that the Buttonwood is the largest-growing tree east of the Mississippi River. Perhaps this is true when we regard the length of the bole as well as the size of the trunk; but in absolute growth, we think it is quite likely the Catalpa would often equal it. In the drives around Germantown one may often pass specimens with trunks probably fifteen or eighteen feet in circumference. There is one on the Johnson estate, and another on the old battle-ground at Chew's, which appear in passing to be between the two figures named. Perhaps it has not received the attention its good timber and rapid growth deserve, because when young it loses the upper portion of its leaders in the winter season, and thus does not make a straight bole. The trees we see naturally all seem to have a tendency to

branch low on this account. But a friend who has had experience in timber-growing tells us this is easily remedied by cutting back the first or sometimes the second year's growth. A young plant from seed sown in April will often make a growth of four feet the first season. If so left, the leading bud dies, and it branches at this point; but if it is cut back to the ground, it will next year throw up a straight stem eight or ten feet high, and very little dies away—not enough, in fact, to interfere with the straight growth of the main trunk; and in this way a valuable timber tree is assured.

This hint is valuable as applicable to many other trees, for most are apt to branch and become crooked when growing the first year or two from seed; but cut back in this way, they push up the next season straight and strong for several feet.

In regard to the growth of the Catalpa, we examined a young one recently cut down, in which the annual rings of wood were some of them between a quarter to half an inch thick—a rate of growth few things could excel.

In some respects the Catalpa is superior to Locust, for that wood is too hard to contract after the iron nail, heated by the sun, contracts in the fall, and thus permits the nail to become loose; but to this we can nail as securely as to the Chestnut post—which indeed this wood much resembles.—*Germantown Telegraph.*

GRAPES FOR RAISINS.—Last season General Bidwell, on his estate of 22,000 acres, planted 110,000 Grapevines of the White Muscat of Alexandria, the great raisin Grape of California. He commenced making raisins of this Grape last fall, and those he has on hand now are certainly as fine as any Malaga raisins can be. He is also cultivating the Almond largely.

TO DESTROY THE GROUND MOLE—"IN A HORN."

It may be said that the most effectual way to destroy the ground mole is to kill him stone-dead. But in order to do this, he must first be got hold of, which feat may be accomplished in divers ways. Perhaps the most amusing is to "horn" him.

Procure a wagon-load, or such a matter, of horns from the tannery; select the localities most infested, and, carefully removing the earth from over the tunnel, place the big end of a horn longitudinally in the bottom of the tunnel, so that if he come from the direction opposite the mouth of the horn, he will enter it.

A short distance from this, place another, in the same track, with the little end pointing toward the little end of the one first placed, so as to catch him, be he coming east or west. Continue the work in this way till you have as many placed as you can attend to; then keep a vigilant eye on the little ends of the horns, and when you observe the little end of one faintly wriggling, remove it dextrously, and you have a mole. Dispatch him and replace the horn, for his boon companion will soon be along.

When you try this, you will find that a mole has no idea of "going round the horn," but will fearlessly enter the big end, and make a desperate effort to "come out at the little end of the horn."

A hundred horns judiciously placed in a ten-acre field, where moles are plenty, will take in, perhaps, fifty a day. This occupation is very attractive to the average small boy, and it is about the only way he can be made available in the country. If you are in the habit of using the prevalent exclamation, "In a horn!" here is the place to put it in.—*Cincinnati Times.*

PLANTS FOR HEDGING.

No. 1.—Is *Esteditschia Monosperma*, a variety of the Honey Locust. It is a native of South Carolina to Florida; found mostly in the swamps, and not common. It grows quite as well in dry soils, notwithstanding the fact that its native situation is wet. It is not as strong a grower as the Honey Locust, consequently better adapted for hedges. If kept closely clipped for the first two years, it seems almost impossible for cattle to effect an entrance through it. It is not suited to small places. Ranchers and large farmers will find it a great acquisition. It will grow in the salt water or in places washed by the spray of the ocean, where no other tree will grow.

No. 2.—*Escallonia alba*, makes a very nice hedge in a small place; is a good, close grower, and of nice habit. There are other varieties of the *Escallonia*, such as *Rubra*, *Macrantha*, etc.; but these are better adapted for training on walls, trellises, etc.

No. 3—Is the Mesquit-Tree; a native of Texas, Mexico, and Arizona. This tree is an evergreen, and resembles the Peach in appearance. It is grown for feed as well as for hedges, producing a pod similar to the common garden Bean. The pods are much used by Indians for food, while horses and cattle fatten on them readily.

No. 4.—Is *Cercis Canadensis*, commonly called the Judas-tree, from the fact that Gerard, the author, asserts that it was on the *Cercis* that Judas hung himself. It grows to a medium-sized tree, say fifteen to twenty feet, under proper cultivation. As a hedge-plant it is not much known, and its only main recommendation, in our opinion, would be its oddity—flowering in early spring in great profusion before the sign of a leaf can be observed on any portion of its body and limbs, and continuing in flower until hidden by the leaves. The color of the flowers is of the richest purple, and in a nicely kept hedge would resemble a purple band. In artistic landscapes a hedge of it would be very appropriate.—*Pacific Rural.*

RAISIN CULTURE.

Among other industries we have often impressed upon our foot-hill farmers the importance of making raisins. Wine-making, to be successful, requires some capital, but anyone possessed of a few acres of ground can grow and cure raisins as an incident to their other business, or can go into the business, if desirable, with but a limited amount of money. Several of our foot-hill farmers have been engaged in making raisins on a small scale for several years, and they all agree that it is both a pleasant and profitable pursuit. The early rains last fall destroyed the bulk of the raisins then in process of drying, but such rains are an unusual occurrence. From different ones who have had some experience, we glean the following facts in reference to the business: The Muscat of Alexandria is the best Grape for raisins, and those grown in the foot-hills, with little or no irrigation, are the best. Any of the foot-hill lands will produce the Grape, and the only irrigation required is while the vine is gaining a start. Lands suitable for vines can be bought for $2.50 to $5 an acre. It will cost from $15 to $25 per acre to clear and fence, but land already under cultivation can be bought for about that sum. The vines are usually propagated from cuttings, by the vineyardist, and, at one year old, when

Nº 1. HEAD OF FEMALE FUR SEAL. TWO-THIRDS NATURAL SIZE.

ready to transplant, will cost about three cents each. If bought at that age, however, they will generally cost five cents. They should be set six feet apart each way, giving about 1,200 vines to the acre. The cultivation is the same given to Corn and Potatoes, and the better and more thorough it is the larger the crop. The Muscat begins bearing very early, and after its fourth year, if properly attended to, may be counted on for about fifteen pounds to the vine, or about eight tons to the acre. In drying, the Grapes lose three-fifths of their weight, one hundred pounds of fresh Grapes making forty pounds of raisins. H. B. Allen, living six miles east of Rockland, in the foot-hills of this county, has been engaged in a small way for several years in making raisins from the Muscat. Being engaged in gardening and fruit-growing, he sells his product to his neighbors, and readily gets $16\frac{2}{3}$ cents per pound at wholesale. At that rate the product of an acre would bring at least $750. The labor of gathering and drying is not great. The Grapes should be allowed to get fully ripe, and when gathered, all defective ones should be removed. Drying in the sun is a tedious operation, requiring considerable attention, but involving the outlay of no capital. There is of course some risk of damage by rain, but generally the whole crop can be disposed of before the fall rains set in. The Alden Dryer makes raisins of excellent quality, drying the Grape with great rapidity and in the very best manner. As the Alden machine with the necessary buildings costs some $3,000, a considerable business must be done to justify its use, though a number of growers can combine in its erection and divide the expense. There is no reason why the foot-hills of Placer County could not supply the whole coast with all the raisins it can consume, besides shipping car-loads to the Eastern States. They are easily produced, and the market for them is practically unlimited.—*Placer Argus.*

Skeleton Leaves. — Leaves to be skeletonized should be gathered only during dry weather, and they should also be perfectly matured, July and August being the best months to gather them. Among the choicest varieties are Pine, Poplar, Beech, and Ivy leaves. Dissolve four ounces of washing soda in one quart of boiling water; add two ounces of quick lime and boil fifteen minutes; allow this to cool; then pour off the clear liquor into a clean saucepan, and when at a boiling point place the leaves in carefully and boil one hour; boiling water should be added occasionally to supply that lost by evaporation. If after boiling one hour the cellular tissue does not rub off between the thumb and finger, boil them till it will, always placing the leaves in cold water to separate the fleshy matter from the skeleton. Bleach the skeletons by putting them in a solution of one quart of water, a large tablespoonful of chloride of lime, and a few drops of vinegar; let them remain in twenty minutes, and then remove and dry between sheets of white blotting-paper, beneath a gentle pressure.

Clematis Integrifolia, or the entire-leaved Clematis. A low-growing plant, with fine blue flowers bordered with white. The greater part of the species of Clematis are climbing plants, but there are a few with erect, self-sustaining stems, like the one named, which I consider the most showy, although the small white-flowering *C. erecta* is quite pretty.—*The Horticulturist.*

Editorial Portfolio.

A HINT

TO THE MANAGERS OF THE HORTICULTURAL DEPARTMENT OF THE EXHIBITION OF THE MECHANICS' INSTITUTE THIS YEAR.

With a view to encourage Horticulture among the people of this great and generally improving city, it would be well for the directors or committee of the floral department of the Fair to distribute as soon as possible, among applicants, both children and adults—especially ladies—a variety of flowers in five-inch pots. The person who at the coming exhibition in the summer shows his or hers in the best condition shall receive as a premium a certain number of bedding-plants. The second-best specimen calls for a less number, and the third for a lesser number in proportion. The bedding-plants to be suitable for out-door planting in the fall.

This plan has been frequently practiced in foreign cities and villages, with the best results. Will not other societies take a forward step in this direction and introduce and encourage Floriculture in this city and country?

The object of every horticultural society, in particular, should be to encourage and promote the cultivation, improvement, and exhibition of fruits vegetables, and flowers. All of these interests have not been treated with that consideration by the Bay District Horticultural Society which they so richly deserve, and which their importance demands. With respect to flowers, the following question seems to be to the point for anybody having a home, to answer:

"Will it pay me to beautify my home with flowers and shrubbery? There are few persons who can not afford to invest a small sum in a few Rose-bushes or other ornamental plants to start with, and in a short time they will be well repaid for their slight expenditure and trouble. Anything which adds to the beauty and cheerfulness of a home adds to its permanent value. There are many gems in the floral creation which, when once implanted in the soil, will continue to grow in beauty year after year, and remain joys forever to the fortunate possessor. All will admit that this department of nature is well worthy the study of man. 'Flowers are not the trifles which many think them to be, or God would not have bestowed the care on them that he did.'"

THE VICAR OF WINKFIELD.

This Pear (also called the Wakefield) is a good deal cultivated in California, and it deserves to be so, as some of its qualities are quite valuable. It grows to a large size, the tree is hardy, of vigorous growth, and yields very large crops, and, for the table, when cooked, it is one of the very best baking Pears. This fruit can not be classed, to be sure, among those of the richest of flavor, but is still a tolerably desirable one for eating. It requires a medium rich dry soil to bring it forward to a good size, and to be fully ripe before picking. The tree should be well exposed to the sun. Taking it in all its characteristics, not many Pears have been so much condemned or so much praised—praised by those who have had patience with it, and condemned by those who have not known how to treat it, or whose soil is not favorable for its proper maturity; but this can hardly ever be the case in California, as we have no frosts severe enough to affect it. In the East some have declared it to be the best winter Pear they had, taking it all in all. But here our climate is so favorable for all

fruit at all seasons of the year, that we have many other very excellent winter Pears that come to perfection; whereas in the East, comparatively, they have but few that arrive at a completely delicious condition on account often of extreme cold, and great changes of weather.

The Vicar should be left hanging till quite late in the fall, and placed in good boxes, and kept for some length of time till it becomes of rather a yellowish tinge; and then with its generally fine blush toward the sun it is a handsome fruit. Our climate is very favorable for this rather uncertain and capricious variety.

THE SEALS AND WOODWARD'S GARDENS.

We believe within the last two or three years Mr. Woodward has had in his Gardens one or more specimens of the fur-seal, but he has none of this interesting species of the seal at present in his ponds.

These animals have a wide geographical range north and south. They are numerous, and are a source of great commercial wealth.

We shall have again to be indebted chiefly to Captain Scammon in his valuable work on *Marine Mammals*, for information regarding these curious creatures.

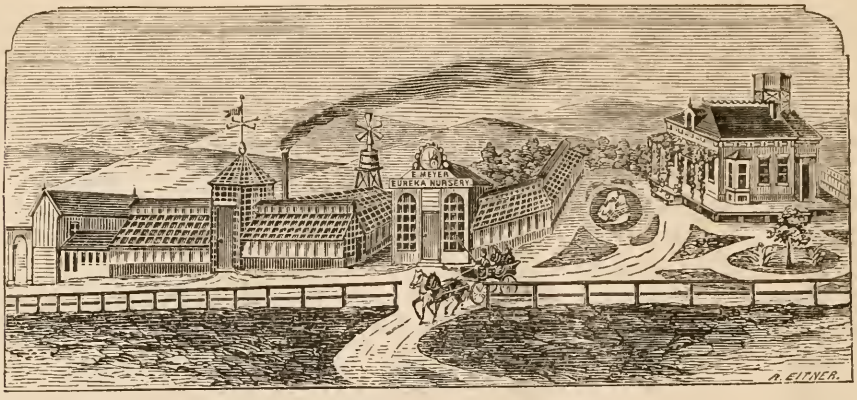
We present our readers, in our current number, with two more zincographic plates—one depicting a full-aged male fur-seal, of St. Paul's Island, and the other the head of a female fur-seal.

The color of the full-grown males is dark brown, and the white hairs on the younger ones give them a silvery lustre. When the season of seal-killing begins, they are very fat, and when it ends they are very lean. When in full flesh, the adult females weigh about eighty-five pounds. The male (engraving No. 1) presents a surly expression, "ever present," as Captain Scammon says, "with those veterans who have fought for prestige upon the rookeries many successive seasons."

It is very uncommon for the female to have more than one pup. Besides, the fat of the fur-seal is an object with the native, being valuable for light and heat. The flesh, also, affords them a staple article of food. In former times they existed in such immense numbers, that, on the coast of Chile, one vessel, after loading with choice skins, was supposed to have left on the island 500,000 seals.

Their food consists of fish, and a variety of other marine productions, and small stones or pebbles are found in their maws. The females have great affection for their young. Many years ago they were killed with the ordinary seal-club, and large numbers formerly gathered on the coast of California. The Indians use spears attached to lines to kill them with. At the present time the number taken annually is about 150,000. The price of the skins in Europe average $8 to $9 each.

American Pomological Society.—We take much pleasure in notifying our fruit brethren of the Pacific Coast that this national institution holds its next biennial meeting at Chicago, Sept. 8th, 9th, and 10th. We trust that our orchardists will respond handsomely and energetically to this call, by sending a good delegation with the best specimens of California fruits to that important meeting of national pomologists. The president is that most worthy and enlightened amateur horticulturist and fruit culturist, Honorable Marshall P. Wilder.



Eureka Nursery, near Golden Gate Park.

The above engraving shows the neat and handsome establishment and reconstructed greenhouses of E. Meyer, proprietor of the Eureka Nursery, near Golden Gate Park. Mr. Meyer is one of our foremost nurserymen and florists. See notice of his catalogue on another page.

PERSONAL.

Mr. F. .A Miller, of the firm of Miller & Sievers, will in a few days depart for the East and Europe, for the purpose of visiting and examining all the leading nurseries and public gardens. The object of his visit is the introduction into California of all plants, ornamental as well as useful, which may come favorably to his notice and which may be adapted to this coast. He will visit the following cities: Chicago, St. Louis, Philadelphia, Washington, New York, and Rochester; and will then proceed to Hamburg, Bremen, Berlin, Erfurt, Dresden, Frankfort, Baden, Haarlem, Ghent, Paris, and London. If we are not mistaken, his journey will result in the introduction of many valuable acquisitions.

Another object of his visit is to establish permanent business relations with Eastern and European houses, in regard to the exportation of plants, bulbs, and seeds indigenous to this coast and the Pacific islands.

HOW TO DESTROY AND GET RID OF SLUGS.

Mr. D. C. Arthur, of Oakland, a lover of flowers and Horticulture generally, informs us that his Hyacinths this spring have been troubled and some of them destroyed by slugs, which are among the most annoying of California garden pests. In order to rid himself of them completely, if possible, he took a lantern, between the hours of nine and twelve at night, and searched for them. He found bunches of these slugs feeding on the tops of his plants, as they were just coming up out of the ground, and so killed them all. These creatures can not easily be found in the day-time, but are night-feeders. Quick-lime is found to be somewhat efficacious against them, when sprinkled over the ground around plants.

Viburnum Awafurki.—Of all the brilliantly colored autumnal plants we have ever seen, the plant above named is the finest. Some of its leaves are now of a bright rose color.

OUR FRONTISPIECE.

We embellish our work this month with two graceful, neat and well-drawn cuts, namely: an aged Date-palm (*Phœnix dactyliferæ*) and a row of giant Fig-trees (*Ficus carica giganteus*). The first named is found growing and flourishing in some sheltered locations of our State, (especially in southern tropical and semi-tropical California. The latter tree is found to do well and bear plentifully in all parts of the Pacific slope except toward the Sierra. We are not aware of the Date-palm having borne fruit here, and though it is cultivated as far to the north as 41° in Spain, as well as in the south of France, in Italy, at Athens, and at Smyrna, the fruit does not ripen there. Its true native home is the north of Africa, Egypt, Nubia, Syria, Arabia Felix, and Persia. Its range is limited toward the south in the old world by the region of equinoctial rains. A sandy and well-watered soil is that which best suits this tree, for which reason it is found always in the great African deserts, in the neighborhood of springs. It constitutes almost the sole means of support to nineteen-twentieths of the population of Fezzan during nine months of the year; forming the food of stock as well as of man, "the oases being bare of herbage." These Palms are planted in Egypt in rows along the canals. They seem to be almost limited to the sub-tropical zone throughout the world as to bearing fruit at any rate. A lady traveler, Josephine Clifford, visiting semi-tropical California, which is about between San Miguel Mission in the northern portion, and San Buenaventura in the southern, relates that she saw a Fig-tree at San Luis Obispo which measured three feet in diameter near the base, spread to seven feet where the branches set in, grew forty feet straight up from the ground, and shaded with its leaves and branches a space of some fifty or sixty feet across. Nor did it stand alone. Beside it was one almost equally gigantic, then followed two or three smaller ones—the whole, no doubt, the remains of a Fig-avenue, or *allee*, like the *allees* of Olives which are often found in southern California.

The Date-palm, like many other trees and most of the other kinds of Palms, has male flowers on different plants from those which produce the fruit, and there is a necessity for some of the male trees to grow near the female to render them fruitful; or, at least, to impregnate the ovary of the seed, without which the pits, which are taken out of the fruit, will not grow. In other words, this variety of the Palm is a diœcious plant.

The Overland.—The March number of this first-class magazine is before us. We always look forward with expectant pleasure to its monthly issue, containing as it does so much of varied interest on many general practical subjects; being rich, also, in exciting tales, many of which are of essential and peculiar value as relating to the Pacific Coast. We can find but few papers similar to them in any other publication of the kind. The present number is as replete as ever with many useful and entertaining articles, which the public had better judge of and enjoy, by immediately becoming subscribers to the work. We need not here enumerate all the papers in the March number, but we can conscientiously urge the public at all events to examine its very attractive table of contents: "The Policy That Built up the West," "Thorpe, Cava-

lier," "Glimpse at a Central American Republic," "To the Lion of Saint Mark," "The Richard Murray Materialization," "Communism," "Chambers in Charlotte Street," "Discipline," "Modern Civilization a Teutonic Product," "That Valentine," "Tobacco and Sugar," "Pioneer Nig Saul," "Autobiography of a Philosopher," "The Friendships of Men and Women," "Pan Avenged," "Toby Rosenthal—How he Became a Painter."

CATALOGUES RECEIVED.

From R. J. Trumbull's Seed Warehouse, 427 Sansome Street: "Guide to the Vegetable and Flower Garden, etc. Catalogue of Flower, Vegetable, Agricultural and Tree Seeds, Flowering Bulbs, Flowering Plants, Fruit and Ornamental Trees and Shrubs; Establishment begun in 1852." This Catalogue and Guide is handsomely printed and embellished with neat engravings. It is one of the best gotten up on our coast. Mr. Trumbull is an extensive grower of the Blue Gum (*Eucalyptus globulus*, in the value of which tree he has great faith), and the *Eucalypti* family. He has given the public instructions how to raise and cultivate these valuable trees, to which we will give a place in the next number of the HORTICULTURIST.

From B. F. Wellington, 425 Washington Street, S. F.: "Catalogue of Vegetable, Flower, and Tree Seeds, Bulbs, etc., for 1875." This is a neat publication. It embraces not only the most noted and commonly known seeds adapted to California, but also all desirable native seeds of Europe, Australia, New Zealand, Mexico, South America, Sandwich Islands, etc. One of the greatest demands now on the part of the agricultural public is for Alfalfa seed, of which Mr. Wellington has provided himself, to meet the market, with several tons. It is now the most profitable feed for all kinds of stock on this coast.

From J. P. Sweeny & Co.'s Seed Warehouse, Davis Street, San Francisco: "Trade List of Garden, Flower and Herb Seeds; also, a select list of Gladiolus and other Spring Bulbs." This firm has been engaged in this business for twenty years; they therefore can be fully depended upon.

From E. Meyer: "General Catalogue of New and Rare Ornamental and Flowering Plants, Bulbs, Seeds, etc." Eureka Nursery, near Golden Gate Park; Floral Depot 27 Geary Street, near Kearny, San Francisco. At Mr. Meyer's sales-room we noticed a splendid and varied collection of double and single Hyacinths in pots. They are well worth visiting.

From Briggs & Brother: As usual, a splendidly illustrated floral quarterly, "Work for 1875." It contains two beautifully drawn and colored plates of *Phlox Drummondii grandiflora splendens*, and *Phlox Drummondii grandiflora variegata*. These are some of the most useful and brilliant annuals in cultivation. They have a great range of bright colors and profusion of bloom, and the sorts are continually increasing. The flowers of these Phloxes are very large, of glowing and distinct colors, with large, clear, conspicuous white eyes. All varieties of flowers that can not be indorsed by this firm are carefully excluded.

From R. H. Allen & Co., Nos. 189 and 191 Water Street, New York: "Annual Descriptive Catalogue of Garden, Flower, and Field Seeds, and Grains, for 1875," with directions for location

and soil for a garden: frames and hotbeds, lawns, etc.; novelties and select vegetable and flower seeds; new varieties of Potatoes for 1875, and ornamental grasses, etc.

From F. K. Phœnix, Bloomington Nursery, McClean County, Ills.: "Plant Catalogue and Wholesale Price List." The nursery contains 600 acres.

NEW AND RARE PLANTS.

New Ferns.—Mr. John Muir, geologist, naturalist, and author of "Studies in the Sierra," informs us that he has lately discovered three new Ferns. He also met with the *Darlingtonia Californica*, or California carnivorous Pitcher-plant. It was not in bloom, being in winter when he saw it, but in the faded flowers he observed many dead grasshoppers, butterflies, moths, and other insects, which had been decoyed to their destruction by its honey sweets and its downward inclined hairy *chevaux de frise* as they may perhaps be termed. Mr. Muir has promised to give us a description of this insectivorous curiosity, if he can spare the time. If he does, we promise our readers that it will be probably somewhat poetical or imaginative, but, according to his wont, strictly truthful as to what he actually observed.

Weigela Hortensis Nivea.—There has been no novelty of late years that we deem likely to be of a more lasting popular character than this. The flowers are white—not the white of so many things, which is neither green, nor yellow, nor rose—nor a pale edition of some of them, but a real pure snowy white. The common *Weigela rosea* and *W. amabilis* are well known, as are also the various kinds between them, of which probably the best one is the variety *Grœwegenii*, which has a very bright rosy tint and the flowers in immense profusion on long wand-like branches. The history of the present one is unknown to us. It is probably a cross between *W. amabilis* and *W. rosea*, or it may possibly be a mere seedling from *W. amabilis* alone. It has more of its character than of the other one, including its tendency to bloom in August and September as well as June. It is not so straggling in habit, but is a well-formed bush, as is the *W. rosea*. It came to American nurseries under the name of *W. Hortensis nivea*, or Snow-white Weigela of the gardens, which seems to indicate that its precise origin is unknown.

It has been found a capital plant for winter-forcing, where pure-white flowers are desirable. It moves very well in the fall, and blossoms as freely as if not transplanted, while a very moderate heat brings out the flowers. These are good points in a forcing-plant.—*The Gardener's Monthly.*

Hydrangea paniculata grandiflora.—The queen of hardy Hydrangeas is the new Japan variety, known in nurserymen's catalogues as *H. paniculata grandiflora*. It grows rather tall if left to itself to come in among small shrubs. Still, as it is not a coarse-wood plant, a little shortening of the leading shoots will make it fit in very nicely with the lesser-growing kinds. The flowers are white, and produced in immense pyramidal panicles a foot or more in length. This is another autumn or late summer blooming plant, and one of the best shrubs of recent introduction.—*The Horticulturist.*

Campsidium filicifolium.—A free-growing slender woody climber, from the Feejee Islands, and referred doubtfully to Campsidium, from the analogy

of its foliage. It has opposite impari-pinnate leaves, which are about five inches long, including a petiole of one inch, and consists of nine pairs of leaflets, which are small, ovate, deeply cut into two or three lobes on each side, the larger lobes being sometimes toothed. The leaves, from their size and form, are strongly suggestive of fronds of some small-growing pinnate Asplenium, *A. viride*, for example. The growth and general character of the plant is so elegant that, whether cultivated as a small pot-plant, trained on globular or other trellises, or planted as a climber, it has a most charming and engaging appearance. The flowers are as yet unknown.

Dracæna metallica.—This robust-habited stove-plant is the finest of all the dark-colored Dracænas, the leaves being as much as sixteen inches long, and of an oblong, acuminate form, with a marginate petiole four inches long. These, together with the sheathy leaf-stalks, are of a uniform, rich, coppery, purplish hue when young, becoming a dark purplish bronze when mature. The leaves are somewhat erect and arching. Taking into account their large size, and their full and rich coloring, together with the free habit of growth, *D. metallica* comes into the very foremost rank among decorative and exhibition plants. Imported from the Samoan Islands.

Gymnogramma decomposita.—A very handsome and well-marked stove-Fern, belonging to the group furnished with ceraceous pale yellow powder. The fronds are three feet long and fully half as much in width, of triangular outline, and curving or arching in a graceful manner; they are decompound, the pinnæ being unequally triangular-elongate, the pinnules triangular-lanceolate, the pinnulets oblong-lobate, the lobes being deeply cut into from two to six small finger-like divisions, which gives the fronds a finely dissected appearance. The stipe is about one foot long, freely covered while young with the pale golden powder.

New Lilliputian Zonal Geranium named "*Aurantia striata.*" This plant is distinguishable in any collection, and will at once take the eye of the critic on account of its unique and tidy habits of compactness, unparalleled density of panicles, and conspicuous symmetry of proportion.

NEW AND RARE FRUITS.

Souvenir du Congres Pear.—Messrs. Ellwanger & Barry, Mount Hope Nurseries, Rochester, N. Y., announce a new Pear—the *Souvenir du Congres*. It was exhibited by them for the first time in this country, at the great Pomological Exhibition at Boston, last fall. It attracted great attention for its large size, fine form, superior quality, and earliness. The tree is vigorous and productive. The fruit is larger than Bartlett or Clapp's Favorite. The skin is smooth, bright yellow, when the fruit is fully matured, and red toward the sun. The flesh, while it is very like the Bartlett, has a less defined musky flavor, and it is firm to the core. It commences to ripen in New York State about the first of August, before the Bartlett, and extends into September.

Following are some new Pears deemed worthy of cultivation by Hon. Marshall P. Wilder:

Harris.—Size above medium; form ovate pyriform, resembling in general appearance the Beurre Hardy; stem one inch or more in length, frequently inserted angularly and without much depression; color golden russet, at matur-

No. 1.—Full-aged Male Fur-Seal, St. Paul's Island.

ity; flesh yellowish white, fine grained, very tender, melting, and juicy; flavor rich, vinous, spirited, and aromatic, somewhat like the Beurre d'Aremberg; season October 1st to 15th; keeps sound at the core; quality *very good* to *best;* will probably prove a first-class fruit; tree healthy, hardy, and productive; foliage small.

Madame Henri Desporte. — Size above medium, broadly turbinate; eye partly closed, in a deep narrow basin; stem short and thick, set on one side of a lip; skin rather thick, almost entirely covered with cinnamon russet on a yellow ground; flesh white, very fine grained, free from grit, juicy and buttery, very sweet and rich, with a very slight astringency; season last of October and first of November; keeps well; quality *very good* to *best*; resembles Beurre Bosc in color, texture, and quality; tree a fine grower and productive. This variety is from seed by Andre Leroy, of Angers, France.

General de Bonchamp.—Size large; form oblong pyriform; color dull yellow, slightly traced with russet; flesh melting, juicy, buttery, and fine grained; flavor sweet, rich and aromatic; season November to December, ripening earlier than with Mr. Leroy in France; quality *very good* to *best*. A Pear of good promise.

Variegated Carnations. — *W. A. H., Dubuque*, writes to *The Gardener's Monthly*: Are there any variegated-leaved Carnations known to you? I have not seen any advertised, but have a well-marked plant, a sport from *C. Shiller*, having a creamy-white stripe in the centre of each leaf. I discovered it when only the tip of the first variegated leaf could be seen, and propagated it at once, and it is now a vigorous well-marked plant.

Correspondence.

Editor of California Horticulturist:

Dear Sir,—Our hills are green and beautiful; the winter is nearly over. This is the second winter that I have cultivated California soil. Our hills have a peculiar climate. I think that they resemble Crimean hills. In Crimea on the northern side-hills the soil is very poor; the southern side resembles Messina in Italy.

The winter was very cold and kept back vegetation. At a ranch owned by a Portugese, Mr. Antonio Williams, half a mile from our place, I saw every kind of vegetables in his garden ready for the table on Christmas-day. His vegetable garden is on a southern side-hill.

We had through the whole winter, for our own table, Lettuce, Radishes, and Spinach. I put Early Rose Potatoes in the ground on the 2d of November; they are most ready to dig up. Green Peas are in blossom.

I hope the time will come when the climate and soil of our hills will be studied by intelligent farmers, and proper places will be cultivated in the winter season to supply San Francisco at that period with all kinds of vegetables. Agapius Honcharenko.

Ukraina, Cal., February 15, 1875.

Dicentra spectabilis (Bleeding Heart). —If limited to but one plant this would certainly be our choice. It grows freely in almost any good soil, never failing to bloom early and for a long time. In habit it has no equal in graceful elegance, and its abundance of rosy crimson flowers make altogether a plant to be admired by the million. Although introduced almost or quite a quarter of a century since, still there are thou-

sands of gardens in which it has not found a home. It may be rapidly propagated by dividing the roots or by cuttings of its half-ripened flower stems in summer, placed in almost any shady spot in the garden.

SOME NOTES ON BUSH FRUIT, FRUIT CULTURE, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

The subjects upon which I will commence to treat are Raspberries, Gooseberries, Black Currants, and Red and White Currants. Raspberries are, perhaps, more liable to suffer from lack of moisture and moderate irrigation than from any other cause. They like a soil, therefore, which contains a permanency of proper dampness, which in our climate they can not have completely, without some irrigation. They will, for the above reason, succeed in half-shaded situations, as in orchards of some kinds of fruits, but the fruit with too much shade never attains that high flavor so much esteemed in the Raspberry. The most improved variety we have seems to be the Fastolf. It possesses one valuable quality in particular—long bearing, at any rate as far as our comparatively dry climate will permit. We have a few other sorts; but the Fastolf continues in bearing long after the other kinds; appearing to partake, in some degree, of the double bearing. They will be better for a rather liberal manuring annually, and no digging over the roots should be permitted, but only the horse cultivator and hoe should be used to keep the ground loose and clear of weeds. This berry is of large size and high flavor.

Among all the smaller bush fruits the Gooseberry delights most in an open, free, and generous soil; one rather dark in color, as much of our soils are, seems to suit it best. We have to depend most on the American native kinds, as the Houghton, small as it is when compared with the European; the latter requiring peculiar treatment with some lime and salt, and other manures, to keep off their great pest—the mildew—and even then we have merely partial success with them. Red and White Currants require, also, a friable and pretty fertile soil; but if too rich, they will produce too much watery wood. It is, however, difficult to make the soil too good for Gooseberries, with any reasonable amount of manurial matters. Many good gardeners, particularly for the English sorts, if they cultivate any, pack about half a barrowful around the stem of each bearing bush every winter. This washes down in nutrition to the roots, and helps to keep them damp in our dry and hot season. Little summer pruning is needed for the Gooseberry—just enough to keep the boughs from dangling too low, though that may be allowed to some extent, like the Grape, in our season of drouth. For this purpose the ordinary shears may be used, removing any portion of the points which might drag too much along the ground.

Black Currants love a moist soil, especially when they are in blossom, or swelling is apt to engender plant lice or aphides. For this reason some manure kept damp round their stems, in order to retain the moisture, as well as to encourage surface fibres, is beneficial. Soap-suds are good for this purpose. Here, too, the use of the spade must be protested against. Summer pruning is not needed with the Black Currant; unless it be a few of the lower shoots, bending with their weight, and draggling, like some foolish woman's

skirts, along the ground. If, however, any of the young points grow to an inconvenient height, they may be pinched or cut back any time during May or June, leaving a few of the lower leaves. Black Currants, it is true, are not much grown here, but they make a useful jam for coughs and sore throats. Red Currants are much coarser-growing than the White, and do not require so fertile a soil, nor so much manure if planted in rather poor land; indeed, when they make too coarse and too thick branches, manure is out of the question; whereas it is not easy to overenrich the Whites. Both Red and White Currants delight in a free and open soil, and will endure drouth much better than the Black Currant. Summer pruning is with them of much service. This is performed when the body or "breast shoots" are about ten inches in length. They may be shortened to four inches, which is necessary to protect them from our intense sunlight; for if it shines much immediately on the bunches of fruit before the coloring period, they will lose size as well as juiciness. But the terminal points, also, are apt to lengthen inconveniently; these may be shortened when from eight inches to a foot in length.

These proceedings will throw much strength into the berries, which is most desirable. It is no use suffering young-growing spray to any indefinite extent; it is but adding more woody matter; whereas the prime object should be to throw as much into the fruit as possible. As for weak growth (and that is rare in our climate and soil), that merely points to the need of manure, if the land is not naturally rich, and may be amended by surface dressings, or by digging out a trench around them, and introducing manurial matters.

Among the chief recommendations to be offered, it is here urged that there be no deep stirring the ground at any period nearer than three feet from the bole of the bush.

The White Currant requires less shortening than the Red, and seldom much summer pruning. It is astonishing what a weight of fruit both the White and Red Currant bush will produce, if of a good kind—as the Cherry Currant—and properly handled in our almost perfect climate.

Further, with regard to pruning in the rest season, it may be observed that a too sparing hand is the common fault. Gooseberries, especially, require more thinning than is commonly awarded to them. The interior shoots of the bush, in healthy trees, should be much pruned away, and the bearing confined chiefly to the extreme points. They are thus gathered with more ease; indeed, the bushes may be stripped in half the time of those choked up in the interior. The fruit, also, particularly the English kinds, is much finer, and the crop will be found to tell well in bulk. Those who grow European kinds of Gooseberries for exhibition purposes may use liquid manure occasionally, during the swelling process, as also just before the fruit begins to color.

I have occupied so much space concerning these small fruits, that I am disabled from enlarging more, at this time, on other points of fruit culture of any kind, and will, therefore, proceed to deal with the usual reports of the markets.

Near the middle of last month (February) vegetables showed very little improvement in any way. Artichokes were to be had for $1.00 to $1.25 per dozen, and Asparagus for 62½c. to 75c. per dozen. Small quantities of Rhubarb were offering at 37½c. per lb. New Potatoes were no better in quality.

Those offering were a mixture of "volunteer" and genuine. The Potato blight had already commenced to show itself on the crop. One-half of the New Potatoes for sale in the retail markets were more or less affected by it. The price of New Potatoes was a little easier on the 12th ult., ranging from 6c. to 8c. per lb.; Cabbage Sprouts were also a trifle cheaper, selling at 8c. to 10c.; early Green Peas were retailing at the same date at 15c. The pods were slightly discolored by frost, but the contents were uninjured. Horseradish was quoted at 20c. per lb.; Salsify at 75c. per dozen bunches; Field Lettuce, 25c. per lb.; Dried Okra, 50c.: Dried Chili Peppers, 50c.

Fruits were retailing for the same price as the week previous. Oranges were very plentiful, but the native fruit is exceedingly small, as a general thing, this season. This is owing to the abundant crop borne by the trees, which have not been subjected to any thinning out so as to give the stronger fruit an opportunity to fully develop. We give the price of dried nuts and fruits as follows: Sun-dried California Raisins, 20c. per lb.; California (dried) Plums, 15c.; German Prunes, 15c. to 25c.; Dates, 25c.; Preserved Bananas, 25c.; California Almonds, soft shell, 25c.; Imported do., 35c.; Walnuts, 20c. to 25c.; Butternuts, 25c.; Chestnuts, 25c.; Cocoanuts, 15c. each.

California Oranges and Lemons were plentiful, and met with ready sale. First-class Apples and Pears were scarce, and brought high prices. The steamer from Oregon, due on the 14th, was expected to bring a large shipment of Apples, which, coming into competition with medium grades, might cause a decline, but could not have much effect upon the prices of the best California fruit. The market was sparingly supplied with Mexican Limes, and those from Los Angeles sold at fair prices. Arrivals from Mexico supplied the market with moderate quantities of Bananas, Pineapples, and Mangoes, which sold at unchanged rates. Apples by the box retailed at $1.25 to $2.50.

Green Peas were very abundant, and prices lower about the 20th of last month (February). Then, also, the first Rhubarb made its appearance, and found ready sale at 25c. per lb. Asparagus was more plentiful, and considerably cheaper. A consignment of New Potatoes from San Bernardino turned out to be bogus, being only a lot of old ones, that had been buried until the skin peeled off, thus giving them the appearance of new. Genuine New Potatoes, raised in the vicinity of the city, were more plentiful, and have declined to 5c. to 8c. per lb. Spinach was quoted at 8c.; Lettuce, 20c. to 25c. per doz.; Salsify, 8c. to 10c. per bunch; Potatoes, by the sack, delivered, $2.25 to $2.50 per cental.

The receipts of California Oranges continue to increase, and the supply is now so abundant that prices are beginning to weaken. Choice Pears are very scarce, and command fancy prices; but the refuse from Eastern shipments are sufficiently plentiful and cheap, though not very salable. The 200 bunches of Bananas by the D. C. Murray, from Honolulu, arrived in first-class order, and find an appreciative market. Apples are plentiful, and by the box retail at $1 to $2.50. A few Pears of inferior quality continue to be offered for sale. Outside of these descriptions imported and dried native fruits only appear on the stalls.

The supply of Green Peas was never known to be so large as it was about the last of February. A few were gen-

erally to be found in market all winter, but they were never before sufficiently abundant in February to sell for 6c. to 8c. per pound. Within two or three years a considerable tract of land along the foot-hills in the vicinity of Warm Springs, Alameda County, has been found peculiarly adapted to the growth of early Peas, in consequence of its almost entire exemption from frost, and this region now furnishes almost the whole supply. The daily receipts average nearly 100 sacks, or about four tons. Asparagus came forward at the same time in limited quantities, but the abundance of Peas interfered materially with the sale of it, and kept articles below the fancy figures usually obtainable at this season.

New Potatoes were more plentiful and retailed at 6c. to 8c. per lb. The high rates obtained for Humboldt, Petaluma, and other descriptions of old Potatoes, for several months, were still maintained. Onions were very abundant, and could be had by the sack at $1.50 to $2.00 per cental. We quote Spinach at 8c.; Lettuce, 20c. to 25c. per doz.; Salsify, 8c. to 16c. per bunch; Potatoes, by the sack, delivered, $2.25 to $2.50 per cental.

The market was well supplied with Los Angeles Oranges and Lemons. Apples were very plentiful, renewed shipments from Oregon contributing to the supply.

During the last week in February, arrivals of fruit from foreign countries included large consignments of Sicily Lemons, Mexican Limes, and Bananas and Pineapples from Panama, by the coast steamer, and Bananas from Honolulu. Pears were very scarce, and generally inferior in quality. Apples by the box retailed at $1.25 to $2.25, delivered.

The quality of the Green Peas offered was just as inferior as the quantity was excessive.

New Potatoes are this year subjected to a new form of adulteration. Formerly what are known as "volunteer" Potatoes were, without much attempt at concealment, palmed off on unwary purchasers for genuine new Potatoes. We took especial pains last year to inform housekeepers of this practice, and placed them on guard against this species of fraud. The result has been that growers are no longer encouraged to continue it so openly, and now we have a mixture of "new" and "volunteer" Potatoes presented as a genuine growth of new crop, and for which the price of genuine new Potatoes is asked—8c. per lb. Mushrooms continue steady at 10c. to 15c.

Bananas and Pineapples were very plentiful, the former at 50c. to 75c. per doz.; the latter at 50c. to $1.25 each.

The Eucalyptus.—This Australian tree, called Sweet Gum, or, botanically, *Eucalyptus globulus*, though comparatively recently known in the United States as a preventive of chills and fever, has been known in Mexico for very many years as possessing that quality. The three-mile drive from the City of Mexico to Chapultepec is bordered by an old avenue of these trees; and wherever there is malaria, there is the Eucalyptus. It seems strange that never until now should the people of our malarial localities, such as New Orleans, have discovered this "fever tree" and utilized it by planting it around them. By an order of the City Council of New Orleans, the Mayor of that city advertises for sealed proposals for planting it on a large scale in and about that malarial city.

Editorial Gleanings.

California Norther.—The norther is essentially a land gale; its effects are seldom felt wide off at sea, but all the country from the base of the Sierra to the coast is under its dominion. Coming as the present one does right after a long rain-storm, its desiccating effects are not felt as much as in the spring-time or in midsummer. We have seen hedge-rows of Cypress turn brown under the influence of a norther as if a fire had passed over them; leaves upon trees would curl up and fall, young fruit would drop off, the paper upon the walls of dwellings would become detached, furniture would fall to pieces, and growing crops of young grain would be nearly ruined in a few hours. The norther sucks up the juices of plants and the juices of humanity at the same time. Nervous people are sometimes made nearly frantic under the rasping effects of the blast, and even animals become restless and excited. What the good effects of a norther may be we have never been able to find out. Does it execute some sort of a sanitary commission in the vigorous airing which it gives to everything out-of-doors, and in-doors, also? If it blows epidemics and malaria out of the country, let us be content with our norther. But unless we can find a redeeming sanitary side, we shall take a norther to be about as useless a gale as ever swept over land or sea.

Beecher on Apples. — Rev. Henry Ward Beecher expatiates with true ecclesiastical unction on the manifold uses of the Apple in the domain of culinary art. It might take its place on the table as regularly as the Potato or the Onion, for though "the Onion is far more odorous, the Apple is far more blessed." It is an admirable sauce for meat, which always craves a piquant acid for relish. When meat is wanting, "a scrap of pork in the frying-pan, with sliced Apples, will serve the economic table almost as well as if it had been carved from a beef or cut from a sheep." Mr. Beecher blesses the memory of the unknown inventor of the Apple pie. He would fain make a pilgrimage to his grave and rear over it an everlasting monument. But the juice of the Apple he accepts only with discreet reservations. Though banished from its former universal position upon the farmer's table, cider is creeping back again, but it comes in the name of a neighbor, and is called champagne. Whether in one form or another, it is still savory of the orchard; it still brings warmth to chilly veins, and adds to the cheer of many a homely domestic festival. "I can not," says Mr. Beecher, "as a temperance man, exhort you to make it, but I must say, that if you make it, you had better make it good."

Plant for Tanning Leather.—A new plant is found in Iowa, which is supposed to grow in the northern part of California, and which we now describe, that farmers and herdsmen may look for it. Its use is for tanning leather. It contains more tannin than the best bark. To the eye it is a wild Buckwheat. Its stem is a lighter red and much thicker, usually over one-eighth of an inch in diameter. The plant is tall as Wheat. The leaves are the form of Peach-leaves. The joints of the stem resemble the leg of a fowl in shape. They are a little furzy. It flourishes on wet bottom land. Some people liken it to smart-weed. It is not reported as bearing a flower; but it

yields seeds, so a flower is supposed, of course.

Its botanical name is *Polygonon Amphibium*. Dr. Bolander has not found it, but he is advised that a plant answering the description has been observed in north California. Some seed is expected from Iowa, which will be described hereafter. Should any of our friends find this plant, they will confer a favor by informing us of the fact. It is believed to be worth looking after.

Bananas in Southern California.—Rev. H. H. Messenger brought to our sanctum recently a number of Bananas which were grown in the open air on his place near the San Gabriel Mission. The bulbs from which the Banana stalks sprung were brought from the Sandwich Islands about twenty-two months ago. In eighteen months from the planting of the bulbs the stalks blossomed, and in three months longer the fruit matured. Fifteen Bananas were borne upon the bunch. They were small, but equal in flavor to any we have ever tasted. From the new bulbs, which will grow from the old ones this year, Mr. Messenger expects to procure much finer fruit. He thinks that the raising of Bananas can be successfully prosecuted here, and that without any unnatural protection for the plants. He also thinks that the Florida Banana is much better adapted to our soil and climate than any other. —*Los Angeles Herald.*

Lobelia Subnuda.—The *Lobelia subnuda* is a small species with prettily veined foliage, spreading in a tuft about two inches high. It is cultivated on the rock-work at Kew, where it was received from Mr. Thompson, of Ipswich, who is fortunate in possessing so interesting a novelty. The leaves have a dark metallic lustre, relieved with light green veins; they are ovate, obtusely serrated or incised, and purple underneath. The petiole rather exceeds an inch, the blade is somewhat less. The flowers are small and pale blue, in erect racemes ten inches high. It is a native of Mexico.—*Gardener's Chronicle.*

Smyrna and Figs.—It would be hazarding little to say that the Fig-tree is the main prop and support of Smyrna, and that its fruit, fresh or dried, furnishes the chief pabulum of her people's prosperity. The Fig, in every phase, from imperfect to perfect ripeness, "with jacket on," or smothered in sugar, or neatly packed in drums for exportation (in which labor most of the adult population seems employed, meets the eye everywhere. Without entering into statistical details unsuited to this article, suffice it to say that this peculiar industry gives constant and profitable employment to thousands of the population, and it is literally "by their fruits" that we know the Smyrniotes. This really constitutes the chief trade of this bustling and busy little city, netting a royal revenue annually for "Giaour" Ismir from the remote infidel on the banks of the Thames or Hudson.—*Temple Bar.*

The Origin of the Green Rose.—There appears to be some uncertainty in regard to the origin of this Rose. It is a sport from *Rosa indica* (the China Rose of England and Daily Rose of America). It was caught in Charleston, S. C., about 1833, and came to Baltimore through Mr. R. Halliday, from whom I obtained it, and present-

ed two plants to my old friend, Thos. Rivers, in 1837. The first clustering Rose was also found in Charleston, and sent to Noisette, of Paris, and there founded the Noisette family of Roses. —*R. Buist, Rosedale Nurseries, Philadelphia.*

THE FOOT-HILLS FOR CHESTNUTS.—The Nevada *Transcript* has the following: "Leme, the proprietor of the French Gardens, near this city, was exhibiting in town specimens of Chestnuts raised on his place the present year. The trees upon which the nuts grew were raised from the seed, which was planted only four years ago. The Chestnuts were sent from France, and were planted in 1870. The trees' are quite heavily loaded with fruit this year, and the nuts are the largest-sized ones we ever saw. The burs contain from three to seven large-sized nuts, some of them exceeding in size a large Plum. They are thoroughly matured, and prove that this foot-hill region is well adapted to their culture. Mr. Leme informs us that he took no pains in planting or training the trees during their growth. They were put into ordinary ground and have grown as thriftily as any tree on his ranch. There are thousands of acres of land about here as well adapted to raising such trees as the ground on which those in question were planted, which can be obtained at Government price. An orchard of a few acres would in a few years afford a nice income, and the expense of starting it would be but trifling. Besides the Chestnut, other nut-bearing trees thrive well here. We noticed a Black Walnut tree in the yard of N. P. Brown, about six inches in diameter, on which, we should judge, there have grown this year two bushels of nuts. The ground around the tree has not been cultivated at all. The tree was set out merely as an ornamental shade-tree. The Almond-trees in the orchard of Josiah Rogers were this year heavily loaded with fruit, and in fact we believe there is not an instance of failure of nut-bearing trees producing bountifully wherever set out in the county. Is there not an opportunity here presented to men of small means to make a permanent home and establish a good paying business in a short time? An acre of good trees would, in a few years, produce four-fold more than any acre planted to grain in the valleys. The crop is always sure, and the market is never over-supplied. It is an industry that in time will be an important one, and those who embark in it will be sure to reap a rich harvest in the future.

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING FEBRUARY 28, 1875.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.19 in.
do 12 M.	30.19
do 3 P. M.	30.17
do 6 P. M.	30.16
Highest point on the 7th, at 9 A. M. and 12 M.	30.32
Lowest point on the 21st, at 6 P. M.	29.94

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	51°
do 12 M.	57°
do 3 P. M.	57°
do 6 P. M.	52°
Highest point on the 6th and 26th, at 3 P. M.	63°
Lowest point on the 3d, at 9 A. M.	45°

SELF-REGISTERING THERMOMETER.

Mean height during the night	44°
Highest point at sunrise on the 7th and 14th	48°
Lowest point at sunrise on the 2d, 3d, 22d, 24th, and 28th	40°

WINDS.

North and north-east on 13 days; south-east on 1 day; south-west on 2 days; north-west on 7 days; west on 5 days.

WEATHER.

Clear on 7 days; cloudy on 5 days; variable on 16 days; rain on 1 day.

RAIN GAUGE.

1st	0.20
Total Rain of the season to date	16.18

SCILLA. SINGLE AND DOUBLE TULIP.

Engraved on Wood, and printed in Colors by GEO. FRAUENBERGER, *Rochester, N. Y*

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. V. SAN FRANCISCO, APRIL, 1875. No. 4.

SEED-PLANTING.

BY F. A. MILLER.

[Continued.]

There is less occasion to cultivate annuals in our gardens here, than is customary in colder climates, for the very reason that nearly all bedding-plants are hardy here, and continue to flower for a number of years. Besides, our mild climate admits the cultivation of a great variety of tropical and semi-tropical plants, so much preferable to most of the annuals, that only the very best of these should receive a place in our gardens. However, there are a number of annuals and herbaceous plants, which are indispensable to the flower-garden, and these I will undertake to point out, as far as practicable and within my acquaintance.

I shall begin with the Mignonnette, so well known for its delightful fragrance, that it will not require any comments on my part. No one can do without it, and everyone seems to succeed with its cultivation. If the seed is good, it will germinate freely in a few days if sown in the open ground. It should be sown where it is wanted, as it does not bear transplanting very well. In California we may have Mignonnette in bloom throughout the year, at least in all the milder districts. We have it in bloom at all times, by sowing the seed twice a year. Seed which is sown in February will flower freely until late in autumn, and seed sown in June will flower during winter and spring. We have had cut-flowers from one planting for nearly eighteen months, but the plants become unsightly when more than nine months old. New varieties of Mignonnette have lately been introduced, but I fail to see any remarkable difference from the old variety. In some the flowers are a trifle lighter in color, in others a trifle darker, while others grow perhaps a little more robust. Until I see something better, I will be perfectly contented with the old variety. Mignonnette thrives best in a sunny exposure, and to have it in nice condition the ground should be well manured before planting. Successive rains or artificial irrigations are apt to make the surface of the ground hard and crusty; to prevent this it will be well to scatter over the ground after sowing the seed, say an eighth to a quarter of an inch of well-decayed manure, finely pulverized; this will help the young plants very much.

If this is inconvenient, or if it has been neglected, the surface must be loosened carefully as soon as the young plants have made a few leaves. To do this without injury to the young plants, the ground should be sprinkled the evening before, so as to soften the crusty surface.

I have said more about Mignonnette than will perhaps seem justifiable to the reader, but these remarks are applicable to most of other seeds, particularly annuals.

Pansies are equally as popular for the garden as Mignonnette, and can not be dispensed with. Who would not admire the Pansy? The very fact that it has received so many pet names speaks well for it. The English call it "Heart's-ease," the Germans "*Stiefmutterchen*," the French "*Pensée*." When we take into consideration that the magnificent varieties now under cultivation owe their origin to the *Viola tricolor*, a common weed of the European corn-fields, we begin to realize the enormous progress which the science of Floriculture is continually making. The Pansy is very easily cultivated, and very few observations suffice to grow it to perfection. First of all, seed should be obtained from a good strain, and we should not mind paying a good price for "number one" seed. We have paid as low as $1.50 per ounce for Pansy seed, and as high as $5.00 per ounce. Imported French or German seeds have always given us more satisfaction than any other. Home-grown seed is not generally gathered with that care which the European seed-growers of reputation are willing to give. Do not mind, therefore, paying a good price for your seed, if you can have confidence in the man you deal with.

Pansy seed germinates freely, and may be sown in the open ground; but I would strongly recommend to sow in pots or boxes, and transplant when sufficiently strong. Our coast districts are admirably adapted for the cultivation of the Pansy; our cool climate is just the thing. To make the very best of them, I would advise to sow seed twice a year, say in November and again in March or April. From the seed sown in November we generally succeed in having a fine lot of strong flowering plants from February to May; and the seed sown in March or April gives us a fine crop of flowers for the early summer months as well as for the autumn and early winter, the climate being remarkably cool during the summer months. This rule, however, can not be applied to the interior districts, where the excessive summer heat and dry atmosphere is very unfavorable to the Pansy; there the cultivation of the Pansy should be confined to the winter months and early spring; and one sowing early in autumn, at the commencement of the rainy season, will answer the purpose.

As soon as the young plants have made from five to six leaves, they should be transplanted into soil which has been well manured and carefully prepared. The Pansy thrives best in rich sandy loam. Water carefully after planting, and finish off by covering the surface of the soil to the depth of about one inch with half-decayed stable manure. The richer the soil is made, the finer will be the flowers. This, more than anything else, is the secret of success in Pansy culture; and surely the little extra trouble will amply repay you.

[To be Continued.]

THERE are nearly or quite 500 nursery and florist's establishments in New York or within fifteen miles of the city.

AMONG THE CALIFORNIA BOTANISTS.

BY JAMES S. LIPPINCOTT.

A residence of ten months' duration in California afforded me opportunity to become acquainted with many of the remarkable plants peculiar to that State, and with several of her adopted sons who have made her flora an object of especial study. If botanical enthusiasm may anywhere rightfully possess its student, surely California's claim to this prerogative will not be questioned by anyone who has passed many months among her infinite spread of flowers, which in early spring render that State almost one continuous "field of the cloth of gold." Five hundred acres in one body, covered densely by the California Poppy (*Eschscholtzia*), well known to our readers, and too brilliant for mortal gaze, might have been seen near Los Angeles, in March of the year just closed. Hundreds of acres of *Burrielia chrysostomia* or the Golden-mouthed, adorned and varied by beds of blue *Phacelia* as regularly shaped and as neatly trimmed as if they had obeyed a gardener's hand, delighted us as we approached Los Angeles from its port of San Pedro. *Dodecatheons* which in profusion adorn the low hills of Paradise Valley near San Diego, and the *Calochortus* or Mariposa Lilies which lend so great a charm to the trip to the Yosemite, must be seen at home if one would appreciate their exquisite beauty of form and color.

We were not surprised to find her botanists inspired with a zeal for collecting and studying her flora, as much surpassing our eastern students as does their field that to which we have been limited on the Atlantic border. Among these, in whom we became more especially interested, we may name Professor H. N. Bolander of San Francisco, Dr. William P. Gibbons of Alameda, and the late Hiram G. Bloomer, Director of the Museum of the California Academy of Sciences.

Professor H. N. Bolander has for many years been one of the most active botanists on the coast, and from 1861 to 1867 was connected with the Geological Survey, as State Botanist. During his term of office and yearly since, he traversed the northern and middle sections, making extensive pedestrian excursions, and has been rewarded by the discovery of several hundred plants new to science. He has indeed been the largest contributor to our knowledge of the rich flora of California, and his extraordinary enthusiasm and success have received fitting acknowledgment at the hands of the eastern botanists who have studied his collections. Professor Bolander has added five new genera of plants, one of which, *Bolandra*, appropriately commemorates his service to science, while nearly one hundred and fifty species of Phænogams, Mosses, and Lichens, have taken their specific name from him. In and about 1866, he collected and distributed about five hundred species of California plants, and in 1870 was published by A. Roman & Co., of San Francisco, "*A Catalogue of Plants growing in the Vicinity of San Francisco*," of which he is the author. The term vicinity is stretched to the extreme of its elasticity, and is made to extend about one hundred miles north and south of the Golden Gate. This catalogue contains the names of nearly all the phænogamous and cryptogamous plants within the range indicated, and in the absence of a text-book of the California flora, is exceedingly valuable.

For several years past Professor Bolander has filled the very important and responsible position of Superin-

tendent of Public Instruction in California. His term of office will soon expire, or has already concluded, and he is about to devote his extensive and accurate knowledge of the California flora to the growth and dissemination of her many ornamental plants. He has erected propagating houses and will soon be prepared to supply a demand for her beautiful bulbous-rooted plants, her ornamental shrubs, and peculiar coniferous trees. To the study of the last named, Professor Bolander has given especial attention, and has succeeded in determining the numerous varieties, and fixing the true character of the species to which they belong. The distribution of seeds of native growth will also receive especial attention at his hands. Professor Bolander is a gentleman of fine presence, of manners courteous and affable, with whom every eastern botanist visiting California should at once become acquainted. His residence is in San Francisco.—*Gardener's Monthly.*

Healthfulness of Apples.—The frequent use of Apples, either before or after meals, has a most healthful effect upon digestion. Better eat less meat and more fruit.

An eminent French physician is of the opinion that the marked decrease of dyspepsia and bilious affections in Paris is owing to the increased consumption of Apples, which fruit he maintains is an admirable prophylactic and tonic, as well as a very nourishing and easily digested article of food. The Parisians are said to devour one hundred millions of Apples every winter—that is, they did before the war. Whether this estimate is true or not, the French are extravagantly fond of Apples and other fruit.

THE SPANISH CHESTNUT.

BY E. J. HOOPER.

The Spanish Chestnut, (*Castanea vesca*) so valuable for its fruit, flourishes well in California (as indeed do most other trees), although, of course, many of them are comparatively young. Some Chestnuts in England have reached nearly 500 years in age. When of good size it is one of the most stately of trees, exceeding the Oak in height, and equaling it in bulk. The foliage exhibits a more decided character; it is glossy and formed into clusters, which are peculiarly elegant when surrounded with florescent catkins. This is the tree which we often see gracing the landscapes of Salvator Rosa and other great Italian painters. And in truth, no other tree affords such continued variety to scenery in pictures: at one time rising in all its leafy majesty in some shady recess or rock-encircled nook, safe from the war of winds; at another, broken and distorted on some high rock, or half-way down a steep and rugged declivity, beneath which might roll an impetuous torrent—for its wood is naturally rather brittle, and liable to be shattered by fierce winds. In California it is at present in what may be called a state of domesticity, being planted round homesteads or in orchards.

Some have described the Spanish Chestnut as being indigenous to Britain; others maintain that it was brought from Sardis into Italy, whence it passed into France and England. No doubt is now existing that it is not exotic in Britain. The great profit arising from the wood, being much used for hop-poles, accounts for the disappearance of large trees from their forest growing-places. Many of the oldest houses in England are floored or wain-

scoted with the wood. No doubt noble forests of these trees once existed in the central part of England.

In Italy the nuts have always been acceptable with milk and cheese; and, as with us, the nuts are roasted on small stoves in the streets by fruit-sellers, who dispose of them to the passing wayfarers. They are equally as grateful and nutritious as, and to me they have much the flavor of, roasted Sweet Potatoes. In Italy, bread made from the flour is very strengthening, and is said greatly to improve the complexion. The Italians also use the flour in making fritters, which are wetted with rose-water, and which, when sprinkled with grated Parmesan cheese, are fried in fresh butter. I think, in time, if these trees are much increased in California, they will be used here, partially at any rate, for similar purposes.

The girth of the ancient tree in England before spoken of, at the height of six feet from the ground was forty-six feet and six inches, about 130 years ago—that is, when it was about 400 years old.

The foliage of the Spanish Chestnut is very beautiful, both in spring and autumn: in the first, grandly umbrageous, and presenting a fine clear green in its spear-shaped leaves; in the second, and when falling into

"The sear, the yellow leaf,"

gorgeously contributing to the rich and varying tints of woodland or landscape-gardening scenery.

I do not see why, in time, these trees in California may not aspire to as grand dimensions as they do in Italy.

The foreign varieties (*Marroniers* of the French) of the Chestnut, differ in little from the American native variety, except in the larger size of their nuts. They are of distinct importance, however, in a landscape, on account of their remaining green for weeks after our native kind has fallen into its autumnal decay.

The Chestnut will thrive in the most barren soils, especially those of a rocky or gravelly nature, provided they have sufficient moderate moisture; doing fully as well in a deep rich loam, or any soil but a wet one. It is, in fact, a tree for any situation. The Bartram specimen is eighty feet high, and seven feet nine inches in circumference; and one of the Marron variety thirty-five feet high and three feet in circumference.

It may be propagated by seed sown in drills in the spring, or in the late fall, if preserved from vermin. The improved varieties are perpetuated by grafting.

THE CACTUS.

BY F. W. POPPEY.

The traveler, when emerging from the primeval forests of Guiana and entering the pampas of Venezuela, will find the scenery changed. The rich verdure that covered the soil has disappeared, the surface is hot, and in the crevices of the cracked ground appear the gloomy forms of the Melon Cactus armed with frightful thorns. Farther up the Andes the ground is almost covered with the pale grayish-green balls of the Mammillarias, among which the Old Man—*Cereus senilis*, is standing, the gray hairs hanging from its serious head. Descending into the plains of Mexico, where the gigantic ruins of the Aztec castles give evidences of a remote and vanished culture, we perceive a scenery spread before the eye, melancholy, bare and dead, as if roasted by the scorching sun of the *Sierra caliente*. Dull grayish-green, branchless, leafless,

rise from twenty to thirty feet high the angular pillars of the Torch-thistle Cactus, surrounded by an impenetrable hedge of the Indian Fig or Prickly Pear, covered with dangerous hurtful spines, whilst all around are seen groups of the strange and ugly forms of the Echinocactus and small Cereuses, between which seem to creep like poisonous reptiles the long dry stems of the large-flowered Cactus, *Cereus nycticaulus*. In short, on the whole journey we are accompanied by a family of plants which in their odd forms seem totally to abnegate the principle of beauty, and yet stand forward so prominently as to give to the whole region its peculiar character. We can not forbear granting them our earnest attention, and as a group of plants which seem to revolt against the laws of all the rest of the vegetable kingdom they certainly deserve our interest to a high degree.

All about these plants is not less wonderful than it is peculiar. With the sole exception of the genus *Peireskea*, none have leaves; for what is commonly supposed to be and called leaf with the *Cactus alatus* or the Opuntia is but a flattened stem or trunk, more or less fleshy, covered with a leathery skin, and where the leaves, if there were any, would be, we find instead bundles of hair, spines, or thorns.

Few families of plants are confined to so narrow a space on the surface of the earth as the Cactus. All of them are perhaps without a single exception natives of that portion of our continent which is situated between latitude 40° S. and 40° N. All prefer a dry soil, exposed to the full rays of the sun, which circumstance strangely contrasts with the fleshy texture of the trunk, filled with a watery subacid juice, not disagreeable to the taste. This peculiarity renders them invaluable to the thirsty languishing traveler, and Bernardin de St. Pierre very appropriately calls them "the springs of the desert." For in the dry season, when all animal life has fled from the *llanos*, when the boa and the crocodile sink into a death-like sleep, the wild asses and mules alone know how to sustain life by availing themselves of the providential Cactus. Cautiously with their hoofs they rub off the spines, split open the large Melon Cactus, and than suck the cooling, refreshing, and nutritious juice. What nature denied them in form of body she gave with liberal measure in the shape, color, and perfume of their flowers. Who has not been delighted with the blossom and its odor of the Night-blooming Cereus? But it is not only the charm of their flowers that gladdens our sight, nor the cooling juice that refreshes the thirsty creature, which make these curious children of nature an object of interest; it is also their manifold economic usefulness.

Almost all the Cactuses bear eatable fruit, and some are among the most delicious of the hot zone, in which alone they fully mature. Their fruit might not improperly be considered a higher order of Gooseberries, which they in a botanical view really are nearest related to. Though the trunk originally is fleshy and juicy, in course of time it hardens into wood, which is both firm and light. Especially the long pillow-shaped Cereuses are in this respect very convenient to the weary traveler in those timberless deserts, to light up the night and bake his *tortilla*. From their being used as torches their name Torch-thistle is derived. On the Hacienda de Antisana, perhaps the highest inhabited spot on the earth (12,000 feet above the level of the sea), the beams, posts, etc., are of this wood, which with its lightness could be carried thither on the

back of mules. In Mexico, in the south of Europe, the north of Africa, and especially on the Canary Islands, the Opuntia, the common Prickly Pear of Texas and New Mexico, is effectually employed for hedges, which with their thorns present a formidable barrier to every intruder. And here we might mention the fact that it is this plant, the *Opuntia cochinellifera*, upon which that precious little parasite the Cochineal (*coccus cacti*) lives. In Brazil, Spain and Corsica, but principally round Oaxaca, Tlascala and Guanaxate, are extensive plantations, called Nopaleros, on which the Opuntias (Nopal) are cultivated for the production of the cochineal, which gives us the carmine. The breeding of the cochineal introduced on the Canary Islands in the year 1833 permitted in 1859 an export of this very light article of 1,369,000 pounds, at $1.50 per pound.

For medical purposes also, both the fleshy stem and the fruit is frequently used by American and Mexican physicians. A considerable amount of oxalic acid contained in the stem of this vegetable may be extracted from it. The Peruvian and the Old Man Cactus yield about 85 per cent. oxalate of lime.

This short view may suffice to account for the interest this plant has so deservedly met with, by the naturalist, the economist, and, for its apparently abnormal organization, by the natural philosopher.—*Gardener's Monthly.*

Lord Kames, in conversation with his gardener one day, said: "George, the time will soon come when a man shall be able to carry the manure for an acre of land in one of his waistcoat pockets." To which the gardener replied: "I believe it, sir, but he will be able to carry all the crop in the other pocket."

THE ROSE.

BY ONE OF ITS ADMIRERS.

"Child of the summer, lovely Rose,
No longer in confinement lie;
Arise to light, thy form disclose;
Rival the spangles of the sky.

"The rains are gone, the storms are o'er;
Winter retires to make the way.
Come, then, thou sweetly blushing flower;
Come, lovely stranger, come away."

Most of the readers of the Horticulturist are no doubt aware that the celebrated Linnæus, a Swede by birth, devised a system and nomenclature now almost universally adopted by botanists, and according to which the whole vegetable creation has been divided into twenty-four classes, which are distinguished by the number of stamens in the flower. These classes are again subdivided into orders, under each class, determined by the number of pistils in each flower. These are still further divided into genera or tribes, and the tribes into species or individuals. In this arrangement, the Rose belongs to the *icosandria* class, which is the twelfth, (including a great variety of fruit-trees, as the Apple, Pear, Cherry, Plum, Nectarine, etc.), the blossoms of which have twenty or more stamens. These stamens, in the Rose, constitute that beautiful array in the flower, which looks somewhat like yellow floss-silk. In this class, the Rose is a genus of the order *polygynia*, in which the pistils—whose little points lie in the middle of the blossom—are more than twelve, and placed in the same flower with the stamens. The leaves which compose the *corolla*, or flower, are denominated *petals*, of which there are five in the wild Rose, which is considered the representative of the genus. The *calyx* or flower-cup, which is usually a green empalement protect-

ing and inclosing the blossom, is, in the Rose, urceolated, or pitcher-shaped, quinquefid, carneous or fleshy, and straitened at the neck. The seeds are numerous and hispid or prickly, and affixed to the inside of the calyx.

It is very difficult to distinguish the species of the Rose from the varieties. Loudon describes *seventy-seven* species, besides adverting to about as many more which are not sufficiently known; and these, together, are very far from equaling the number of well-known varieties—for we may see descriptive catalogues of more than 1,500 cultivated Roses! In striking contrast to this multitudinous array, others have comprised the sorts usually found in our gardens under fourteen species, as follows: 1. *Rosa alba*, the common White Rose. 2. *Rosa Alpina*, the Alpine Inermous or Unarmed Rose. 3. *Rosa Canina*, the Canine or Wild Dog-rose. 4. *Rosa Carolinensis*, or Carolina and Virginia Rose. 5. *Rosa Centifolia*, or Hundred-leaved Rose. 6. *Rosa Cinnamonea*, or Cinnamon Rose. 7. *Rosa Eglanteria*, the Eglantine Rose, or Sweet-briar Rose. 8. *Rosa Gallica*, the Gallican Rose. 9. *Rosa Moschata*, the Musk Rose. 10. *Rosa Pimpinellifolia*, or the Burnet-leaved Rose. 11. *Rosa Sempervirens*, the Evergreen Musk Rose. 12. *Rosa Spinossissima*, or the Most-spinous Dwarf Burnet-leaved Rose. 13. *Rosa Villosa*, or Villose Apple-bearing Rose. 14. *Rosa Virginiensis*, Virgin Rose.

In modern systematic arrangements the Rose belongs to vast groups of flowering-trees denominated, from our favorite, *Rosaceæ*; including in immediate connection, on the one hand the *Rubises* or Brambles and the *Potentilla* or shrubby species of Cinquefoil, etc., and on the other, the numerous species of *Cratægus* or Hawthorn, of which there are about eighty sorts cultivated in Europe and America. Linnæus himself devised a *natural method*, divided into fifty-eight classes or orders; he ranks the Rose under the thirty-fifth, or *Senticosæ*, so called from *sentis*, a thorn, and comprehending the bramble, the briar, and others, which resemble them in external structure.

The usual method of propagating the Rose is either by suckers detached from the root of the parent tree, or by cuttings or slips. The former are generally to be obtained in sufficient plenty from the common garden Roses; but the Moss, Provence, and others, which seldom send up these suckers, must be increased by cuttings or layers. In the latter method, the branches, being bent down and partly cut downward, are fastened with a peg into the earth, and covered with soil, until they have struck root. Slips of the monthly kinds will take root with great readiness, either in vials of water, or in common earth.

The more curious sorts of Roses, however, are generally produced and multiplied by inoculation or budding. The usual process by this method is, first to make a transverse incision in the branch and then another from it downward, resembling a T; the rind is then opened, by a proper budding-knife, at the junction of the lines, and the bud inserted; the whole is then tied close with a string of soft cotton, or matting: this is usually practiced in spring, when the sap is rising freely.

The diversities of the Rose are so numerous, that botanists have found it very difficult to determine with accuracy which are species and which only varieties—or whether, indeed, there be properly more than one species, which is the *Rosa Canina*, or *Dog-rose* of our valleys and hills. To this sentiment many eminent writers have inclined; and this also was the opinion of Lin-

næus, who attributed the different varieties to culture and accident. Whatever may be the claims of the Wild Dog-rose, or "Hip-tree," to be considered as the ancestor of "royal Roses"—upon which it appears very difficult to decide—certainly the flower itself possesses an elegant simplicity, and a delicate fragrance, hardly surpassed by any of our wild flowers. It is plentiful in most parts of the world, and not less so in California, where I have met with it in great abundance, in all parts of Napa Valley, and other portions of the State, and where, this spring or summer, I hope to greet it again while pursuing with rod and line the rushing trout along the brook-side, when I shall be tempted to exclaim with the poet:

"Welcome! O welcome once again,
Thou dearest of all the laughing flowers,
That open their odorous bosoms when
The summer birds are in their bowers.
There's none that I love more, sweet gem than thee,
So mildly through the green leaves stealing;
For I seem, as thy delicate flush I see,
In the dewy haunts of my youth to be,
And a gladsome youthful feeling
Springs to my heart, that not all the glare
Of this blossoming West could awaken there."

Next I will mention the Eglantine or Sweet-Briar, of which there are numerous varieties, if not species. This Rose is not esteemed for its flowers, which are very small and single; but the peculiar sweetness and fragrance of its leaves, especially when rubbed a little, render it a very valuable shrub. It grows indigenously in some parts of England and Switzerland, as well as in America. It claims culture in every garden, for this odoriferous quality of its leaves; and should be planted in the borders, and other compartments contiguous to walks, or near the habitation, where the plants will impart, particularly in the moist air of some evenings, their refreshing fragrance very profusely around.

But I will close with the exquisitely simple lines and beautiful moral and eulogy of another esteemed poet:

"How fair is the Rose! what a beautiful flower!
The glory of April and May!
But the leaves are beginning to fade in an hour,
And they wither and die in a day.

Yet the Rose has one powerful virtue to boast,
Above all the flowers of the field:
When its leaves are all dead and fine colors are lost,
Still how sweet a perfume it will yield.

So frail is the youth and beauty of men,
Though they bloom and look gay like the Rose;
But all our fond care to preserve them is vain,
Time kills them as fast as he goes.

Then I'll not be proud of my youth or my beauty,
Since both of them wither and fade;
But gain a good name by well doing my duty:
This will scent like a Rose, when I'm dead.'

THE BLUE GUM AND ITS CULTURE.

BY R. J. TRUMBULL.

The Eucalypti family is rather numerous—there being not less than thirty species, of which the "Blue Gum," or *Eucalyptus globulus*, ranks highest in the estimation of Californians. Of all trees, whether of this family, or any other, the "Blue Gum" is the most rapid grower—besides possessing medicinal qualities which add much to its value. For a sparsely wooded region, where the temperature does not descend below 25 degrees Fahrenheit, no variety of tree can be grown to the same size in the same period of time. Its wood is valuable for fuel as well as for manufacturing. There are, however, other species of the family, but little known here generally at present, that will at no distant day become

perhaps even more popular than the "Blue Gum," whose wood is harder, closer grained, and better adapted to the thousand uses to which timber is applied. When it becomes known that this family has among its members species whose wood can be converted into shingles, studding, and weather-boarding, and that buildings constructed of such will be not only remarkable for their durability, but nearly as "*fire-proof*" as are iron buildings, and on which underwriters will willingly issue policies at half the rates common on other buildings, then the value of such species will be better appreciated by tree-growers.

Culture.—Make boxes about two feet long by sixteen inches wide, and from three to four inches deep, allowing small holes in the bottom for drainage. Fill up till within half an inch of the top with fine alluvial soil, moderately rich. Smooth the surface; sprinkle the seed evenly over it, and cover with an eighth of an inch of soil composed of half sand. To attain the best results the boxes should be placed in a "cold frame," described elsewhere. If sown in summer, the glass should be shaded by a covering of whitewash or light muslin. In the absence of glass, make a frame of boards with a movable cover made of laths nailed from one-quarter to one-half an inch apart, under which place the boxes. Water will be needed daily if the weather is warm and little moisture in the atmosphere, and should be applied with a fine sprinkler. Seed will germinate in from eight to fourteen days. When plants are two inches high, begin to "harden" them by allowing more air, increasing from time to time until they have become hardy enough to withstand the hot sun of the day and the cool air of the night. When six inches or more high they may be transplanted to a temporary or permanent place, if care is taken to remove the plants with some earth attached to the roots—at least not to allow the roots to be exposed to the atmosphere. For forest culture, the young trees should be planted from eight to twelve feet apart each way, and between the rows should be cultivated for two years, when they will be strong enough in trunk and root to care for themselves.

ACACIAS.

BY DR. KELLOGG.

A friend in a letter under date of February 20th, says: "If I knew which of the Acacias were trees or shrubs, I could give them due distance and better arrangement. Could you inform me?"

Our information is very limited, but we may be able to help some. If the names alone were sent, by return mail "trees" or "shrubs" could be checked and returned.

Acacia melanoxylon (Black-wood Acacia) here grows large, with a very sturdy body and ample base. It is quite a charm to behold its bearing in a storm, so stubbornly upright. It is at all times clad in cheerful evergreen foliage; perfectly symmetrical in its conic form; somewhat decked in flowers at a season when other trees are dormant and bare. Mr. S. Nolan, of Oakland, has a young tree about twenty feet in height, a perfect beauty. The wood is black, and very much esteemed in cabinet-work; regarded as very superior for oars and buggy-shafts, and for ornamental work in general. Fine tree to alternate or contrast with an avenue of spire-trees.

Acacia pendula (Weeping Acacia, Drooping Myall). This species and *A.*

homalophylla are both small, say ten to fifteen feet, and graceful as the Weeping Willow. Laden with golden flowers, with silvery attenuated branches, they are objects of exceeding beauty. Both have dark-colored fragrant wood of the sweet violet odor of rosewood. Of these the natives of north-eastern Australia make boomerangs, sportsmen ramrods, and the stockmen whip-handles; and in general they are very useful for turnery-work. This would prove a great boon to our dry plains, such as the San Joaquin Valley. The only objection is, the cattle are so exceedingly fond of it, they would soon dismantle a forest; they will even stand on their hind feet to "come the giraffe" over the defenseless Myall shrub.

Brevity requires that we combine several together where a family is so large; and even then but few can be noted. Formerly many of these were termed "Mimosa-trees," and now, by the English and Australians are called "Wattles."

A. cultriformis (Blade Acacia) and *A. prominens* (Prominent Acacia), are both shrubs, about six feet high. The first has smooth rather-arching angular branches; leaves of light soft bloom, small, one-half to one inch long and broad, somewhat triangular like the end of a shoe-knife blade, the prickly point hooked (which leans to one side), a gland on the middle of the upper margin, one-nerved nearly parallel with the lower margin. Flowers crowded in heads; these racemes are both in the axils and on the end of the twigs. Blooms in February and March.

A. prominens, similar in size and general form, and flowering as above. The leaves spread out and turn back, sickle-shaped, one-nerved, ending also in a prickle; a prominent gland on the upper margin, at the base.

A. lophantha (Crest-flowered Acacia, or Elegant Mimosa), common but exceedingly delicate and beautiful; foliage, opening to the morn and closing at eve, dark green; the leaves consist of eight to ten pairs of pinnæ or wings, each one bearing twenty-five to thirty pairs of little linear bluntish leaflets. The bunches of flowers oblong-egg-form, in pairs at the axils. The common fate of this tree here is to be potted too long; the roots become crumpled and the tree therefore blows over. It is somewhat flat-topped, ten feet high, and very handsomely spreading.

A. dealbata (Whited Acacia). Like the last it is unarmed; distinguished from it, and from *A. mollissima*, at a distance by the soft gray-green hue, instead of the sap-green color of its kindred. The pinnæ of the leaves are fifteen-paired, each bearing very many pairs of minute equal pubescent leaflets; a perforated gland or glands seated between one (or more) of the pairs of its wings; the elongated cluster of flowers lateral. This tree aspires to an oblong rounded form; the foliage is more closed in and massive than most of its section, yet it is softer and more fleecy than a summer evening cloud: in short, it has peculiar charms to our taste, and is very desirable for a middle or foreground tree on a lawn—attains to ten or twenty feet. Fine specimen trees may be seen at Mr. S. Nolan's garden, Oakland. The bark of this Acacia is so strong in tannin as to require some caution, or it may "burn the leather." It is now an article of commerce; also, an extract is made from it (and some others), which is deemed a more feasible form of exchange, and is used as a substitute for "Japan earth" (*terra Japonica*)—an extract from the outer colored wood and bark of *A. catechu* (and others), by boiling, evapo-

ration, and drying: the purer form is the *catechu* of druggists. Where astringents are required, the bark may be used; brandy saturated with it forms an estimable wash for nipples to forestall or cure any excoriations which the delicate suffer from nursing; also, for hoarseness, relaxation of palate or fauces, diarrhœa, ulcers, canker, etc. Here, too, the "stricken deer" that leaves the herd, in lonely solitude to roam, will find a living tablet of the smoothest bark on which to carve his "Rosalind."

[To be Continued].

JAPANESE VEGETABLE WAX.

The *Japanese Mail* contains an account of the manner in which this article of commerce is obtained. The trees from which wax is made are the Urushi, or Lacquer-tree, the Yama-urushi, the Hage-urushi, better known as the Ronoki, and the Koganoki. [?Various species of Rhus, such as *R. succedaneum.*] The wax is made from the rind of the fruit. In places where wax is manufactured to any great extent the Urushi is not used for its lacquer. As the trees are not cut for several years, they may be seen in the wax-producing districts growing to a height of thirty-five or forty feet. In districts where the trees are used for their lacquer or varnish, they are cut every seven or ten years. The mode of obtaining the wax from the Urushi, or Lacquer-tree, is as follows:

Late in the autumn the branches, heavy with fruit, are lopped off and taken into the house. The fruit is pounded with a pestle, and then shaken in a basket-sieve, so as to separate seed from rind. From this rind the wax is made. The mode of expressing it differs here and there, but in no very important particulars. The following brief description is taken from the mode as followed out in Sendai and Aidzu: Boiling water is got ready in an iron caldron, over which a lattice-work of sticks is placed, and on these some matting. The sifted rinds of the fruit are then laid out on the matting and steamed, after which they are placed in hempen bags and again steamed. The bag, with its contents, is then put in a wooden trough, wedges on blocks are inserted in the trough, and driven home into the bag with heavy blows from a mallet. An aperture at the bottom of the trough provides for the egress of the wax. The trough and wedges are made of Kiaki wood, and the mallets and blocks of wild Mulberry, a very hard wood, and well suited for the purpose. A small quantity of oil, in the proportion of about one-tenth, is added to the wax, to allow of its being expressed more easily. It then goes through another steaming process, and is again pounded in the trough.

Wax from the Yama-urushi, or wild Lacquer-tree, is obtained thus: The fruit is collected at the latter end of summer, and is at once steamed, without being pounded with a pestle, as is the case with the Urushi wax. The wax is purified by melting. A large tub of cold water is taken and placed under a wooden tank having a small aperture close to the bottom. The melted wax is then poured into this tank, and escapes through the aperture into the tub beneath; while doing so it is stirred rapidly with the hand, after which it is placed either in matting or shallow boxes, and dried in the open air for about fifteen days.

The Hage-urushi, from which wax is largely obtained, grows in the south-western part of Japan. This tree was first brought from the Loochoo Islands to Sakurajima, an island near Satsuma.

Its production has so increased that there are now no less than seven different species. The Hage-urushi tree is raised from seed or from slips. Koga wax is made from the fruit of the Koga-tree, which differs from the Urushi and Hage-urushi trees. It is an evergreen, and is largely grown in Ossugori, in the northern part of Nagato. It flowers in the middle of summer, the fruit ripening in autumn, when it is plucked and soaked in water for four or five days, after which it is trodden out with the feet, thus separating the outer rind. The Koga wax contains a large proportion of natural oil, which in a measure restricts its use to cold and temperate districts. Candles made of it show a very bright light, and if some contrivance could be hit upon for extracting the oil, the consumption of this wax would be increased, as it is very cheap compared with the other kinds. Refuse wax is used for manuring purposes.

WILD FLOWERS.

BY AN AMATEUR.

Wild flowers may not improperly be called the true philanthropists of their family and race. How often do their generous profusion and cheerful display, especially in this paradise of floral beauty—California—give a kindly greeting to the solitary rambler, or parties of excursionists, with their merry children, who delight to revel in their blossoming wealth. And how welcome are they, gladdening the eyes of city merchants or toiling men of business, who breathe the fresh country air when they can spare a day in the week; or on Sunday, roaming over the hills of Angel Island, or Saucelito, or back of Oakland, gathering handfuls of Buttercups, Poppies, Larkspurs, Lupines, or the prouder Foxglove, with numberless others, to carry home, and set in the most choice and conspicuous spot in their dwellings. So dear and attractive are wild flowers, that one would think that everyone *must* love them.

"O, I'll never envy riches,
Though toilin' at the plough,
There 're flowers alang the peasant's path,
E'en a king might stoop to pu'."

Although most of us are brought into contact in this favored land and climate with what are generally regarded as the more richly tinted and gorgeous productions of foreign climes—splendid exotics—yet for poems in praise of the Geranium and the Cactus we might search in vain; while for those which celebrate the "wildlings of nature," have we not enough to fill volumes? Ay! volumes fraught with beauty and fragrance, of which the following is but a foretaste and a specimen:

"Not only with vine-leaves and ears of Corn
Is nature dress'd, but 'neath the feet of man,
As at a sovereign's feet, she scatters flowers,
And sweet and useful plants, which, born to please,
Also essay to serve."

We are too apt to look upon part of the vegetation with which the earth is covered—"clothed as with a garment of beauty"—as worthless and contemptible, especially when there are no blossoms which with their tint or perfume afford gratification to the senses; and to pass by "common weeds" as vile things, not simply useless, but mischievous.

"Scorn not those rude unlovely things,
All cultureless that grow,
And rank, o'er woods, and wilds, and springs,
Their vain luxuriance throw.

"Eternal love and wisdom drew
The plan of earth and skies;
And He the span of heaven that threw,
Commands the weeds to rise.

"Then think not nature's scheme sublime
These common things might spare;
For science may detect in time
A thousand virtues there."

Daily more and more are the mysteries of nature unfolded to us; daily more and more are her "hidden uses" made manifest. And this is the *moral* which may be drawn from the meanest weed, or blade, or leaf on which we gaze.

Of all the creatures and objects which minister to our wants or pleasures, flowers are the gentlest, the most unresisting. Set flowers on your table—a whole bouquet if you can get it, or but two or three, or a single flower—a bunch of Violets, which are so plenty even in the season of winter here—a Rose, a Pink, nay, the common garden Daisy. Bring a few Evening Primroses from your last field walk, and keep them alive in a little water, or stick them in damp sand; preserve but a bunch of Lupines, or a handful of flowering grass (one of the most elegant, as well as cheap, of nature's productions), and you have something on your table or mantel that reminds you of the beauty of God's creation, and gives you a link with the poets and sages who have done it most honor. Put but a Rose, or a Lily, or a Violet on your table, and *you and Lord Bacon* have a custom in common; for that great and wise man, it is said, was in the habit of having the flowers, both wild and cultivated, set upon his study table, morning, noon, and night, and at all his meals. Now here is a good fashion that shall always last us; never changing with silks or velvets or ribbons, nor dependent upon the caprices of fashion. The *a la mode* of the garments of heaven and earth endures forever, and we may adorn our houses with specimens of their elegant drapery—with flowers out of the fields, and golden beams out of the blue ether. The holiness of nature is a loftier contemplation than the gilded saloons of the great or the "diamond palaces" of the merchant.

The flowers of the field, independent of their charms, form a delightful study—a good botanical dictionary being an assistant about their uses and qualities.

Thomas Starr King thus speaks of our California wealth of wild flowers: "Here we have abundance of flowers early in April, not shy, but rampant; flowers by the acre, flowers by the square mile; flowers as a visible carpet of an immense mountain wall, or a whole hill-side, or vast plains. You can gather them in clumps, a dozen varieties at one pull. You can fill a bushel basket in five minutes. And the colors are as charming as the numbers are profuse. Yellow, purple, violet, pink, and pied, are spread around you, now in separate level masses, now two or three combined in a swelling knoll, now intermixed in gorgeous confusion. Here are a hundred acres of wild meadows, stretching to the base of hills nearly 2,000 feet high—the whole expanse swarming with little straw-colored flowers, orange Poppies, squadrons of purple beauties, battalions of pink, glowing brilliantly with all these and other hues. The orange and purple predominate in the mountain robe. On the lower slopes a strange sprinkling of blue, gathered here and there with intenser stripes, the general basis being of purple, orange, and yellow."

Then there is no end to the great variety of wild flowers, to be found in the woods, valleys, cañons, swamps, near springs, under the shrubs and chapparal, and in shady nooks.

Soda is called a specific for plant-lice.

THE CALLA LILY.

BY WILLIAM SUTHERLAND.

Calla Lilies, and Orange and Lemon trees, must be especial favorites of the fair sex, judging from the innumerable questions asked us by our lady patrons, in regard to their cultivation, time of blooming, etc.

Thinking that some of the fair readers of the *Monthly* would like to have some information on the subject, I give them a few notes below:

The Calla Lilly (*Richardia Æthiopica*) was first introduced into Europe from Africa, about the beginning of the present century, from which time it has been cultivated with more or less success all over the civilized world, until it has become one of the most popular flowers we have—not only as a window plant, but also as a bouquet flower—thousands of the flowers being used by our bouquet makers annually; in fact, very few large bouquets of any pretensions are now made up without them, and most of our cut-flower growers have a succession of the blossoms the year round, receiving from ten cents to twenty-five cents for each flower, according to the time of year, demand, etc.

There are some four varieties of the Calla in cultivation—two with green foliage, and two with ornamental leaves—besides our own native variety, all requiring about the same treatment, and resembling each other in the shape of the flower, but differing somewhat in size and shade of color. Strictly speaking, what passes for the flower is only the spathe or sheath that envelops the flowers, the true flowers being clustered together on a short stem in the middle of the sheath, those at the base being pistillate; those on the upper portion being staminate.

Richardia Æthiopica, the old Calla Lily, grows from two to three feet in height, the leaves being green and the stalks of a brownish color, the sheath pure white on both sides.

Richardia Æthiopica nana, a dwarfer variety of the above; the spathes or sheaths are smaller, and can be more readily used in bouquets, etc.; the same color as the above, alike on both sides, sometimes of a green shade in the centre. This is easily distinguished from the above by its bright green stem.

Richardia variegata grows about one foot in height; its leaves beautifully veined with white. This variety must be extremely scarce, as I have seen it in no other collection besides that of the late B. A. Fahnestock, of this city.

Richardia alba maculata grows one foot in height, resembling the preceding variety in style of growth, shape, etc. Its leaves are beautifully spotted with long white spots, as if some insect had eaten the green part out in patches. The spathes are small, and shaded with purple in the middle.

Richardia palustris, our native variety, grows about one foot in height. Its leaves are heart-shaped; the spathes, which are white on the upper side, and green on the back, spread away from its clustering flowers. This variety forms no bulb, but can readily be grown from its long and jointed fleshy roots; it also bears a conspicuous cluster of red berries in the fall.

While the Calla Lily is not very fastidious as to soil, etc., I have found it to do best in a rich, sandy loam—say about equal parts of loam-sand and well-rotted cow manure. When growing, it should have abundance of water. For this purpose it may be grown in pots, standing in pans of water, or its roots entirely or partially submerged. In this way it can be grown in fountains, and other bodies of water. When done

blooming, it should be dried up until all the leaves fall off. For this purpose the pots containing the plants may be laid down on their sides in any dry place, where, after resting a month or six weeks, the bulbs should be shaken out of the old earth and repotted in fresh soil. Removing all small bulbs and side shoots, reserve only the strong bulbs for flowering. Water sparingly until they begin to grow, when they must have a more copious supply. They generally begin to bloom about four months after being potted.—*Gardener's Monthly.*

DRYING NORTHERS OR MARCH WINDS.

BY DR. A. KELLOGG.

Apples, Almonds, Peaches, Pears, etc., are often totally lost or sadly dwarfed in the struggle for existence against the adverse withering winds that sweep down from the north only for a few days in the spring months. These winds, from some cause, are dreadfully drying and exhausting to crops and especially to all tender herb-growth, fruit-trees, shrubs, Roses, and the like. Plants are so very sensitive to the depressing power of this state of the elements, that we are almost inclined to credit them with *anticipating* the harm—as the poet has it,

"And feel alive through all her tender form,
The whisper'd murmurs of the gath'ring storm,"

they shrink so suddenly from its baleful influence. Some have even thought this palsying effect was due to an electric or vital divergence, temporarily retarding if not arresting sap circulation, while exhausting at the same time unduly its own and the soil's supply of moisture.

But however we may account for it, the main point is, to know how best to forestall, fortify, and so practically counteract its injurious influence at the time, and onward to "closing autumn's farewell smile." This is done by a bountiful and thorough irrigation—water being the universal medium of plant supply to meet the exhausting demand this hyperborean sirocco makes so suddenly upon its resources. If this be timely done, the fruit will set well in spite of all adverse winds, and not only produce abundant fruit, but fruit increased to double the ordinary size. (See Sowerby's "Report to the Royal Horticultural Society," 1817.) Trees, unlike men, are seldom ungrateful to the friend in need.

INFLUENCE OF TREES ON RAIN-FALL AND CLIMATE.

At a recent meeting of the Scottish Arboricultural Society, a report was made by Mr. Buchan, Secretary of the Scottish Meteorological Society, of experiments on rain-fall made at Carnwath. "The forest selected contained about sixty-two acres, and a little outside, to the north-west, was a green knoll quite clear of trees. In the interior of the wood, and 320 yards distant, was another knoll of precisely similar character. Immediately on the top of the western slope of this knoll was a bare patch about fifty feet in diameter, and this was surrounded on all sides with trees of various sorts, varying from forty to fifty feet in height. The growth of the greensward and of the plants around showed that the situation was well fitted for the inquiry." Two sets of meteorological instruments, exactly alike, were placed one on each knoll, at exactly the same elevation above the ground. Observations were begun on the 16th of September, 1874. "The precise points to be elucidated were the

temperature and the condition of the atmosphere as regards moisture outside as compared with the interior of the wood." In the interior, the highest temperature was 79°.4; the lowest, 19°; range 60°.4; on the outside (occurring the same day as the preceding), the highest, 78°.1; the lowest, 19°.8; range, 58°.53. The mean of all the maximum day temperatures at the station within the woods was 52°.2; on the outside, 51°.7; of all the minimum day temperatures inside the interior, 38°.8; on the outside, 38°.7. The means of the night temperatures were very nearly identical at both stations during the whole period of observation; except in June, the difference was never more than a fifth of a degree, but for the days of maximum temperature the averages show an excess of half a degree in favor of the station inside. "The remarkable result disclosed during the annual rise of temperature in the spring and summer months was, that in the inside of the wood the temperature was two degrees higher than on the outside, while during the annual fall of temperature in the autumn, the temperature of the day inside of the wood was in the mean half a degree lower than on the outside."

In respect to moisture, the results were as follow: The average dew-point at 9 o'clock in the morning, was, at the interior station, 42°.5; at the exterior, 42°; at 9 in the evening, respectively, 42°.2 and 42°. In the month of August the dew-point at the interior was, on the average, 41°, or .8 higher than at the exterior.—*American Sportsman.*

The Japan Oaks.—Numerous species of the Oaks of China and Japan are now coming into popular favor in England. Their introduction into California might be a good move.

VANILLA BEAN IN MEXICO.

The Vanilla bean (properly called "Vainilla") grows on a vine which, although growing from the root, is a parasite, as it will grow even cut from the root, for it takes its substance from the tree around which it clings by means of its thousands of fine tendrils. Like all parasites, there are trees which are particularly adapted to its support. They are planted about ten feet apart, in rows, at the foot of small trees which are left in clearing the lands. They begin to bear the third year, and in favorable years give from $400 to $1,000 per acre. No cultivation is needed but to cut down the grass and weeds; no plowing or spading being necessary. The bean is often gathered in September and October, but as it is not yet ripe, the Vanilla is of inferior quality, and sells for a low price; but if left till the end of November or December it comes to perfection. It is then gathered carefully and spread out in the sun on mats, if the weather be favorable, but if otherwise it is placed in ovens, which processes change the color from a pale green to a deep rich brownish or purple, and at the same time develop the oil which on pressure exudes from the bean. They are then packed in blankets while warm, and put into large tin cases to go through a sweating process, again put in the sun and again in the blankets until they attain the proper color. They are then placed in a dry room upon shelves made of some open material, so that the air can circulate under and around them. This evaporates all the watery part of the beans. When sufficiently dried they are put into large cases ready to be assorted into sizes and qualities. The person that raises the beans seldom cures them, for that requires a good deal of

care and special attention. There are about fifteen different classes, but they are sold by the packers at one round price. Four years ago the value here was $60 to $70 per thousand beans; now they are worth from $130 to $180 per thousand, such has been the increase in the consumption without a proportionate increase in the cultivation. The people will work only about one hundred days during the year, which provides them with all they need, and as they will do no more there is very little increase in the production of anything. When the beans are assorted they are tied up neatly in bunches of fifty beans each, and packed in cases of tin holding from two to three thousand. These tin cases are lined with tin foil and a ticket put on the lid giving the quality, size, and quantity. Some five or six of these tin cases are put into a neatly made cedar chest, which is sometimes lined with zinc and hermetically sealed so as to prevent moisture from getting to the Vanilla in transporting, which would ruin it. These cedar cases are then sewed in mats, and these are covered with a coarse bagging to avoid the dangers of transportation on mules. In this manner all the Mexican Vanilla goes to places of sale in Europe and the United States, where it is worth from $9 to $20 per pound, the thousand beans weighing from nine to ten pounds.

Formerly France was the great market for Vanilla, but the enterprise of some of our American merchants has diverted the trade to New York, which is now the great depot of Vanilla, and parties from Europe come to New York to buy.—*Report of Dept. of Agriculture.*

A Large Cucumber.—A "Marquis of Lorne" Cucumber has been grown that measured *thirty-six inches* in length.

INSECTS AND WILD FLOWERS.

The most recent treatise from Sir John Lubbuck's pen is one on *British Wild Flowers, considered in Relation to Insects,* forming a very important number in the "Nature Series," published by Macmillan & Co., of London, in which the author's pet "ism" (Darwinism) receives quite a respectable airing. The object of the book is to show the important part insects perform in the propagation of plants. He starts out with the proposition "that if, on the one hand, flowers are in some cases necessary to the existence of insects, insects, on the other hand, are still more indispensable to the very existence of flowers; that if insects have been in many cases modified and adapted, with a view to obtain honey and pollen from flowers, flowers in their turn owe their scent and color, their honey, and even their distinctive forms to the action of insects. There has thus been (according to Sir John's opinion), an interaction of insects upon flowers, and of flowers upon insects, resulting in the gradual modification of both. . . . It is obvious that those flowers which, either by their larger size or brighter color, or sweeter scent, or greater richness in honey, are most attractive to insects, will, *cæteris paribus,* have an advantage in the struggle for existence, and be most likely to perpetuate their race." "Insects," he adds, "unconsciously produce changes (in plants) similar to those which man effects by design." These propositions, having direct bearing upon the chief tenets in the Darwinian creed, are the groundwork of Sir John's subsequent inquiries into the relations of insects to flowers. He explains the anatomy of insects and the structure of the flowers they visit in search of food; the obstacles in the

way of the self-fertilization of flowers, and the manner in which insects unconsciously act as fertilizing agents.

SELECTED PLANTS SUITED TO CALIFORNIA CULTURE.

BY DR. A. KELLOGG.

YAMS.

Dioscorea villosa, or Native Wild Yam. Middle and Southern States. An ornamental twiner, with an enormous tuber, forty to fifty pounds weight; rarely eaten.

D. alata. The Uvi Yam. Stems twining, four-angled and smooth. Tubers eight feet long, and of prodigious weight, attaining to 100 pounds; vines supported by reeds, poles, or bushes. Propagated from pieces of the old root; matures in about seven months. The tubers are baked or boiled. From India and South Sea Islands.

D. purpurea, Roxb. India. In Bengal considered next best to the above (*D. alata*).

D. globosa, Roxb. This is said to be the most esteemed Yam in Bengal.

D. pentaphylla. Prickly, alternate, divided leaves. Continental and insular India and South Sea Islands. A good Yam.

D. aculeata. The Kaawi Yam. India, Cochin China, and South Sea Islands. Stems prickly, not angled, leaves alternate. This species ripens later, and needs no staking; is raised from small tubers. This Yam is of a sweetish taste, regarded as one of the finest esculent roots of the globe. There is an excellent variety, with flesh of a bluish hue, cultivated in Central America—*e. g.*, at Caraccas and occasionally in the Southern States—driest and mealiest, though not so large, and of very delicious taste.

D. nummularia, Lamarck. Tivoli Yam. Continental and insular India, also South Sea Islands. A high-climbing prickly species, with opposite leaves. Root cylindrical, as thick as an arm; the taste exceedingly good.

D. oppositifolia. India and China. Not prickly. One of the edible Yams.

Besides these are a great variety little estimated, but all are ornamental vines. There are thirty species and many varieties found in Brazil alone, of which we have good descriptions.

Our long warm summer seasons and mild winters are sufficient to ripen all the species of Yams.

One of the oldest and best of the varieties of the common English Ivy is the *Irish* or *Giant Ivy* (variety *Canariensis*), a native of the Canary Islands, but introduced into Great Britain very many years ago. It is preferable of the species on account of its more luxuriant growth and larger foliage, yet possibly it is less hardy. As a basket-plant it is exceedingly fine, and is still in demand, notwithstanding the many new and beautiful forms. The *Palmate-leaved Ivy* (variety *digitata*) is very neat and pretty for hanging-baskets, and for trailing over rockeries. The foliage is deeply divided, not unlike the fingers of a hand, hence the name.

Destroying Weeds in Walks.—An efficacious means to destroy weeds growing between pavements, in alleys, etc., is to boil twenty-four pounds of lime, four pounds of sulphur and 100 quarts of water; allowing the mixture to cool, and adding an equal quantity of water, before pouring over the weeds—selecting if possible a sunny day for the work. This will keep the ground clear for a twelvemonth.

Editorial Portfolio.

ANOTHER BRIEF BUT PLEASANT VISIT TO THE OAKLAND NURSERIES.

Delightful and splendid California's early spring weather greatly enhanced the pleasure of a trip to this beautiful garden city, as it may very properly be called.

The first place we stopped at was Mr. W. F. Kelsey's Nursery and Floral Establishment, on Telegraph Avenue, commenced in 1852. Mr. Kelsey has again undertaken the management of this business, with Mr. David Tisch as foreman. Mr. Tisch has had much experience as a florist and propagator of plants in various cities of the Union, among which as the most prominent was St. Louis, where he operated chiefly with Mr. Shaw, the spirited propagator of the famous and admirable gardens, ever open for the enjoyment of the public of that grand Missouri metropolis and State. Mr. Tisch has also had considerable experience in California, as a nurseryman. His houses are proofs of his diligence and skill. His leaf Begonias are in splendid growth and condition, and are likely to make good show-plants, as well as many of his numerous other plants. At this nursery may be found fruit-trees and plants of every variety and kind, evergreens, and ornamental trees and plants, bulbs, Roses, etc. Mr. Kelsey has put up additional buildings to accommodate his many boarders. It is a delightful location to enjoy both country and town, as the street cars pass the place every five or ten minutes.

Nearly opposite are Mr. James Hutchison's very neat and finely appointed grounds and plant-houses, the Bay Nursery. Untiring industry, energy, and unremitting attention have made this nursery one of the best and most extensive in point of number and sorts of trees, ornamental shrubs, and flowering plants in the State. New and rare plants receive especial attention. Here and at Mr. Hutchison's Depot and Seed Store, Broadway and 13th streets, are to be found all choice seeds. Nothing can be found more systematic than both the nursery and depot.

The next place we visited was Mr. John Hampton's "Oakland Nursery." This nursery and its greenhouses are at present on a comparatively small scale; but everything can be found here, amply sufficient to embellish any new home. One of Mr. Hampton's specialties is the importation of Araucarias from Australia—also all the varieties of Palms suitable to our climate. New and choice plants receive all desirable attention. Next year Mr. Hampton will publish a complete catalogue of his nursery and floral stock, which will then be sufficiently large for that and every other purpose.

Oakland Gardens are beginning to look gay in their spring dress. We had the pleasure of visiting Mr. Harmon's handsome residence and grounds. This place was commenced, we believe, only three or four years ago. But since that time much that is elegant and beautiful in building, premises, and planting, has been accomplished. A most architecturally handsome, graceful and spacious conservatory of iron and glass—truly a small crystal palace—has been erected. In the two wings are graperies; in the central portion, formed as a high and domelike structure, is to be placed a large and handsome aquarium with a central water-pipe, and side pipes conveying water through the mouths of sculptured birds or fishes. At right angles with the grape-houses are wings, in which are placed the

tropical and many other kinds of vegetation. Mr. Turnbull, manager of the garden, conservatory, and plant-houses, has invented a fluted iron grating, which covers the walks in this large conservatory, and on which water is poured from a hose, to promote evaporation and a healthful dampness. Mr. Turnbull showed us in one of the greenhouses, among a fine variety of other plants, an attractive species of Primula—a seedling of his—with distinct purely golden eyes; a white Azalea (*Indica variegata,*) with pink stripes and variegated foliage; also, *Poinsettia pulcherrima.* We mention this last-named plant on account of the method which Mr. Turnbull has of dwarfing it, which is by taking a short cutting in the fall, and striking it, which enables him to have a plant in the spring with its flowers, as he said, "on short legs instead of its naturally very long ones." He performs the same operation with Rutland's beautiful *Thyrsacanthus rutilans,* which renders it beautifully adapted for a hanging-basket, with its crimson flowers drooping gracefully below it. Mr. T. has also some very fine Rhododendrons, with large flower-trusses—one of them colored a delicate pinky white. We saw some large beds of many varieties of the Hyacinth, double and single; the old early flowering Euonymus, with its brilliant yellow flowers; Heaths of various-colored flowers, and a handsomely planted rockery; with many horticultural attractions of fruit-trees, evergreens, and shrubs, with a good vegetable garden nearly bordering on Lake Merritt, some distance back of the mansion.

The collection of Pears in the Jardin des Plantes, at Paris, was begun in the year 1792. There are now more than 1,400 varieties.

FLOWERS AND PRACTICAL HINTS FOR THE GARDEN—FOR LADIES.

Spring-time is come: for although we, in our highly favored California, have more or less hardy and tender flowers all the year round, still vegetation has some rest even with us, and Flora begins to deck herself more carefully and beautifully in the month of March, and puts on her most rich, brilliant, and precious jewels about the latter part of June. What can be a more interesting and refined occupation for ladies than the raising and care of flowers, either in the lot, garden, house, or conservatory? What more healthful and elegant employment? We would like very much to be somewhat instrumental in creating among our fair sisters a love for the practical knowledge of the culture of these nature's gems, so analogous to the precious jewels with which they are in the habit of adorning their persons. They are far from being so expensive, but in form and coloring, at least, equal those lustrous and favorite natural mineral productions. A poet, addressing a lovely and sweet collection of flowers, thus speaks:

"You are gifts that all may offer—
Wealth can find no better proffer;
For you tell of tastes refined,
Thoughtful heart and spirit kind.
Gift of gold or jeweled dresses,
Ostentatious thought confesses;
Simplest boor this boon may give,
Modesty herself receive.
For lovely woman you were meant,
The just and natural ornament;
Sleeping on her bosom fair,
Hiding in her raven hair,
Or peeping out mid golden curls;
You outshine barbaric pearls.
Let the rich with heart elate,
Pile their board with costly plate;
Richer ornaments are ours,
We will dress our home with flowers.
Comfort for the aged eye,

For the poor cheap luxury.
Though your life is but a day,
Precious things, dear flowers, you say:
Telling that the Being good,
Who supplies our daily food,
Deems it needful to supply
Daily food for heart and eye."

But let us cease for the present our poetry about flowers, and come to mere matter-of-fact concerning them. Say the lot you have, dear ladies, is 60x100 feet. On the north side may be planted in a bed about three wide wide, next to the house, Fuchsias, Ferns, Begonias, and all plants requiring partial shade; also Azaleas, Smilax, Hydrangeas, and other similar plants. Ivies and other ornamental vines are trained on simple wire or wooden trellis-work, or on the side of the house, forming a dark and rich background. On any board fence, often on one side, are trained Clematis, Solanum, Jasminoides, Wisteria, and Sweet-scented Honeysuckle. If there is a trellis built around the front door, any kind of handsome climbing Rose-bushes may be trained over. Round whatever internal beds are made there may be an edging of a small species of *Sedum* or Stone-crop. Near this edge plant a row of *Nierembergia gracilis* and *rivularis*, a few inches apart. Beyond these, and in a parterre and nearer the house, is a row of variegated Geraniums. In the centre is planted a *Dracœna terminalis* and around it *Nierembergia variegata*, Ivy Geranium, Lobelias, Alternanthera, Tradescantia, and Moneywort. On each side of the centre may be planted *Deutzia gracilis*, Larkspurs, etc. For a background there may be a row of Cannas. In other larger beds there may be Dielytra, Pæonies, *Spiræa Japonica*, and other herbaceous plants and bulbs. Here Dahlias, Gladioluses, and some other bulbs may remain permanently in the ground. Some *Eucalypti* and Acacias, with an evergreen or two, may be planted for both shade and ornament. All this is a mere outline. In addition to the above flowers, Petunias, Verbenas, Maurandia, and Tropœolum vines may be planted.

Some more hints on such subjects as the above will be given in future numbers of the HORTICULTURIST.

DIFFICULTY OF GIVING ANY GENERAL CERTAIN RULES FOR CULTIVATION OF PLANTS IN CALIFORNIA.

One of the greatest obstacles in advancing rules for cultivators in our State is the many various climates that are to be found in it. What advice in that respect experience has found to be applicable in one section of the country, will not answer at all for another portion, and so on to a very considerable extent all over this slope. For example, the Pansy, which flourishes and flowers well in this city and neighborhood the year round, and along the more humid coast counties, will, for a large part of the year, be found to be dried up in the interior valleys. The same difference of atmospheric effects exists between San Francisco and other coast cities and towns, and their surrounding lands: the warm valleys, the foot-hills, and the more elevated plateaus toward the Sierra. Trees, plants, and flowers of all kinds are, therefore, more or less affected according to these several locations, and each district requires for its vegetable productions, and for their well-being and prosperity, a particular treatment. In other words, vegetation depends much in any part of our planet upon climate, altitude, seacoast, and interior surfaces, and other external conditions, just as what may be termed the physiognomy of a region or country arises from the predomi-

nance in it of certain families or even of particular genera of plants; and an intelligent observer, even without an acquaintance with the characters which distinguish one species from another, will be easily led to discriminate the general effect which the prevalence of each impresses upon the landscape. Atmospheric conditions in the aggregate serve to constitute the definition of climate everywhere on the globe, and in California in a comparatively limited extent are witnessed those climatic varieties which, as we have observed, render it so arduous a labor for us to lay down a system of cultivation, either in book or essay, which could much assist the general florist or fruit-raiser, but more especially the former.

California includes the warmer, temperate, and the sub-tropical zones, but how much, also, as regards its vegetation, does elevation, or vicinity to or distance from the ocean, and the interior level and valley sections as well as Southern California, affect it.

A manual on the cultivation of flowers would be a desirable publication for many, but this would be very far from an easy undertaking in our many climatic influences and effects.

NEW AND RARE FRUITS AND PLANTS.

A New Melon.—"Sutton's Hero of Bath Scarlet Flesh." This is considered by many the very best scarlet-fleshed variety ever brought out. It was awarded the first prize at the Royal Horticultural Society's Birmingham Show, with other prizes at other places in England. It is very early, of vigorous growth, most delicious flavor, handsomely netted all over the outside, and keeps well after cutting. It is of moderate size and thin-skinned. We obtain the above from "Sutton's Spring Catalogue and Amateur's Guide for 1875, Royal Berks Seed Establishment, Reading, Berkshire, England."

New Rose—Duchess of Edinburgh, Crimson Tea.—Most Tea Roses are light—a dark one will be welcome. Messrs. Veitch & Son say: "The color is a deep glowing crimson, very free flowering, and from its present appearance we have every reason to believe it will make as good a bedding variety as the Crimson China." The flowers are large and full, fine form and substance.

It was exhibited at the Royal Horticultural Society's Show on May 13th, when it received a first-class certificate from the Floral Committee, and was greatly admired.

CATALOGUES RECEIVED.

From the Dingee and Conard Co., Rose Growers, Westgrove, Chester Co., Penn.: "Descriptive Catalogue for 1875 of New and Beautiful Roses. Roses by mail a specialty." This catalogue presents instructions how to grow Roses in open ground, and Roses in pots, and for winter-blooming, together with their insect enemies.

The Japan Pea.—We have received from L. L. Osment, Cleveland, Tenn., sample packages of this new vegetable, that in appearance is small and differs from the ordinary Pea, but is said to be equally good for table use and invaluable for stock food, as it gives a product of 200 bushels to the acre. One Pea is planted in a hill, and forms a bush from three to five feet high. Those desiring to procure it can obtain three packages for $1 currency by addressing Mr. Osment, as above.

OUR FRONTISPIECE.

We believe our readers will admit that we have embellished our present number with a beautifully drawn and colored plate, representing those brilliant and favorite flowers, the Single and Double Tulip, and Scilla, of the natural order *Liliaceæ*.

In a wild state the Tulip species is a most unattractive object, for it is of a dull brownish red, with no stripes or other marking except a circle of black at the base of the petals. Yet from this origin are all our fine handsome varieties obtained.

The season is just at hand when these showy flowers will be making their best display in beds or as single plants. All of them, either planted in groups or otherwise, are very desirable in the borders of the flower garden as affording a rich display at a season when flowers are most valued. One class, called *par excellence* "early," are particularly handsome on account of the great variety exhibited in their colors. Such varieties as the Pottebakkers, Claramond, Vuurburg, Canary, Vogel, etc., deserve a place in every collection. The lovely species *Oculus solis*, on account of its rich color, and the Florentine for its scent, are also desirable. Nor should the gaudy Parrot Tulips be neglected; all assist in forming a most agreeable and gaily colored whole.

The Scilla are very pretty bulbous-rooted plants; all of them hardy, of course, in California, and very desirable on account of their early habit of flowering. *S. amœna*, blue; *bifolia*, red, blue, or white; *brevifolia*, pink; and *siberica*, blue, are among the most beautiful and earliest, as they produce flowers from December to April in pots in the greenhouse during winter, and bloom out-doors late in the summer. If they are intermixed among other large-growing plants, they will afford a pretty variety, especially those which produce long spikes of beautiful flowers, and continue a long time in bloom.

Correspondence.

LETTER FROM HON. MARSHALL P. WILDER,

PRESIDENT OF AMERICAN POMOLOGICAL SOCIETY.

E. J. Hooper, Esq.—*My Dear Sir:*—I am always pleased with your articles in the California Horticulturist. The American Pomological Society's next meeting will be at Chicago, September 8th, 9th, and 10th. A great time will be had, and you and your friends must meet us there with your fruits. The circulars are now preparing, and will soon be out. Please give your readers an article in the Horticulturist, urging upon them the importance of the hints contained in our catalogue of fruits for fifty States and Territories—the work of our most experienced men. There is nothing like it in other lands. No other society has made such progress, and performed so much work in that line. I will forward a copy by mail.

Yours, as ever,

Marshall P. Wilder.

Boston, March 25th, 1875.

The Largest Pear in the World.—T. Brehaut, of Guernsey, has raised of the Uvedale's St. Germain, six Pears, twenty pounds, and he asks whether any one in the world has beaten this? One weighed "all but" five pounds. In his remarks on this subject, Mr. B. intimates that Belle de Jersey and Belle Angevine are not the same as Uvedale's St. Germain, which will be news to American pomologists. These large Pears seem to attract, for Mr. B.

says six of his large Pears brought nine guineas. Some $8 apiece is profitable Pear-growing, but it will not do to figure up an acre at this price.—*The Gardener's Monthly.*

FRUIT CULTIVATION, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

There are some fruits, like the Bartlett Pear and the Newtown Pippin for example, that are suited for almost any country or locality where the Apple and the Pear can be grown to profit. But there are a great many others that are adapted only to certain large sections of the States, as the northern or southern; some, also, are confined to a limited tract. Perhaps there is no portion of the world where so many fruits succeed so well as in the soil and climate of California, owing to its equable and mild temperature, and originally fertile earth, either of fine loam or more compact adobe. We are then incurring but little risk of committing errors, or misleading cultivators of fruit, when we bring forward any new specimen which has been found good and profitable in any of the other States or Territories. We have one before us, namely, the Bassett Apple, a highly popular new winter fruit, originated in Connecticut, by W. D. Hall, of New Haven County. It is so highly esteemed that "the more widely known winter Apples on the nursery lists have not been able to displace it. It belongs to the Pearmain family, and it is said to resemble the Cogswell Apple in general appearance, except that it is smaller, and ranks medium as to size. This will, probably, be enlarged in California, as there is no doubt that nearly all fruits and vegetables here go beyond their Eastern size. The skin of the Bassett is a rich yellow, nearly covered with red, marked and streaked with bright red. Flesh white, compact, tender, juicy, scarcely subacid, with a rich, refreshing flavor. Ripe, in the East, December to February. A handsome dessert fruit of good quality. It is reported as a good bearer. It has never been sent out by the nurserymen. We have already, in America, 2,300 described Apples, but I publish this new Apple—the Bassett—because of its apparent superior qualities to the majority of the above immense list. It must be a very showy fruit for the market and the table, and would likely be an acquisition as an addition to our late Apples.

As we have, and are likely to have continually, importations of new plants and fruits from foreign lands, and especially from China, Japan, and Australia, a few brief remarks derived from an experienced importer as to their management on the voyage, may not be unacceptable to many cultivators or botanists. This importer states, that what he found most convenient was an oblong box with a span-glass roof. Its width inside should be about eighteen inches, so as to receive two rows of square wooden pots, made to fit accurately. The glazed sides of the roof should be movable, and hinged to the case by their lower edge; and, if possible, they should be fitted with transparent oyster shells, easily procured at the China sea-ports. Hooks should be adapted to the ends, for the purpose of keeping the glazed sides open in fine weather. The bottom of the case should be double, with a cavity of half an inch to allow for the running off of salt-water in case it gets in when the decks are washed. The whole should be covered by a water-tight tarpauling, without

which it would be impossible to keep the cases on deck, which is much the best place. When the plants are put into the box, the whole of the mold should be covered with moss, to prevent its being shaken out of its place, and likewise to keep it moist. After this it should be crossed with laths, nailed tightly down. The best situation is where they get plenty of sun and light. If the plants have too much sun, shade them by closing one shutter, or by using the tarpauling as a shade. Some exposure to the sun is indispensable to harden the wood and enable the plants to endure the vicissitudes of climate. Water sparingly as long as they are seen not to droop. They can not endure the salt atmosphere. The period of leaving China should, if possible, be late in the year.

But to speak of our markets. About the 5th of this month (March) some excellent new Potatoes appeared in the market, and found ready sale at 6c. to 8c. per lb. Inferior New Potatoes could be had at almost any price, although the range was from 3c. to 4c. per lb. Mushrooms were selling at 10c. per lb.; Salsify at 75c. per dozen bunches; Garden Lettuce at 25c. per lb.; Horseradish, 20c.; Chile Peppers, 50c.; Shives, 15c. per bunch; Cabbage Sprouts, 8c. per lb.; Rhubarb, 20c.; Asparagus, white, 25c.; green, 30c. to 35c.; Jerusalem Artichokes, 8c.; Artichokes, $1 to $1 25 per dozen. Green Peas were still high—8c. per pound.

California Lemons were retailing for 25c. to 50c. per dozen. Oranges were to be had all the way from 15c. to 75c. per dozen. There was an excellent display of Apples, some lots of choice Oregon having been recently received. There were also some good Oregon Pears at the beginning of March. The season of early Strawberries is close at hand. Two years ago the first lot of early crop had come to hand about that time. Last year the season was backward and the ripening of the fruit was considerably delayed; there has been a notable absence of warm weather so far this year, and there may be a similar delay in the arrival of the Strawberry crop.

The feature on or about March 5th was the first appearance of Cucumbers. Receipts of Green Peas continued to increase. Asparagus was a little more plentiful and cheaper.

Apples and Oranges were very plentiful. The receipts of Los Angeles Oranges were never more liberal, and they moved off slowly and at reduced figures. Oregon contributed largely to the supply of Apples, and sent a few Pears. By the box, Apples retailed at $1.25 to $2.25, delivered. The retail price of Italian Chestnuts was reduced to 35c. per lb.

The first Strawberries of the season were received about the 10th of March, and retailed at $2.50 per pound. The lot was very small, consisting of only two short pounds, hence the extravagant price at which it was peddled out to epicures. It is not often, if ever, the first Strawberries of the season here command such a high price. If the warm weather which had prevailed during the past week had continued, we should much sooner have had an abundant and cheap supply of this delicious fruit. California Lemons have never been more plentiful, in better condition, and cheaper than they are now. The supply of Oranges, if anything, has been and still is excessive, and there are no signs, even up to this month (April) of diminution in the shipments from the southern counties. The better descriptions of Apples were a little dearer about the middle of March than

they had been for some time previous. Dried fruit was plentiful about the 10th of last month.

German Prunes were quoted at 16c. to 25c. per lb.; California Raisins, 20c.; Dates, 25c. Nuts were as follows: Walnuts, 20c. to 25c. per lb.; Almonds, soft shell, imported, 35c. per lb.: do. California, 25c.; Filberts, 25c.; Italian Chestnuts, 40c.; Common Ohio do., badly damaged by frost, 25c.; Cocoanuts, 15c. each.

Vegetables were improving. There was a better showing in new Potatoes at reduced prices, 6c. per lb. being the top of the range. Mushrooms were retailing at 15c. to 25c. per lb. Asparagus was selling at 12½c. to 15c. for white, and 25c. for green. Artichokes were quoted at 75c. per dozen, and Jerusalem Artichokes at 8c. per lb. Rhubarb was cheaper; it was quoted at 20c. to 25c. per lb. Shives were retailing at 15c. per lb.; Cabbage Sprouts, 8c. per lb.; Horseradish, 20c.; Chile Peppers, 50c.; Field Lettuce, 25c.; Green Peas, 8c.; Garlic, 25c.; String Beans were not yet in, although due.

The first Strawberries above spoken of, were from San Jose. The first of the new Tahiti Oranges was expected about the 24th of March. A few Pears from Oregon were still in market about the middle of last month, and there was little demand for them at 5c. to 10c. per lb. There was much complaint at the small size of New Potatoes. A few at the top of the sacks were large, but the bulk of the remainder was made up of almost unsalable trash. The producer is the sufferer, from the low prices his dishonest practice obtains. The prospect of an abundant yield of Strawberries is excellent, and warm weather will soon bring forward a most plentiful supply.

About the 19th of March Mission Sweet Peas were in market, retailing at 12½c. per lb.; also the first lot of this season of Sugar Peas was received, the price for which, although very variable, may be placed at 25c. per lb. Peas did not command more than 6c., but there was a very marked improvement noticeable in their condition. Mushrooms gave out about the same time. Asparagus improved, and the supply was increasing: prices were, however, steady. Artichokes were cheaper, selling at 50c. per dozen. Jerusalem Artichokes were steady at 8c. per lb.; Rhubarb was quotable at 15c. to 20c. per lb., being 5c. per lb. lower than last week. New Potatoes continue to retail at 6c. per lb. Cabbage Sprouts are steady at 8c.; Horseradish at 20c.; Chile Peppers at 50c.; Field Lettuce at 25c., and Garlic at 25c.

A good supply of Apples was received by the last Oregon steamer. California Apples are getting poor; native Red Cheeks are nearly out of the market altogether. Pears are scarce, poor, and dear. There have been no receipts of Strawberries from the 12th to the 20th of March. Semi-tropical fruit is abundant. Dried fruit is also plentiful.

Anything like a plentiful supply of Strawberries can not be expected much before the early part of this month (April). The ripening has been retarded by recent cool weather, but the prospects of the crop are flattering, and the yield promises to be abundant and of good quality.

The first cargo of new-crop Tahiti Oranges arrived during the week. The fruit is unripe and too sour to have any effect upon the sale of the California variety. The Mexican steamer, which arrived on Tuesday, brought a few packages of Limes and forty cases of Oranges from a plantation back of Ma-

zatlan. These Oranges are some of the finest ever received from that country. They arrived in perfect order, and, being of large size, sweet and juicy, are selling very readily. Los Angeles Oranges and Lemons are arriving as freely as ever, and are in good demand at slightly improved prices. The market is fairly supplied with Apples, but the stock of Pears is almost exhausted, the few remaining being mostly from Oregon, and inferior in quality. California Raisins, Almonds, and Walnuts are still coming forward, and are displacing the foreign products to a great extent. By the box, Apples retail at $1.25 to $2.50 delivered.

Asparagus, Green Peas, and Cucumbers are more plentiful and cheaper. New Potatoes in considerable quantities are coming forward from Halfmoon Bay and the Mission gardens, and retail readily at 5c. to 6c. per pound. We quote Spinach at 8c., and Lettuce at 20c. to 25c. per doz.; Salsify, 8c. to 10c. per bunch; Potatoes by the sack, delivered, $2 to $2.50 per cental.

A few Strawberries have come in from San José, which brought $2.50 per lb. The cool weather and frosty nights prevent the fruit from ripening. California Oranges are now at their best, and are selling very readily, the demand for them not being in the least affected by the cargo of Tahiti. Apples are becoming quite scarce, and prices are advancing. The different qualities now retail at $1.50 to $3 per box.

Alternanthera amabilis tricolor. — This is a charming variety, remarkable for the brilliancy of its large leaves; it is of very free habit, and forms a beautiful ornament to the flower garden in the summer months, either in small beds or as a border plant.—*New York Horticulturist.*

Editorial Gleanings.

The Ailanthus as a Medical Remedy. —The *Archives de Medicine Navale* publishes an official note, addressed by Dr. Robert, who is the medical chief of the naval division of China and Japan, to the Inspector-General of the Health Service in the French navy, calling attention to a drug used by the Chinese physicians in the treatment of dysentery. It consists of the root bark of the common Ailanthus, and is by them employed in the fresh state only; but Dr. Robert, having been compelled to use some that had become dry, found no sensible difference in its action in the two states. For administration, one and a half ounce weight of the root is cut into very small pieces and triturated with two ounces of hot water for a few minutes in a mortar, in order to soften the bark, and then strained. A teaspoonful of this strong infusion is administered as a dose morning and evening, alone or in a cup of tea. Taken in this form it provokes vomiting. The medicine is administered in this manner during three days, the patient being kept upon full diet. After that time the Ailanthus is omitted, and the diet is altered to broths until health is restored; if there is no cure at the end of ten days, the use of the Ailanthus is recommenced.

Deep and Shallow Roots.—Some of our best cultivators of fruit attach great importance to inviting the roots of fruit-trees to run near the surface of the soil, and with this end in view they never cultivate nor tear up the surface, applying a top-dressing of manure to compensate for the deficient cultivation. They raise excellent crops this way; but they do not give us any experiments on trees growing side by side, with the

same top-dressing and a mellow surface added, to prove which is best. The matter seems at present to rest on single opinion or "theory." J. H. Clary, a correspondent of the *Prairie Farmer*, urges the importance of the opposite course, remarking that "experience is better than theories;" then goes on to give his theory, and the practice of some western orchardists based on it. He says that "Judge McGonigal plants his Grape-vines at least fifteen inches deep; I plant my fruit-trees the same depth; and Rothius Scott, with orchards of 2,000 of the finest trees I ever saw, plants at least two feet, and some two and a-half feet." He fills the hole partly at first, and cuts off the side roots to keep the roots well down. His object is to keep the roots away from sudden changes of weather, heat, cold, drouth, etc. But neither do these cultivators furnish us the results on other trees set side by side to test the relative advantage of each mode. We often hear long speeches at horticultural meetings, in which the speakers recommend their own practice and the theories on which it is based, but we are still left in conjecture as to the actual comparative results.

Botanical Gardens.—The public-spirited citizens of Chicago, progressive in everything, and desirous of making their home what its name expresses—"Garden City"—are taking preliminary steps for the commencement of a Botanical Garden in the west division of the South Park of that city. Her lovers of the floral kingdom and others are uniting together, and have enlisted the aid of scientific men and associations both in this country and abroad, in furtherance of their worthy enterprise. Similar efforts were made in Philadelphia a quarter of a century or more ago, but they did not meet the success that usually attends all efforts of the more vigorous and determined city of the north-west. If the latter determine to rival Paris with her *Jardin des Plantes*, it is believed she will make a strong effort to that end.

The Groves of Morocco.—The groves of Rose-trees and the flower farms of Morocco are said, by a recent traveler, to exceed in extent and value those of Damascus, or even those of the valley of Mexico. The general climate of the country is very favorable to this kind of culture. Swept alternately by the breezes of the Atlantic and the Mediterranean, and tempered by the snows of the Atlas ranges, the degree of heat in Morocco is much lower than in Algeria, while the soil is exceedingly fertile. To the Date-palm and to Orange and Lemon trees the climate seems to be especially suited, the Dates of Tafilat having been famous even from Roman times. The Orange plantations are of great extent in various parts of the country, while Olives and Almonds are also staples exported in large quantities. Seeing that this fertile land, lying within five days' steam of London, produces so much vegetable wealth under the most barbarous cultivation, it appears extraordinary that European enterprise does not in such a climate seek profitable employment for its over-abundant capital in its application to the development of such vast resources, so close at hand, instead of going to so far a field as Australia or America.—*London Garden.*

Thinning Fruit.—The value of the practice is well established, of thinning out the young fruit on overloaded trees, for the purpose of improving the size,

flavor, appearance, and market price of what remains, and producing less exhaustion to the trees. A correspondent of the Maine *Farmer* adopts the practice of cutting and thinning out the small branches after the fruit has formed, taking off in this way at least half the crop. He gets the usual crop with double the size of the Apples. There appears one objection to this practice—the tendency to check the growth of the tree by the removal of so large an amount of foliage while growing. It might do on strong, rich soils, with young trees; but young trees on rich land are not apt to overbear. We would recommend caution and comparison. It should be remembered that thinning out the young fruit when small is much easier than to hand-pick it when mature.

A WRITER in the Sacramento *Record* says that since the planting of the vine in California, over a hundred years ago, the Grape crop has never been a total failure.

Now, where France possesses one acre of land especially adapted to the production of the best quality of Champagne wine, or where Germany possesses one acre peculiarly calculated for the production of the still light wines of the Rhine, or where Spain has one rod of soil on which she can produce the Malaga raisins, California has one thousand acres adapted to each particular product. These lands are lying unappropriated and unoccupied all along the foot-hills of the Sierra Nevada and Coast Range mountains from one end of the State to the other, and may be had at a price that brings them within the reach of the poorest peasant of Europe. The man who spends his money in a vain endeavor to make a light delicate table wine from Grapes grown upon the rich luxuriant soil of the Sacramento, San Joaquin, or other California river bottoms, is doing just as absurd a thing as would be the German Rhine wine maker in attempting to excel the Malaga raisin maker in his business by drying the wine Grapes for raisins, or as would be the resident of Malaga in making an effort to rival the Hock or Rhine wine by expressing and fermenting the juice from his Malaga Grapes.

THE TEMPERATE CHARACTER OF OUR CLIMATE.—In a show-window of C. C. Hastings & Co.'s store, beneath the Lick House, may be seen a cluster of five Oranges, to which is pinned a notice to this effect.

"These Oranges were raised this winter, in the open air, by C. L. Beard, (in Alameda County) within twenty miles of San Francisco. There can now be seen on the same tree from 300 to 500 Oranges, from green to ripe. The tree is seventeen years old, eighteen feet high, and fourteen inches in circumference. This cluster broke off from its own weight. Oranges, Olives, Lemons, Dates, Figs, Grapes, Peaches, Nectarines, Apricots, Berries, etc., grow in the same garden."

Mr. Beard's is not an isolated case of Orange culture in the open air, within easy distance of San Francisco.

PLOW AND SPADE DEEP. — Diss, of San Francisco, who returned from a visit to his ranch on Cross Creek a few days since, said to us, "Tell the farmers to be sure and plow deep." The effect of the two theories of plowing is very clearly demonstrated in his Alfalfa field, where the ground was

plowed three, six, twelve, and fifteen inches deep. The different depths show a distinct shade of growth ranging upward in response to the plow going down. We know of several farmers who mortgaged their farms last fall in consequence of their shallow plowing theory.—*Visalia Delta.*

Grapes for Hogs.—A practical farmer, a man of over twenty years' experience in the Corn regions of the West, and about the same in California, gave us the other day his candid opinion that good, sweet, well-ripened Mission Grapes fed to hogs would make as much pork, pound for pound, as Corn. Doubting on our part led to investigation into the theory of fat and flesh production, and though still unwilling to believe that a hundred pounds of Grapes will make twenty pounds of pork—about what Corn will do when properly fed—we can not but admit that they may prove very profitable for feeding, and as this gentleman informs us that his hogs will leave Barley or Wheat to eat Grapes, would recommend those parties who, because wine-making has not been a success with them, and their common Grapes are not the things for raisins, have meditated rooting out their vines, to try this mode of disposing of their crop. An acre of vines when they are five years old will bear, say 10,000 pounds of Grapes. If we place their pork-producing capacity at one-half that of Corn we have a thousand pounds of pork made from an acre of these condemned vines, worth, as prices go here in Grass Valley, from eighty to one hundred dollars. An acre of Grapes can be raised and picked, after once the vines are in good bearing condition, for less than an acre of Corn can, and yet an Illinois or Missouri farmer will raise three or four acres of Corn and feed it to his hogs to make a thousand pounds of pork, and when made pay freight to Grass Valley, and sell the pork to be cut up and made bacon of for the very men who have those non-paying vineyards.—*Foot-Hill Tidings.*

Adiantum Farleyense.—Probably one of the finest examples in the United Kingdom of the beautiful exotic Fern, *Adiantum Farleyense*, "The Queen of the Maiden-hair Ferns," was shown at the exhibition of the Stamford Horticultural Society, September 4th. It was staged by Mr. Allsop, gardener to C. T. S. Birch Reynardson, Esq., Holywell Hall, Lincolnshire. Well grown, very healthy, and beautifully colored, this specimen must have measured nearly or quite three feet in diameter; and the boldly arched elegant fronds gave it a fine symmetrical appearance, which did not fail to excite the admiration of all who saw it. A single frond of this superb Fern is a sight to be thankful for; but it is when a large and well-grown example of it meets the eye, that one seems to fully appreciate and delight in its exquisite beauty and almost unrivaled elegance.—*Gardener's Chronicle.*

Do any of your readers know of a Plum called the "Winter Plum?" A few years since an intelligent Polander gave me a few seeds that he had brought from the north of Europe. I took but little interest in them, supposing them to be nothing more nor less than the "German Prune." However, I planted them; the most of them came up and grew finely. I transplanted four of the trees, which have borne several crops. I can see no difference between this fruit and the Damson, only they are

from four to six weeks later in ripening —coming in when all other varieties are gone. This lateness in getting ripe will, I think, make them very profitable to raise for market. I am satisfied that like the Damson they will reproduce themselves from the seed, as the four trees are precisely similar in all respects. Do any of your readers know of this Plum? If so, will they please give the proper name of them through your columns?—*C. C. Cooley, Adams Co., Ohio.*

Poison Oak as Food for Cattle and Hogs.—Poison Oak, the mere looking upon which will cause swelling and eruption upon some people, while others can handle and work among it with perfect impunity, is said to be a useful and duly appreciated shrub by some of our foot-hill farmers. Philip Roberts was asking Mr. Underwood, who lives some miles below here, and upon whose place Poison Oak is plentiful, not long since, why he did not dig it out and get rid of it. "Why," said Mr. Underwood, "that is one of the best crops I have on my farm. Before grass starts, after the rains have spoiled the dry feed, my cattle and hogs browse the leaves and tops off and seem to thrive upon them; and later in the spring the hogs root up and greedily devour the young sprouts, making a living when other food is scarce. Then, in the fall, when feed is dry, stock will eat the green leaves of Poison Oak, and mixed with the dry grass it seems to do them good."—*Grass Valley Tidings.*

A well-known botanist, now on a visit to this city, many years ago took great interest in the matter of naturalizing in this State the best known foreign grass. He addressed letters of inquiry to a great number of foreign countries, and especially to such as had a climate much like ours. There was a remarkable unanimity in the replies, naming *Lucerne* or *Alfalfa*, or the same grass under some other name, as the one grass which was preferable to all others. After some years he returns to find that Alfalfa has not only taken root here, but that the experimental stages have been successfully passed. Perhaps as good an illustration as any other of the real value of Alfalfa in this State may be found in the fact that where the land is well set in this grass it can be rented at $10 an acre, with a good margin of profit to the parties taking it on such terms. The roots of this grass have been known to live sixty years.

METEOROLOGICAL RECORD,

For the Month ending March 31, 1875.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.23 in.
do	12 M.	30.23
do	3 P. M.	30.22
do	6 P. M.	30.22
Highest point on the 31st, at 12 M.		30.40
Lowest point on the 18th, at 9 A. M.		30.05

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		53°
do	12 M.	58°
do	3 P. M.	58°
do	6 P. M.	54°
Highest point on the 10th, at 3 P.M.		68°
Lowest point on the 14th, at 9 A. M.		47°

SELF-REGISTERING THERMOMETER.

Mean height during the night	43°
Highest point at sunrise on the 12th	50°
Lowest point at sunrise on the 3d	36°

WINDS.

North and north-east on 4 days; south-west on 4 days; north-west on 20 days; west on 3 days.

WEATHER.

Clear on 16 days; cloudy on 6 days; variable on 9 days; rain on 6 days.

RAIN GAUGE.

2d	0.33
4th	0.17
5th	0.03
24th	0.22
27th	0.05
28th	0.28
Total	1.08
Total Rain of the season to date	17.26

1

2

3

Group of Bulbous Plants.

1. *Gladiolus.* 2. *Tritoma uvaria.* 3. *Tuberose.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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SEED - PLANTING.

BY F. A. MILLER.

[Continued.]

I will now say a few words in favor of the Stock (*Matthiola*) which is now grown to its greatest perfection in Germany, and has become one of the leading bedding-plants everywhere. European catalogues now enumerate so many varieties and forms, that it seems difficult to select from their lists. I believe it answers our purpose, if we will confine ourselves to three varieties, namely: The large-flowering Ten-week Stock for summer flowering; the Autumnal Stock, for early winter; and the Winter or Brompton Stock, for late winter and early spring flowering. They are decidedly a most desirable feature in the flower-garden, and present no difficulties so far as their cultivation is concerned.

Like the Pansy, I prefer to plant the seed in pots or boxes, and find no objection to plant the three varieties mentioned at one and the same time, say in March or April; their distinct characters bring them out in their respective seasons, as their names imply. The seeds germinate freely, particularly if covered with a pane of glass, but as soon as the plants are up, they should be aired every day, and when the second or third leaves appear, the glass should be removed entirely, in order to harden them well before transplanting. The Summer Stock should be transplanted when quite young, say a month or six weeks after the young plants have made their first appearance; the Autumn and Winter Stocks may remain in the seed-boxes for several months, before transplanting becomes necessary. To produce fine plants and perfect flowers, the ground should be kept clean and loose. As soon as the flower-buds make their appearance, and the single-flowering plants can be distinguished from the double-flowering ones, the former should be removed; the main object being the production of double flowers. Imported German seed is preferable to all others, for the same reasons as mentioned in connection with the Pansy.

Phlox Drummondii is also a most desirable annual, and produces a very cheerful effect during the summer months. As a bedding-plant it has no superior; it is a neat and compact grower, and a most profuse bloomer.

Near the coast, I find it does not germinate readily in the open ground, the climate apparently being too cool. The seed should be sown in pots or boxes with glass covers; the young plants to be transplanted with more than ordinary care, unless the weather is cloudy. Where professional gardeners are employed, and frames or greenhouses are at command, the surest and best way is to pot off the young plants, and when established in the pots to transfer them into the open ground; but where such conveniences are not at hand, careful transplanting from the seed-boxes into the open ground will answer; in which case it will be well to shade the plants for a few days during bright weather. In the interior the seed may be sown at once in the open ground as soon as the frosts are over. They will flower in profusion from midsummer until late in autumn.

THE MAGNOLIAS.

A valuable paper on these admirable ornamental trees was presented to the late horticultural meeting at Rochester, by Mr. George Ellwanger, and being the result of extensive experience for more than a quarter of a century with all the kinds that can be cultivated at the North, we give it nearly entire to our readers, its excellence fully warranting the space it occupies. After some introductory remarks, Mr. E. says:

"There is no tree or shrub, in our opinion, whether deciduous or evergreen, that can compare with the Magnolia in effectiveness, or take its place in all well-laid-out public or private grounds. Its superior stateliness of form and splendor of growth, the size and richness of its foliage, and its lavish yield of fragrant flowers, all tend to place it in the foremost rank among hardy ornamental trees and shrubs.

"Its proper place is on the lawn, where it shows to fine advantage in contrast with the green; or it may be planted effectively on the border of lawns, with an evergreen in the background to heighten the contrast. Planted in groups, it yields to no rival, and its effect in the early spring is grand beyond description, illuminating the landscape and loading the atmosphere with its rich perfume.

"The Magnolias are all either indigenous to America or Asia, and occupy very similar parallels of latitude. The Chinese varieties possess the peculiarity of coming into bloom before the appearance of the leaves. On their own roots they are all of slow growth, growing at best into low, bushy trees, and on that account, are admirably adapted to be planted with the larger varieties of shrubs, or to claim a place in small grounds where there is not room for anything larger. Where the space is abundant, however, to give room for a finely developed tree, they should be budded on the *Magnolia acuminata*, which adds materially to their vigor, hardiness, shapeliness and size. The French inarch them on the *purpurea*, a dwarf Chinese variety of less vigor than the others, but more easy of propagation. The *acuminata*, however, is far preferable with us.

"The Magnolia, very erroneously, has long been considered by many a tender tree. This idea has obtained prevalence, doubtless, from its extreme shyness to being transplanted. No roots, to my knowledge, are so sensitive to exposure to the wind, or sun, as those of the Magnolia; hence the poor success in transplanting them.

"It often occurs that after being moved they survive for a few months, maintaining a sickly existence, and hav-

ing made no roots, perish in the winter, thereby, unfortunately, strengthening the impression that they are not a hardy tree.

"To insure success in their transplanting they should be moved in the spring—never in the fall—and the Chinese varieties at that period when they are coming into bloom, and, consequently, before the leaves have made their appearance. Great care should be exercised in their removal, the fibrous roots being preserved as nearly as possible and carefully guarded from any exposure to wind or sun. For this purpose a cloudy or rainy day is preferable. While almost any good soil is sufficient to insure their growth, they succeed best in a soil which is warm, rich, and dry.

"The varieties embraced in the annexed list, with but one or two exceptions, are all of sufficient hardiness to endure the rigors of even a New England winter. On our own grounds we have a number of specimens over thirty years old, as hardy and thrifty as our native Oaks. In enumerating varieties I shall call attention only to those which have for years come under my observation on our own grounds.

AMERICAN VARIETIES.

The *Magnolia acuminata*, or Cucumber-tree, as it is often called from the resemblance of the young cones to a Cucumber, forms when well developed one of our noblest and most finely proportioned trees, often growing in our forests to a height of from sixty to seventy feet, and attaining a diameter of several feet. The leaves are large on young trees, and the flowers, which vary from five to six inches in diameter, are yellowish white, tinted with bluish purple. In autumn the cones open, displaying the coral-colored, polished seeds, and adding greatly to the charm of the tree. The *acuminata*, as previously mentioned, is invaluable as a stock upon which to work the Chinese and other slow-growing varieties.

The *Magnolia acuminata variegata* is a variety of the preceding, with the foliage and young wood striped with yellow. It is also of superior growth, and is very distinct and fine. It originated on our grounds about fifteen years since.

"The *Magnolia tripetela*, one of our best-known varieties, is of medium size, with immense leaves growing in clusters, and large white flowers five to seven inches in diameter. This variety is seldom seen with a single stem. Its natural habit is to throw offsets from the base of the trunk, which, when allowed to grow, add to its attractiveness. Its period of flowering is June, and, while not nearly as fragrant as the Chinese varieties, its immense leaves at the end of the branches and showy cones of seeds render it a highly ornamental tree.

"The *Magnolia Thompsoniana* is one of the most unique and attractive of its species. Anyone who has passed a tree in bloom, or even possessed one of its wonderfully fragrant flowers, becomes enamored of it at once. The *Thompsoniana* is a hybrid of the *glauca* and *tripetela*. It commences to flower near the middle of June, continuing more or less during the summer. It is the rarest as well as the most fragrant of all the Magnolias. It is, however, difficult of propagation. It continues growing until the latter part of September. The young wood does not always ripen well on young plants, and should be protected with straw or mats during the winter, and planted where they will be sheltered from the west and north-west winds.

"The *Magnolia glauca*, or Swamp Laurel, is of low growth, with extremely fragrant flowers and laurel-like leaves. As its name indicates, it is a favorite of moist soils, never succeeding on limestone unless budded on the *acuminata*. Owing to its remarkably bushy growth, and handsome fragrant blossoms, it is extremely valuable as an ornamental shrub.

"The *Magnolia glauca longifolia* is a variety of and similar to the foregoing, but differing from it in being more vigorous, and in its finer foliage.

"The *Magnolia macrophylla*, were it not for its sensitiveness to the cold, would prove one of our most invaluable ornamental trees. It is a native of North Carolina, where it grows very luxuriantly, the flowers and foliage both growing to extreme size. The *macrophylla* is among the rarest of the native Magnolias. It is not hardy as far north as New York in exposed situations. If planted, however, with judgment, in a warm soil and protected situation, it often does well. At any rate it is worthy of a careful trial. We have had it flowering on our grounds for several years.

CHINESE VARIETIES AND THEIR HYBRIDS.

"*Magnolia conspicua* (Chandelier or Yulan). In many respects this is the finest of the Chinese varieties. We have always held it in the greatest esteem, owing to its being the earliest flowering of all the Magnolias, as also for the matchless whiteness of its flowers. If placed in contrast with evergreens or the *Forsythia viridissima*, which begins blooming at nearly the same time, its effect is almost startling. It has aptly been christened "Chandelier," for there is nothing to compare with it in lighting up the landscape of early spring. Its flowers are large, white, and extremely numerous, often numbering thousands on a single tree.

"*Magnolia Soulangeana.*—This fine variety is a hybrid of the *conspicua* and the *purpurea*. While in general habit it closely resembles the former, it lacks its wonderful effectiveness, owing to the flower being tinged with purple. Coming in blossom, however, a few days later, the flowers are not as liable to injury from late spring frosts in the Northern States. Perhaps the *Soulangeana* has been more disseminated in the United States than any other variety.

"*Magnolia Norbertiana.*—It is also a hybrid between the *conspicua* and the *purpurea*. It differs from the varieties previously mentioned, in its flowers being much darker, and, therefore, we regard it as superior to the *Soulangeana*. This variety is still scarce.

"*Magnolia Lenne.*—The Lenne seems to be closely related to the *Norbertiana*, and is doubtless of a similar parentage. In color it is darker, and in size somewhat larger. It is a decided acquisition.

"*Magnolia speciosa.*—In habit of growth this variety resembles the *Soulangeana*. The flowers are smaller and of a lighter color. They also come into bloom a few days later and continue some days longer than any of the other sorts. It is a remarkably free bloomer. For florists it is the best for cut-flowers.

"*Magnolia obovata* (Chinese purple).—The *obovata* is a charming dwarf variety, hardly ever seen over five or six feet high. It has showy purple flowers, and blooms in the latter part of May or in early June.

"*Magnolia rubra* (Chinese red).—This is a variety of the preceding, of more slender and erect habit, with larger flowers of a deep purple color."

COLORS OF FLOWERS.

BY E. J. HOOPER.

We are all rather at a loss for words to give us an exact idea of floral colors and their various shapes. We are sometimes embarrassed when, walking in a rich and beautiful garden, we are called upon to designate particular colors. We are annoyed the more, too, because colors have for the writer harmonies as ravishing as those of music, because their influence acts powerfully upon his imagination. Horrible discordance in colors in the paper or staining of a room where a man may be imprisoned by sickness, is enough in itself, in some minds, to aggravate the malady. So too the inharmonious disposal of flowering plants in grounds or beds, or where there is too great monotony of colors, is about as great an eyesore to a refined and accurate taste.

One of the most disagreeable things to us in traveling, is the manner in which the apartments of hotels are decorated; yellow curtains and red fringe, chairs with red covers and yellow fringe: these colors, so generally and barbarously brought together by upholsterers, produce with us the most disagreeable impressions. There are, to us, between colors and their shades, discords as strong as those that can possibly exist between certain notes of music. There are assemblages of colors as false as the notes of anyone who had never had a bow in his hand, but took up a violin and scraped away at random. Sometimes, but fortunately very seldom, we meet with women who always appear in green dresses and necks and hats trimmed with yellow; and men who deck themselves in staring purplish red vests and bright blue cravats.

With regard to the correct names of the colors of certain flowers or insects, we think perhaps that we shall all better understand them by employing the names of many of our precious stones. Most people seem better acquainted with the colors and tints of jewels and minerals, or pearls and corals, than with those of the flowers which surround them. This may be, probably because vanity has attached a singular and excessive value to precious stones, to decorate their persons, neglecting to notice the more common riches which nature has spread with such profusion over the surface of the earth. It is true there are many precious stones which are singularly agreeable to our sight, but there is not one whose colors may not be found upon some flower or insect. Is not the chrysis a living jewel, composed of an emerald and a ruby? Do we know a sapphire so blue as the *Tritelia laxa* of the fields, as brilliant as the *Salvia patens*, or the blue Delphiniums, which flourish in our gardens? Discover if you can among stones the color of the Scarlet Geraniums, and of the red Verbenas, which eclipse even the Geranium. Is there a diamond which has the fire and colors of drops of dew in the sun? Is not a garden a living jewel-case, full of jewels which fly, and others that brightly and gaudily blossom and spread around in addition their perfume?

But precious stones are dear; all the world can not have them, and that is the reason all the world wishes for them. The matter, besides, is not so much to see and possess precious jewels as to exhibit them. We have but to look around us; flowers, birds, and insects have more varied and beautiful colors then they have. Besides, all precious stones are so closely imitated in glass, that few persons can distinguish them.

Many colors have taken their names from certain precious stones. These denominations have not much meaning, but they vary singularly in their shades, and even in their color, as mineralogists will tell us. In flowers, as not in gems, for the purpose of designating color we have a complete gamut, which would be wanting in no tone or the fraction of a tone, and a language exact and well arranged. Some names of colors have been borrowed from flowers; as lilac, violet, amaranth, buttercup, and rose. Also the names of fruit: orange, lemon, plum, apricot, and apple-green.

Flowers present us more than in any other way colors expressed by comparisons to objects most familiar to us, and in addition that of containing in the same order of things and ideas all colors and all possible shades. There are yet numberless shades without names.

Let us take, for example, the least common color among flowers — blue — and let us begin our gamut. Certain Hyacinths will first give us a white scarcely tinged with blue; the Parma Violet is of an extremely pale lapis blue; then comes the blue Geranium of the fields; then the Chinese Wistaria; then the Flax-blossom, and many others. We have no words to express the shades of the Rose. And how can we express the shades of white? There are four trees covered with white blossoms—the Cherry, Plum, Apricot, and Almond. Other trees have white blossoms, but of a different shade.

Language is at least equally poor in its attempts to express scents in flowers. But it must be admitted that nature has not bestowed an equal susceptibility with regard to colors or scents to all persons. There are least as many people with a false sight in colors as with a false ear in music, and some are naturally what is called color-blind.

RAISIN BUSINESS—PLANTING A VINEYARD.

The raisin business on this coast is bound in time to be a leading one. Better raisin Grapes can not be found in any climate than are produced in California. We have a climate that is also generally very favorable for the drying of raisins out of doors. Last fall was an exception, on account of early rains. The best method of drying appears to be an open question at the present time among viniculturists. Evidently the Alden and other hot-air driers are not the thing. No satisfactory results have been obtained from such processes. It does not do to partially cook the Grape, as Prunes and other fruits are treated by the hot-air driers, and with a lesser heat it takes too long to be economically done. Possibly large chambers may be so arranged with glass roofs that heated air in circulation can greatly assist the sun in the drying of raisins. The best raisins that have been yet produced have been dried in open air and sunlight.

As the Grape is just ripe, it is found to be best to nearly sever the vine bearing the bunches from the main stalk, and let it hang until the Grapes are fully ripe and shriveled before picking them. When the branch is thus treated, the leaves absorb the moisture faster than the main vine can supply the sap, and the Grapes lose much of their water by absorption back through their stems to the leaves. This process seems to mature and concentrate the saccharine of the Grape and hasten the drying.

The best bed to dry Grapes upon is said, by those who have experience, to be fine gravel about four inches thick, upon the dry ground, where sun and air can exercise full power. In locali-

ties where dampness is deposited at night, a shelter of canvas or other convenient material is found to be practical. This may be unrolled over a light frame and rolled back with little trouble.

The way to make the best raisins with the least expense is the question. After they are made, with as little handling as possible, it is quite as important to select the best bunches, cull out all inferior berries, and box carefully for market. Raisins should be assorted into extra, first and second qualities.

We advise the planting of raisin Grapes on every farm where they will be likely to do well. The White Muscat of Alexandria is the best variety for raisins. Cuttings should be planted about December. The ground does not require to be deeply plowed. Good, thorough surface cultivation is enough. Cuttings twelve to eighteen inches long, put in with a spade, standing about forty-five degrees, will grow and do well. Two men can soon put in an acre. Mark off the land in perfect squares eight feet each way, so the rows will be straight, and plant with one good bud above the ground. You will be surprised how quickly, easily, and cheaply a vineyard can be planted. Be sure to cultivate the surface soil so as to allow no weeds to grow the first season, and success is almost certain. A bearing vineyard can just as quickly be made from good cuttings as roots.—*California Agriculturist.*

Cranberries in Japan.—A young Japanese, while in the United States, expressed much surprise at seeing Cranberries eaten at the table, and said that in the monntains of Japan they grew very large and beautiful, but are never cooked. Some old man occasionally goes up to the mountain and picks a long basketful of them, which he brings on his shoulders down to the town. Here the boys gather about him, and for a small coin purchase the right to crowd their pockets with them. And what use do you think they make of this otherwise useless fruit? The boys blow the glowing berries through rattan tubes, as our boys blow beans through tin ones. That's what Cranberries are used for in Japan, where they grow to great perfection.

THE CULTIVATION OF SUMAC.

The Grass Valley *Foot-hill Tidings* draws attention to the fact that the foot-hills and other portions of California offer opportunities for the cultivation of the Sumac-tree. The leaves of this tree are a valuable article of merchandise, being used in the manufacture of leather. Tanning is becoming an important industry in the State, and Sumac contains more tannin or coloring principle than any other known vegetable product. In Europe the best Sumac comes from Sicily, where the climate greatly resembles that of California. It is also grown extensively on this continent, that raised in Virginia being considered the best article. The *Shoe and Leather Reporter* of a late date gives the following as the present market rates for the products for tanning purposes: "Hemlock bark is quoted from $15 to $16 per cord or ton; Quercitron, or Black Oak ground bark, $30 to $32 per ton. Mimosa bark, which is procured in Australia and in South Africa, is quite noted in the English market at $40 per ton; while the ground Sumac is quoted in all these markets for from $70 to $130 per ton, as per quality or grade." If we are not mistaken, some two or three years ago a

plant supposed to be Sumac was discovered growing wild in San Diego, and samples were sent on to Washington. It was, however, discovered that this, like the supposed wild Coffee, was not the genuine article. But there is no reason why the Sumac-tree may not be cultivated in California, as in Virginia and other Eastern States, with profit to the grower and with advantage to the leather manufacturing industry.

ACACIA TREES.

BY DR. A. KELLOGG.

[Concluded.]

In our zeal for the culture of Australian Gums and the other foreign timber-trees, let us not undervalue our own. Even prophets, as the proverb of wisdom hath it, are not without honor save in their own country.

Among Acacias, our native Locust-tree (*Robinia Pseudo-Acacia*) must still stand at the head of the list, for the following, among many reasons:

For ship-building it is found to be superior to Oak, Ash, or Elm; and for posts and rails, wet or dry, near the ground, it equals Cedar. It is of rapid growth, and, once established, is self-perpetuating. Gracefully ornamental in foliage or flowers, the former a light loose horizontal spray most delicately soft, gauzy, feminine, which never fails to grace lawn or copse, countenancing the grass and herbage, which thrives beneath its shade; with chaste white flowers, drooping like clusters of the Virgin's Bower, and fragrant withal. In point of taste it pleasingly contrasts with the more sombre Cypress, or deep-green foliage of Firs and Pines.

Besides, it grows well on any shallow sandy and gravelly soils, where Oak and many other good timber-trees will not thrive; and on good soils, tested with Oak, Ash, Elm, Maple, etc., surpasses them all. On gulches and drainage-washes, creek-banks, rivers, etc., it is prone to shoot up groves of suckers from interlaced root-runners, that fix such soils well, and so check the incursions and wear and tear of streams and occasional freshets; meanwhile furnishing the best of browsing scrub, timber, fuel, stakes, everlasting (?) hop-poles, etc. One of these suckers has been known to grow twenty feet high in a single season, and measure three inches in circumference, by authoritative measurement. In this respect its growth is quite equal to the Lombardy Poplar, that so often cumbers the ground, or the comparatively useless Willow. All this, mind, is mere underwood; for there is no poisonous drip, that kills most vegetation, from these trees. At the same time the proper timber-growth for ships' knees, floor-timbers, foot-hooks, and straight-grained trunk for pins, or treenails (trunnels, for short, as they are called), go steadily on prospering toward a never-failing market, for there is no end to the demand. Even the best Oak tillers are known to break sometimes near the head of the rudder in a gale; yet this has never happened with the Locust. This timber, though soft and brittle when young and green, is nevertheless very hard, tough, and elastic when of proper age, grown in open exposures, and well-seasoned. Tillers of all sea-going vessels at the East are now made of the Locust.

To prepare the hard-coated seeds, pour on boiling water and let it stand a day, then pour off the water and select out all the seed that are swelled; pour on boiling water again, and after standing a day pour off and select the swelled seed as before; then repeat. Plant

in drills four feet apart; in eight to ten days they will come up as regularly as Beans or any other garden seed.

All timber-trees should by no means be mutilated at all at the roots.

We have not spoken of these trees for hedges, but they bear clipping, and when woven readily graft or coalesce at the point of contact, and soon give a solid wall of twelve to thirteen feet high, and make good substantial wind-breaks, etc.

Acacia mollissima, or Very-soft Acacia, is a tree here of fifteen to twenty feet in height, of somewhat rounded form; the foliage of a soft green hue; branches and leaf-stems angular, pubescent; leaves of eight to ten pairs of wing divisions, each bearing thirty to forty pairs of linear much-crowded pubescent leaflets, a gland between each pair of pinnæ; heads of flowers on stemlets disposed in racemes along the auxiliary flower-stems, and so presenting one vast mass of fragrant golden blossoms, which magnanimously cheer the winter months of California. The bark is valuable for tanning, and the gum for food. Unlike the "Black-wood Acacia" (*A. melanoxylon*) it requires *some* pruning, or to be sheltered from the force of high winds. The same may be said of *A. floribunda*, or Bundle-flowered Acacia; (Syn. *fragrans*—perhaps some may consider *retinoides* the true name). Without extending this article through the great family, we can only briefly say, this tree is one of the most desirable because a perpetual bloomer. Like those of superabounding humor, who sweetly scatter flowers along life's social circles, so this charming tree carries onward the summer joy and the songs of flowers into autumn brown and sear; indeed, encircling forever with a golden garland of fragrant flowers Time's rolling years.

LIQUID MANURE FOR POT-PLANTS.

The beneficial results obtained from manure water, when judiciously applied to fruiting and flowering plants, have long been recognized by cultivators; and its use is now becoming more general. It is well known that the roots of plants are more healthy when growing in pure soil free from rank manure, and that these roots will draw more healthy nourishment to the plants from manure given in a liquid state, than when they are incased in rank material which they can not consume. We know that our most successful Grape-growers use very little solid manure in the soil—only a few bones or bone meal, or similar material, which can not give off more stimulant than the plants can consume. These will remain much longer in the soil than manure, which dissolves rapidly, and continue their action as a fertilizer to the end.

The successful florist has more faith in giving stimulants when the plant really needs them, than in keeping the roots buried in soil made rich and almost offensive by strong manure. When roots are few and the plants almost at rest, the purer the soil and the less stimulant the plants receive, the better will they thrive when their roots come to draw up larger supplies of nourishment. Moisture is needed to soften the soil and to allow the roots to extract nourishment from it; but when all the virtue is out of the earth, and the plants begin to show signs of distress, all the watering in the world will not give vigor to the exhausted functions. But let a portion of guano or any well prepared manure be mixed with the water sufficient to color it, and let this be repeated at every watering instead of giving a much stronger dose at long-

er intervals, and the result will be most satisfactory. We have tried a number of experiments this season with liquid manure, and all lead us to have faith in the application of it, at every watering, in a weakly state.

A number of old Fuchsias were stunted and pot-bound, but pressure of more important matters prevented our potting them into fresh earth; but to each watering a coloring of guano was allowed, and the plants with their pot-bound roots have not only made vigorous growth but flowered freely from June until November. Some Pelargoniums, which were cut down last season and allowed to break in the usual way, were shaken out of the pots and placed in smaller ones, but, when they should have been shifted, they were allowed to remain in the small pots, which were crammed with roots. Guano water was given at all times when they required moisture, and the plants grew and made fine foliage, and flowered better than the others which were favored with larger pots and fresh soil. We could give many other examples to prove that giving liquid manure frequently, and not until roots are in abundance to consume it, is the proper way to deal with this important assistant to cultivation.—*Florist.*

Origin of Plants.—Cabbages grew wild in Siberia; Buckwheat originated in Siberia; Celery originated in Germany; the Potato is a native of Peru; the Onion originated in Egypt; Tobacco is a native of South America; Millet was first known in India; the Nettle is a native of Europe; the Citron is a native of Asia; Oats originated in North Africa; Rye came originally from Siberia; Parsley was first known in Sardinia; the Parsnip is a native of Arabia; the Sunflower was brought from Peru; Spinach was first cultivated in Arabia; the Pear and Apple are from Europe; the Horse-chestnut is a native of Thibet; the Cucumber came from the East Indies; the Quince came from the Island of Crete; the Radish is a native of China and Japan; the Pear is supposed to be of Egyptian origin; the Horseradish came from the south of Europe.

SOME GOOD ROSES.

BY F. A. MILLER.

[Continued.]

There are some other very excellent Roses, besides those already mentioned, which are profuse and nearly constant bloomers, but they seem to do much better in one locality than in another; and again there are other and newer sorts, which promise fairly to establish a reputation as constant bloomers, but are not sufficiently tested to be placed side by side with those mentioned. These, together with some older sorts, form a most extensive group of most desirable Roses of excellent blooming quality.

Beauty of Waltham, very crimson; Duchess of Norfolk, bright crimson; Géant de Battailles, purple scarlet (an old favorite); John Hopper, rose and crimson (also an old and very popular Rose); Jean Bart, velvet crimson; Lord Raglan, velvet crimson; Louis Odier, bright rose; Madame Laffay, rosy crimsan; Maréchal Vaillant, reddish purple; Peter Lawson, deep scarlet; are some of the Hybrid Perpetuals which bloom throughout the summer season, and will under favorable circumstances produce a few flowers during our winter months.

Auguste Vacher, white, straw centre; Catharine Mermet, light flesh; Isabella

Sprunt, beautiful yellow Rose; Marie, copper; La Quintinie, rose; Souvenir d' un Ami, salmon and rose; Souvenir d' Elise Varden, white, yellow centre; Regulus, coppery rose; all of which are free-blooming Tea Roses, and are nearly constant during a mild winter. To this, however, I would certainly add a few, which are of a more recent introduction and seem very prominent: Bon Silene, Bougere, Marie Sisley, canary; Gloire de Dijon (old but scarce), Comtesse de la Bath, a most exquisite Rose, lately introduced here.

Souvenir de Malmaison, blush; Docter Berthet, dark crimson; George Peobody, purple crimson; and Louise Margottin, light rose, are free-blooming Bourbon Roses, and continue in bloom during the greatest part of the year.

Of the Bengal (or Daily) Roses, Citoyen des Beaux Mondes, Hermet, Madame Brean, Madeline and Prince Charles should be in every collection of Roses; they produce flowers profusely and nearly constant.

To this already rather extensive list, I may safely add the following Noisettes: Amie Vibert, pure white; Ophir, buff; Fellenberg, crimson; and Jaune Desprez, rosy buff.

The yellow and white Banksias also deserve a place in every garden; they are rapid evergreen climbers, and most excellent winter-flowering varieties.

The next point in the selection of Roses should be color. If only a few varieties are planted, certainly the colors should be very distinct and decided. To select colors from the descriptive catalogues is not always satisfactory, inasmuch as the terms used in them are much more decided than the colors are in reality.

Of the Hybrid Perpetuals, the following twelve are, in my opinion, the most contrasting, and comprise the leading colors:

Mad'lle Bonnaire, pure white.
Madame Vidot, satin blush.
Madame Rivers, pale flesh.
Jules Margottin, bright cherry.
John Hopper, rose and crimson.
La Brilliant, clear carmine.
Lord Raglan, violet crimson.
Gloire de France, deep red.
Géant de Battailles, purple scarlet.
Eugene Appert, brilliant crimson.
Black Prince, dark crimson.
Emperor de Moroc, very dark velvety crimson.

Of Tea Roses I would select the following as the most contrasting:

Devoniensis, creamy white.
Souvenir d' Elise Varden, white, yellow centre.
Isabella Sprunt, beautiful yellow.
Catharine Mermet, light flesh.
Duc de Magenta, bright rose.
Regulus, coppery rose.
Safrano, apricot to buff.
La Sylphide, flesh to pink.
Gerard Desbois, bright red.

Of the Daily (China) Roses I can recommend the following as the most decided colors:

Daily White, pure white.
Mrs. Bosanquet, clear flesh.
Madam Brean, fine rose.
Madeline, bright cherry.
Citoyen des Beaux Mondes, carmine to crimson.
Hermet, deep crimson.
Agrippina, brilliant red.

To these I would add a few of the Noisettes and miscellaneous Roses, such as:

La Marque, pure white.
Cloth of Gold, sulphur yellow.
Maréchal Neil, deep yellow.
Fellenberg, rosy crimson.
Persian Yellow, rich golden yellow.
Prairie Queen, rosy.

HARDY CLIMBING PLANTS.

There are two classes of climbing plants—those which are strong growers with large heavy foliage, and those of more delicate foliage, and of more delicate growth. The first are suitable for covering the ends of buildings, blank walls, and arbors; the second are more suitable for piazzas, verandas, and similar positions. For brick or stone walls, unfurnished with training-rods or lattice-work, the best climbers are Ivy, Virginian Creeper, and the Bignonia or Trumpet Creeper. These throw out rootlets from their stems and branches, and thus they attach themselves to the wall against which they are planted or trained. They are especially useful for covering brick or stone walls, as the walls defend them from the action of the weather; but are not so useful for covering wooden walls, because they must be torn off, to their great injury, when the walls require painting.

Of Ivies, the best for the purpose of covering walls is the *Hedera canariensis* or Irish Ivy, which has large foliage and is a rapid grower. *H. Rægneriana* has, also, very large foliage; while *H. helix*, the English Ivy, has small foliage. There are many varieties of Ivy with variegated foliage, but mostly delicate growers—except *H. marmorata* (or *H. latifolia maculata* of some catalogues), the foliage of which is large and beautifully marbled.

The *Ampelopsis* (*A. hederafolia*) or Virginian Creeper, is well known. It is not evergreen as are the Ivies, but sheds its leaves in autumn. These, for some time before they fall, are of a beautiful scarlet or crimson color. *Ampelopsis* is not nearly so much planted as it should be.

The *Bignonia* (*Tecoma*), or Trumpet Creeper, has lighter foliage than the Ivy or Ampelopsis, but the flowers are very beautiful. The species are: *T. radicans*, with reddish-orange flowers, and *T. grandiflora*, with orange-yellow flowers.

Aristolochia sipho, or Dutchman's Pipe (so called from the curious shape of the flowers), although an old inhabitant of our gardens, is seldom seen. It is a free-growing plant, with very large, striking foliage, and is very suitable for planting against and training up the columns or open-work pilasters of a piazza. There are two other hardy climbing species—*A. tomentosa*, and *A. ficifolia*—which have smaller foliage, and are not as strong growers as the first-named. They all require to be trained up, as they do not themselves take hold of the walls or other supports as do the Ivies, the Ampelopsis and the Bignonias.

The Wistaria is a well-known climber, and is admirably adapted for training up a blank wall or along the frieze of a piazza. There are now several species and varieties to be found in the nurseries besides the common Chinese purple. The best of them are the Chinese white, the long-racemed, the double-flowered, the Japanese white, and Magnifica. The Chinese white is not as strong a grower as the purple. It produces a beautiful effect when grafted into the purple variety or trained with it. The long-racemed variety is from Japan. It is a profuse bloomer, and produces racemes of flowers from two to three feet long. The double-flowered has very double dark purple flowers, but they are not produced in such numbers on the racemes as are those of the single-flowered varieties. The Japanese white is a profuse bloomer, producing large racemes of pure white flowers; it is an earlier bloomer than the Chinese white. Magnifica is a

strong-growing variety, with large-shouldered racemes; the individual flowers are very large, and of a deep purple. It is a very beautiful variety. Wistarias should be trained on No. 12 or 14 wire, well fastened—the hold-fasts being set three or four inches from the wall—and stretched taut by such means as are used for tightening buck-saws.

For cottages, or small piazzas, verandas, and porches, the lighter and delicate-growing vines are more suitable and appropriate. Honeysuckles, Akebia, and Clematises are best adapted to this purpose. Running Roses do not succeed so well in such warm exposures as when planted in the free air and trained to pillars made for the purpose. They are also liable to the attacks of insects which greatly disfigure them, and would thus give a neglected, slovenly look to the veranda, were they trained against it. The climbers here recommended are nearly, if not entirely, free from the attacks of insects.

Of Honeysuckles, the Chinese, the Golden-leaved, and Halliana are the best adapted for the purpose of which we speak. The well-known Red and the Yellow Trumpet Honeysuckles are also excellent in shady situations; but the Belgian, the Monthly, and most of the other sorts require cooler and more moist situations than are likely to be found in close proximity to a dwelling. *Akebia quinata* has digitate leaves, from two to three inches across, which remain on the plant far into the winter. It is a rapid grower when established, and produces a profusion of curiously shaped chocolate-purple flowers, of a very peculiar but not disagreeable odor. It is perfectly hardy, and is to be highly recommended for this purpose.

The varieties of Clematis have been so largely increased within the past few years, that it is almost impossible to say which are the best. But few of them have ligneous or truly woody stems, and of these, the hardiest and best two are *C. Virginiana*, a native species, and *C. apiifolia*, a Japanese species. Both have white flowers, produced in July and August, and are rapid, strong growers. The varieties of Clematis that produce their flowers on shoots of the same year's growth are too many to be here enumerated. Many of them have flowers, five, six, and seven inches in diameter, and of almost all shades of color. Some are pure white, some of different shades of blue, purple, mauve, crimson, and violet. The following, among the leading sorts, are easily grown in any good soil; preferring a rich loam and to be well mulched with manure:

Jackmanni, of free growth; flowers intense violet-purple, abundantly produced from July to October. *Lanuginosa nivea*, similar in habit and growth to the preceding; flowers, pure white; a constant bloomer from June to October. *Rubella*, similar in habit and growth to the first; flowers large, of a deep claret color, freely produced from July to October. *Rubra violacea*, like the preceding, but having the flowers maroon-purple, flushed with reddish-violet.

Great attention has been paid of late years, in England, to this family of plants, and a work especially published about them. In this country, Messrs. S. B. Parsons & Sons, of Flushing, N. Y.; T. C. Maxwell & Brothers, of Geneva, N. Y., and Mr. John Saul, of Washington, D. C., have paid special attention to them, and have all the leading varieties. They are a lovely class of plants, and we can not too highly recommend their cultivation.—*American Garden.*

FLORICULTURE.

BY AN AMATEUR.

Gardening is founded on natural philosophy, and the smallest economical principle in its theoretical study, of course, initiates the mind into the nature and truth of the practical culture of flowers, and we can discover the habits of those plants we wish to cultivate with success. Where nature has not endowed the mind with a taste for the physiological principles of Floriculture, it is time almost lost to endeavor to acquire it.

"What then is taste, but those internal powers,
Active and strong, and feelingly alive
To each fine impulse? a discerning sense
Of decent and sublime, with quick disgust
From things deformed, or disarranged, or gross
In species? This, nor gems, nor stores of gold
Nor purple state, nor culture can bestow:
But God alone, when first his active hand
Imprints the sacred bias of the soul."

Where taste really does exist, there is a pleasure bestowed on the mind which serves to benefit our lives greatly; more than is apparent to the common observer. This will not appear strange when we reflect on the solace the mind undergoes at leisure moments, even to the business man, or housewife. The evenness created in the temper, the pleasurable change experienced after the pursuits of business or labor, tend to create in the mind that which it stands in need of, a blissful feeling, an incentive that keeps the body in health and vigor. The time in the occupation of gardening, after the business of the day is over, if not then passed, would be likely to be employed in some perhaps injurious luxuries, or some merely temporary pleasure, which would only debilitate the mind and constitution.

That department of gardening which relates to the culture of plants is not of difficult management, and does not require the skill so generally supposed necessary to be bestowed on them. Many plants are killed by over-kindness, when it should be borne in mind that they, like the human family, require a state of rest; therefore they should not be kept constantly in a growing state, though it is not always easy to perfectly prevent this in our stimulating climate and soil.

For instance, a person deprived of his natural rest becomes eventually unfit for his vocation; not only that, he must live regularly, or he will never be vigorous or of a healthful habit. Plants are living things in some sense. Nature has not endowed them with speech, it is true; still, by watching them closely, there are such signs in their appearance, if not treated correctly in their habits, as will convince the cultivator that a different system must be adopted. Therefore to come as near nature as possible, our understanding should teach us that plants in pots should be repotted into fresh soil in their season—that is, when in a state of rest—and be watered only when growing, to make them healthy, and the soil should, as nearly as, we can possibly find be such as suits their natural habits. By doing this we make them healthy, and in a fit condition to perform the functions so desirable in them to flower at all. This is the business of the amateur to see to, and it may be considered their food and rest, without which no science in gardening can prosper.

Gardening, as an amusement, is certainly one of the most pleasing of recreations, possessing much novelty, creating a pleasant enthusiasm, and is such food for the mind as softens the passions, improves the understanding, and adds many moments of happiness to that existence which our Maker has blessed us with. The mind is filled

with a pleasing excitement in the attainment of a new plant, thus giving to science an opportunity of still further increasing pleasures that are most beneficial and therefore desirable. The diffusion of a useful knowledge in gardening is also communicative from one person to another, making our condition as rational beings more elevated, and developing our ideas as they expand, and is more influential in the path of life, even to the most humble attainment in vegetable physiology.

There has been, in many works published, a mystery upheld on the subject of gardening and the propagation of plants. For what reason, may it be asked, has this dogmatical system predominated so long? This can not be answered, unless it be argued that the whole system has been confined too much to certain classes of men, who, instead of endeavoring to create a taste for flowers, have been studious to conceal their knowledge, and thus to check Floriculture; unmindful at the same time that the more converts gained to the system of gardening the more plants would be sold by them. I am happy to say, that now the knowledge of their cultivation is becoming better diffused; indeed, the whole art is in a state of rapid revolution. We can not turn to any place but we see some of the most beautiful gems of Flora almost at every home. This is as it should be. Ladies will find a solace to their minds in their leisure hours, that could not be better employed.

In regard to gardeners in general, in this country, most of them are self-taught, and this reflection on this particular subject ought alone to convince those who have a natural taste for the science, that the art is attainable. This will better encourage all persons to cultivate flowers.

The Scotch gardeners are considered the best in Europe. We seldom find an English gardener on his arrival in this country, capable of conducting greenhouse as it should be conducted. This leads a person to suppose that those *exotics* are only employed in the drudgery of weeding in their native country, and when here wish to pass for *bona fidé* gardeners. Indeed, even most of the experienced English gardeners find their knowledge of cultivation in this country deficient, as the difference of climate and soil varies materially from what they have been accustomed to. But a scientific man will soon discover the difference and alter his mode, if not too old in his fixed principles or prejudices.

There are other sciences attached to gardening that help to make the system more complete, which are understood but partially in practice, and not at all in theory. I allude to Botany—that part that relates to plants; it is a branch that ought to be studied, as it leads the mind to a thorough knowledge of the distinct species of plants, their properties, sexes, order, and indeed the whole system. The ground-work of this science leads the mind to a knowledge of many important particulars in relation to flowers. To know how to anatomize flowers is particularly interesting to the cultivator, though not absolutely necessary. It is obvious that this study tends to refinement, and its knowledge is essential to the mind; the materials thus created attract friends, who seek for information. Thus we find a pleasure in diffusing the usefulness we may attain by study.

There are but few *florists* that are *botanists*. This may appear strange, but it is an incontrovertible fact. Both pursuits may be studied in leisure moments without interfering with each

other; and if florists understood the fundamental principles of Botany many errors could be avoided or corrected that are now existing, as the practical botanist is sometimes arbitrary in his rules, which are out of the power of the theoretic florist to correct.

Chemistry is another branch highly essential to the art of gardening, which will be understood better before many years elapse. The farmers will find it necessary to know the *quality of the soil they make use of, to insure success* in this business, as well as the practical gardener.

It is not my object to crowd the mind of the young amateur in the art of gardening, or its requisites; for it is simple, and can be carried on without understanding all the theories of Botany or chemistry. I only wish to point out the great *desideratum* of a valuable acquisition to the mind, if these theories could be attained. Educated to these sciences, the mind would be elevated above the condition that falls to the lot of practical gardeners, and the field of science would be open to discover things that are not now contemplated by them.

"WOODS."

FROM A LECTURE BY PROFESSOR BESSEY, OF THE IOWA AGRICULTURAL COLLEGE.

Few objects in nature are of more interest than trees; not only to the naturalist, who sees in this masterpiece of nature a complicated machine, pumping up sap in great quantities, and evaporating it from the myriads of breathing pores in the leaf, and pushing its roots far down into the soil, but also to the merchant, who sees in it a material that is essential to the manufacture of many indispensable articles. Not only do trees attain a size far surpassing that of any other living thing, but the age they sometimes reach is almost inconceivable. Think of the Big Trees of Calaveras being alive 3,100 years ago, when the names of Homer's characters were familiar sounds. Or of the Dragon-tree, on the Island of Teneriffe, which died in 1867, after standing 5,000 years. When Moses was writing the *Pentateuch* this tree had been alive for more than 1,000 years; when the Big Trees of California were seedlings, it had seen centuries; when Rome was in its glory this Dragon-tree had passed its prime. Thus it was the only living link connecting pre-historic with modern times.

The lecture will not consider this branch of the subject, but will refer to trees having a commercial value. Among the many useful products of trees—food, medicine, balsam, gum, timber, etc.—the latter is most valued by us. Timber is divided into two kinds—soft and hard. In the former class are the different varieties of the cone-bearing family, and Poplars, Cottonwood, Lindens, etc. In the latter are the Oaks, Walnut, Hickory, Elms, Maples, Laurels, and others.

The cone-bearing are the most valuable for soft-wood timber, and almost all countries north of the equator have some representatives of this important family, while south of it these trees are replaced by other families, such as the Gum-trees of Australia and the Norfolk Island Pine. Europe is furnished with soft wood for many purposes by the Scotch Fir, which grows to the height of from seventy-five to one hundred feet in the mountainous parts of central Europe. It also occurs abundantly in the northern part of both Europe and Asia. The White Pine, that formerly covered immense tracts of the northern United States, and that still forms large forests, is useful for the

same purposes as the Scotch Fir. It grows much higher than its Scotch relative, often reaching a height of from two hundred to two hundred and fifty feet, but it is of small diameter, seldom more than three and a half to four and a half feet. The Yellow Pine, a tree of less than a hundred feet in height, takes the place of the White Pine in the South Atlantic States, growing there extensively, especially in Georgia and South Carolina. Its wood is heavy, dense, and full of sap, and becomes very hard when thoroughly dry. This makes it valuable for flooring, and for this purpose large quantities are sent to the Northern States, and even to California. Many thousand feet were brought to San Francisco to be used as flooring in the Palace Hotel.

The Sugar Pine is a California tree that furnishes to the West what the White Pine does to the North, the Yellow Pine to the South, and the Scotch Fir to Europe. We thus see that these similar trees supply the same need in the different parts of the northern hemisphere. The Sugar Pine is a very close relative of the White Pine, and differs from it only in size, being much larger. On account of the lightness and strength of the wood, of its having no tendency to warp, and its taking paint well, it is used for doors and window-frames; and but for the fact that there are other varieties of the cone-bearers here, would be as universally used as its relative in the Eastern States. The Redwood, a species of Cypress, is the lumber-tree of California. It is peculiar to this coast, and is restricted even here. Professor Gray, from fossils found in the Northern States, has concluded that the Redwoods are the remnants of a former gigantic race that covered a large part of the country. They are a dying race, that have for some reasons survived longer in this State than elsewhere. The Douglas Spruce, found in the Rocky Mountains and in California, has been found to be more serviceable for railroad ties, sidewalks, and for other purposes, than other soft wood. The Oregon Pine, one of the most valuable woods on this coast, is firm, strong, and elastic, and has been proved to be as useful for ship-building as hard woods. As the wood is much lighter than the hard woods, the same weight of cargo does not sink these ships as deep into the water as Oak-built vessels. And, as the wood is very elastic, the masts and spars, although bent by a heavy press of sail for a long time, spring back to place when the pressure ceases.

There are other varieties of cone-bearing trees in California, but as their properties have never been thoroughly investigated, they have no market value. The foregoing are the only soft-wood trees of value in California, but they replace all the soft timber of the Eastern States, except that of the Tulip-tree or Yellow Poplar.

The Oaks are the most important of the hard woods, as the Pines are of the soft. The British Oak is known in every part of the world which English ships visit, and probably much of the efficiency of the British navy is owing to the abundant supply of this wood. Its value was understood many years ago, and plantations were set out, so that many ships now sailing are made from Oak planted in these places. The only American Oak of much value for ship-building is the Live-oak of the Southern States; and as this occurs south of the places where ships are built, inferior woods have been substituted.

California has no equal of the British Oak. For the common Evergreen Oak, such as occurs in Alameda County, no

use has as yet been found. The Tan-bark Oak, which was long considered useless as a timber-tree, has been found to become, after proper preparation, a hard, tough wood, suitable for making wagons, agricultural implements, etc. The history of this one tree should incite a study of the properties of the trees now considered useless. The Cañon Oak, found in the cañons of the California mountains, is useful for ship-building, and resembles the British Oak. We can conclude, from a study of the woods and uses to which they are applied in one part of the world, what woods would be used in another place for the same purpose. Thus a study of English woods and their uses would indicate that similar woods would be used for similar purposes in other parts of the world.

There are many other varieties of hard woods. The Walnuts, of which one species is found in California, furnish useful timber; the Black Walnut especially. The Hickory, white, tough, and heavy, is used where great strength is required in a small space, but, as it is subject to attacks from insects, it can not be used for pillars. The Elm, Ash, and Maple belong to the Eastern States; one species of the latter, however, being found on this coast. The Laurel, which is coming into extensive use as an ornamental wood, is peculiar to this State. The Mexican hard woods, White Mahogany, Rosewood, Ebony, etc., will probably be largely used before long.

These few facts have been thrown together to incite the hearers to properly investigate and study the wood of trees now considered useless, with a view to their supplying the place of timber yet lacking on this coast, and enabling them thus to contribute to the wealth and prosperity of California.

CHINESE FRUITS.

BY DR. A. KELLOGG.

Long-yen and Li-tchi.—Many Chinese fruits are well adapted to California, especially the sheltered southern and middle portion of the State.

Among these are "Long-gan" or "Long-yen" (*Dimocarpus Longan* and *D. Li-tchi*). Both species are trees, but there are many varieties cultivated in southern China and the East Indian Islands. They differ in the quality of the flesh and time of ripening; also, in the shape of the fruit, some being globular like the Li-tchi so common on the Chinese fruit-stands of San Francisco; others are heart-shaped, or oblong, but nearly of the same size. Long-yen is also medicinal.

The twigs are thick and gross like the Fig, leaves oddly pinnatifid like the Walnut. The fruit is produced in long loose racemes or clusters, somewhat like an open bunch of very large Grapes, usually red when ripe. In one species it continues green. Both Li-tchi and Long-yen are of a uniform light-brown color as they appear sun-dried or oven-dried in our market. In the recent or fresh state it has a leathery coat, rather thin, and inside is a semi-transparent substance with a dark-brown seed in the centre. The flavor of the pulp is slightly sweet, subacid, and particularly pleasant to the taste in a warm climate. It should be remarked that when dried the pulp is shriveled and reduced to half its usual size. It is eaten with tea, and has a rich taste when well preserved. By the buckle-like or truffle markings of the cinnamon-brown surface, and thin brittle bladder-like shell, anyone will easily recognize it.

The trees bear fruit much sooner when raised from cuttings—if from seed eight or nine years are required,

whereas from cuttings only three or four years.

The best authorities now place these under the earlier Genus *Nephelium*—*N. cappaceum*, one of the most ornamental and wholesome.

China Peaches.—Some varieties grow to the height of forty to fifty feet, with fruit of great size. Marco Polo saw a Peach in the District of Cang-chew that weighed two pounds. In general the larger sorts are considered to be of inferior flavor, although some Peaches in the Emperor's District are said to be as exquisite and meltingly delicious as the best European. The gardeners have the secret art of preserving the fruit gathered in October until January, as nice in flesh and flavor and as smooth as in the fresh state. It should be noted that in China Peaches are budded upon stocks raised from seed or pits of the choicest varieties. The flat variety flowers in autumn, ripens very early, and with California excess of winter sun would do well.

Germinating Seeds of Locust-trees.—A correspondent of the *Scientific American* says: "The seed of the common Locust-tree will not only stand the temperature of boiling water, but will always fail to grow unless boiled for eight or ten minutes. My father planted about 15,000 seeds of the common Locust on four acres of land, and only about fifty seeds germinated. We now boil them for ten minutes, or place them in cold water and allow it to come to a boil, and remove them three minutes afterward. These seeds will grow finely after a large brush-pile has been burned over them. These are facts, occurring every year, to my personal knowledge."

ORANGE CULTURE AND THE HAWAIIAN ISLANDS.

The proposition to admit Hawaiian fruit into the United States free of duty has created considerable alarm among the Orange culturists of Southern California. The Chamber of Commerçe of Los Angeles has formally memorialized Congress against entering into a treaty which may contemplate any such result, alleging that it would be a death-blow to one of the most important industries in that portion of the State—Orange culture. There is really no cause for alarm on any such score. It may be interesting to the Orange culturists of California to learn that the Hawaiian Islands have not been exporters of Oranges for many years, and they have ceased to produce more than enough for their own consumption. If we are correctly informed, the Orange-groves of Hawaii have long ago been almost annihilated by the very same pest which is now threatening the Orange-groves of southern California with destruction—the obnoxious scale-bug or Orange *coccus*. The Orange culturists of southern California have much more cause for alarm in the growing depredations of this insect than they have from any probable competition with the Hawaiian Islands. The disagreeable stain with which the rind of Los Angeles Oranges is covered has been so marked, during late years, that a good deal of the fruit is no longer presentable in the condition in which it is shipped to market. If the evil is one which can not be remedied, then it is a misfortune much to be deplored; but if it is owing to a want of care and to inefficient culture, the sooner Orange culturists set about correcting it the better. We would call attention to another thing in this connection. During the last two

seasons the native Orange crops have been large, but there has been a corresponding decrease in the size of the fruit. Complaints are thick on this account, especially from consumers in the remote sections of the interior. The diminutiveness of Los Angeles Oranges this year is such as to materially injure their market value, and, instead of commanding the top price at which this description of semi-tropical fruit is now selling here, it is difficult to dispose of it at second or third rate prices. The remedy is in the hands of the growers themselves. Instead of allowing the trees to carry more fruit than they can nourish, thinning out will have to be resorted to, so that what is left on the trees may attain full growth. There is perhaps as much danger to the Orange culturist's business from this cause as there is from the ravages of the scale-bug, and much more than there possibly can be from the competition of a country that is now almost a non-producer of Oranges.—*Bulletin.*

DIGGING AND MANURING ABOUT FRUIT TREES.

Where I first began my gardening career, it so happened that a change of gardeners took place; the new-comer being a very energetic man. Finding the out-door fruit-trees in a bad condition, he set us at once to work removing all the old soil out of a Peach border to the depth of about two feet, the border being about 150 by 12—commencing at the front and working the soil out behind us to be taken away, with the exception of about a foot and a half of the surface soil, which was mixed with the new, for placing on the surface again. The border contained only poor, light soil, with a yellow, stiff, and also poor rocky subsoil, through which the roots were trying to penetrate; hence the starved condition of the trees. Proceeding with our work, we carefully preserved all the roots, both good and bad, until we had worked all the soil out with forks, keeping the desired depth, which allowed the soil to fall from among the roots with greater facility. After the old soil was removed, it was replaced by turf, cut some months previous from a meadow, mixed with a little dung (not leaf-mold) taken from a farm-yard. When we came up to the level for the roots to be laid down, we spread them openly and evenly, leaving only the best, which were very few for such large trees. We then put the same compost above the roots, treading the whole firmly, and lastly the old fine soil on the top, which completed the task. The following spring the trees broke out with renewed vigor, looking all that could be desired, but I did not remain to see the first year's crop. However, on paying my late master a visit last year, he informed me that they were now all he desired, producing heavy crops of the finest and best-flavored fruit.—*A Young Gardener.*

India-rubber-tree in California.—J. P. Rowe, writing to the *California Agriculturist*, gives the following information: In answer to one of your correspondents who inquired some time ago about India-rubber-trees, I wish to inform him that they grow as easily here in California, as the Blue Gum and Pepper-trees. Here are the statistics of one grown at Captain Wilcox's town residence, San Diego: Age, two years; height, seven feet eight inches; circumference, five inches. It has been in the garden twenty months, and during that time it has grown seven feet.

Editorial Portfolio.

OUR FRONTISPIECE.

Our number this month is embellished with cuts of three favorite garden flowers — the Gladiolus, the Tuberose, and the *Tritoma uvaria*—for which we are again indebted to that eminent, indefatigable, and popular florist, James Vick, Esq., of Rochester, N. Y. These flowers are all pretty well known, and therefore require no long description; besides, we have before written upon their character and cultivation in previous volumes of the Horticulturist.

The Gladiolus is the most beautiful and showy of our bulbs, being of almost every desirable color—brilliant scarlet, crimson, creamy white, striped, blotched, and spotted in the most curious and interesting manner. There is no other country in the world where the Gladiolus, and indeed nearly all other flowers, thrives so well as in California—at any rate for such a length of time in the year.

The Tuberose is a beautiful, pure white, wax-like, very sweet-scented double flower, growing on stems three feet high, each stem bearing a dozen or more flowers. Our cut is much reduced in size, but gives a good idea of its appearance when in blossom.

The *Tritoma uvaria* is a stately vigorous plant, sending up its strong flower-stems five or six feet in height, surmounted by a curious spike of red and orange pendent flowers, a foot in length. It is very striking and brilliant in color, and is very conspicuous and gay in our gardens in California in the winter and spring, at a time when we have the fewest plants in flower.

Oak timbers with their ends encased in cork have lasted 600 years.

VISIT TO F. LUDEMANN & CO.'S NURSERY.

The grounds and plant-houses at this establishment are quite extensive, and comprise the cultivation of everything in this line that can be required by the public. There are some things that of necessity must run out some years, or at least nearly so, for there are manias or fashions for the demand of particular plants and flowers at one period or season more than another, just as there is for certain articles in the fancy hat, ribbon, artificial flower, or dress business.

Most of our best florists have their specialties. F. Lüdeman & Co. have just now in this respect Pansies and Orchids. Some of the seedlings of the first genus of plants are very beautiful, distinct, and rare. They are of all colors and marking; some of a velvety black, dark purple, maroon, etc., with white or yellow borders and brilliant golden eyes, relieved above or below with white or ultra-marine tints, showing splendidly in the sunlight. Some of them are striped or mottled most handsomely or curiously. In fact there is an almost endless variety of them. They are raised from imported German seed.

This firm has just received a large importation of new Orchids from Guatemala. They comprise forty varieties, and from three to four thousand plants. Among them are *Casleya Skinnerii*, *Odontoglosum grandis*, *Lælia superba*, *Lælia acuminata*, *Epidendron mocorolum*, *Epidendron Stamfordiana*, *Lycosta Skinerii*, *Epidendron Cnemidophora*, *Odontoglosum pulcherrima*, and *Stanhopia* in varieties. The *Orchidaceæ* is the type, as is well known, of the most extraordinary and remarkable order known in the whole range of vegetation.

THE OLIVE.

There are not many kinds of fruit-trees that we can more confidently recommend to our horticulturists and landowners in California—at any rate in all parts of the State, except, perhaps, the extreme northern portion of it, and on too lofty mountains—than the Olive. It is true, it is a tree of rather low growth, especially on too elevated positions, and where the soil is rather poor and with little depth, but on good soil and in the warm and rather moist valleys it has proved hardy and productive, and its cultivation is not at all an untried experiment, for numbers of them are doing well and bearing fully in most of the old missions of the country. It is a tree that has proved itself both hardy and productive, and a great quantity of oil has been made from it, with a good profit.

The Olive may be advantageously grown on all grounds for ornament as well as use. Its continual verdant appearance and dark purple berries are pleasant to the sight, and it makes also a good shade on account of the density of its elegant foliage. A late practical writer, Dr. John D. Scott, says: "They are easily and cheaply propagated by pieces of the roots, suckers, seeds, or cuttings. The latter mode is most generally adopted. A trench is dug six or eight inches deep, and the soil thrown out on one side. On this inclined bank cuttings about a foot long and from one to one and a half inches in diameter, are laid about a foot apart. The ditch is now filled up and the soil drawn up to near the top of the cuttings. But one stem is permitted to grow. The soil is kept loose about the young trees and free from weeds. They are watered occasionally, and at three years old they are ready for the orchard. Their distance apart is thirty-six feet in light, hilly soil; in rich soil, forty-eight feet. Vegetables, Corn, Beans, and other light crops may be cultivated in the interspaces to help to pay expenses until the Olives come into full bearing. They begin to bear here in the sixth year, sometimes earlier, and the fruit may be profitably gathered and converted into oil about the tenth or twelth year."

They might be planted with advantage probably in orchards with other fruit-trees—say every fourth space, as they would outlive the shorter-lived trees. A full-grown tree produce from fifty to seventy-five gallons of oil annually, which at $4.50 per gallon would far outstrip in value any other fruit-tree—the far-famed Los Angeles Orange not excepted. Some exceptional trees have been known to yield 300 gallons each in a year, which would be worth more than the whole annual product of some farms that we are acquainted with.

We would recommend the planting of Olives, particularly in public watering-places, on account of their not being likely to be injured or destroyed with sticks and stones by visitors or strangers, as most other fruit-trees are, for the sake of their fruit. Fig-trees also may be advised to be planted in the same situations in preference to other fruits, as their fruit is mostly eaten on the spot, and from its softness not carried off in the pocket.

The writer above named also says: "The Olive-tree is of extraordinary longevity. Some are known to be 400, others 700 years old at the present time, and bid fair to flourish for many centuries yet to come. There are some in Italy which are supposed to have been in existence since the time of Pliny. Others still linger about the Mount

of Olives, but whether they ever extended their sheltering boughs over the kneeling Saviour, history, perhaps, will ever be silent."

Its timber constitutes one of the most valuable of woods. It takes a high polish, and is greatly prized by cabinet-makers. It is used extensively in inlaying with other valuable woods. The wood of the root, when polished, presents a marbled appearance, and is used for making snuff-boxes, dressing-cases, and other ornamental articles."

CATALOGUES RECEIVED.

"Descriptive Catalogue of Evergreen and Deciduous Trees and Shrubs cultivated and for sale by F. Lüdemann & Co., at the Pacific Nursery, Baker St., between Lombard and Chestnut, San Francisco, Cal." See notice, p. 157.

VICK'S FLORAL PREMIUMS.

For the purpose of encouraging the culture and love of flowers, I authorize the officers of every State and Territorial Agricultural Society in the United States (and when there are two prominent societies in one State, both), and the Provinces of Canada, to offer in my behalf, the following premiums:

For the best collection of Cut-flowers, $25.00; second best, $10.00; third best, $5.00; fourth best, Floral Chromo.

The offer is made to amateurs only, and the flowers to be exhibited at the regular annual fairs. The awards to be made by the regular judges, or by any committee appointed for the purpose. When only one collection is exhibited the judges may award the first, or any other premium, according to merit; but the exhibition must be a creditable one, and if not so, in the opinion of the judges, no premium to be awarded. The flowers not to be made up in bouquets but exhibited separately, and named. I shall not consider this offer accepted by any society, unless published in the regular premium list, so that all may have an opportunity to compete. The money will be forwarded by draft on the bank of New York City, as soon as the award is made known to us, either to the officers of the society, or to the persons obtaining the premium.

I also authorize the officers of EVERY COUNTY SOCIETY in America to offer one of my FLORAL CHROMOS for the best exhibition of Cut-flowers. Now let us have some grand exhibitions of flowers.

JAMES VICK.

MECHANICS' FAIR.

The Tenth Industrial Exhibition of the Mechanics' Institute will be held in their Pavilion on the 17th of August. We are happy to observe that Horticulture is to be well cared for, and that medals and premiums will be granted to meritorious exhibitors of plants and flowers and fruits. A large number of plants and ornamental trees have been placed in the garden, and are growing finely.

OVERLAND MONTHLY. — By consent of the best judges the May number of this popular periodical is even ahead of many of its predecessors in depicting the scenes and characters of the Pacific slope. "Big Jack Small," by F. W. Gally, is inimitable, and most of the other articles are of the highest order, and calculated to enhance the reputation of the magazine. J. H. Carmany & Co., publishers, 409 Washington St.

CULTIVATION OF FRUIT AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

In the culture of fruit, as in all other undertakings, we can not impress the orchardist too strongly that it should be performed in the most thorough manner to insure complete success, especially as regards young trees. He should be very careful not to injure the stems and the roots in plowing for the purpose of keeping his land free from wild grasses and weeds.

In practicing this necessarily constant cultivation of the soil, it will be found too expensive to restrict it to hand culture with the spade and fork. This may answer best for all dwarf fruit-trees, but it will be found too costly for the general orchard. Shallow working the ground with the plow and cultivator will be found the most judicious and least hurtful method, with suitable applications of manure when the natural richness of the soil becomes too much exhausted. Upon this occurring (which in California fortunately takes some time, so great is the general fertility of the land), by giving a dose of lime, horse-manure, or of marl or ashes, we shall infuse a new life and growth and productiveness that will astonish and delight us for our outlay and labor.

It is much better not to allow an orchard to become sodded, but to keep it always cultivated, and the earth loose.

It is an injurious practice to allow the branches to become too thick and long, and not cleanse the bark when it becomes foul and mossy. Some skillful annual pruning can not be dispensed with, and it is one of the most important operations that we can perform upon plants — especially woody plants. This has to be performed at several periods of their existence and growth. The season for pruning has been made the subject of animated discussion, and different periods have been very confidently indorsed by different authorities, from which it may safely be inferred that all are somewhat right, or may be supported by good reasons. This refers to pruning in its general sense, and applies to the removal of limbs of greater or less size. We always desire to avoid the removal of large limbs, and should endeavor to provide against the necessity of such removal by trimming our orchards sufficiently when they are young, and while the branches are small; but when such removal becomes absolutely necessary, it should be performed late in the fall, when vegetation here is partially at rest. For the removal of small limbs from young trees, hardly any time can come amiss. Better to do it out of season, than to neglect it.

Thinning fruit is not so much practiced as it should be, particularly on the Apple. Old trees are often too fruitful; so much so as not only to deteriorate the fruit, but to injure the tree itself. This is so much the case with certain varieties, as to constitute a serious objection to planting them; other sorts so exhaust themselves by overproduction in one season, as to be barren, or nearly so, the next year, during which period of rest they are able to recuperate their energies and to provide a new set of flower-buds. The Grape-vine is capable of sustaining a most wonderful amount of fruit on this coast; but on young vines especially it is very bad policy to allow of this overproduction. Whenever an old Apple-orchard has reached this condition of overfruitfulness the best method of thinning is

to give a severe winter-pruning; removing portions of the spray, and encouraging the free growth of young wood in various parts of the top, to replace the older portions that were removed.

The modes of keeping fruits are exceedingly various, and some of them are quite primitive here, and do not require the same care as in the East. The *desiderata* are coolness and dryness, and the latter should not be carried to too much desiccation. Fruits for market should be well selected, and of a like average quality throughout, and not fixed up for sale with the best only at the top of the boxes, or ends, or sides, whichever are to be first opened, while the inferior fruit is concealed within, as is too often the case. Honesty is the best policy everywhere, and dealers soon learn to discriminate in favor of the brands of honest packers. It is believed that any orchardists who will take pains in the selection of their fruits, and in the excellence and honest measure or weight of their packages, will soon establish a reputation that will be of great value to them in their offerings and sales.

As to our markets—the vegetable market about the 16th of last month (April) was flooded with Asparagus, which had reached the lowest notch on the scale of prices, being then quoted at only 5c. to 8c. New Potatoes about the same time came into market in large quantities and in improved condition; the scarcity of old Potatoes was therefore only slightly felt on that account. The former retailed at 5c. to 6c. per lb. Sugar Peas were abundant at 12½c. per lb. Sweet were down to 10c., and common Bay continued firm at 8c. Cucumbers were to be had in limited quantities at 15c. to 25c. each. Artichokes were unchanged, retailing at 50c. per dozen. Rhubarb was selling at 6c. to 10c. per lb.; Horseradish, 20c. to 25c.; Dried Chili Peppers, 50c.; Spinach, 8c.; Field Lettuce, 15c.; Oyster plant, 75c. per dozen bunches; Thyme, 50c.; Kale, 50c.

There was not much change to note in fruit. Strawberries were more plentiful, riper and cheaper. The retail prices were 35c. to 50c. per 1-lb. basket. The supply of Oranges was undiminished, and prices were firm. Imported tropical fruit and California dried descriptions were steady at last quoted prices. Green Apples were scarce and poor. Mangoes, 50c. per dozen; preserved Bananas, 25c. per lb.

California Oranges came forward very freely, and met with ready sale. During the middle of April, another cargo of Oranges arrived from Tahiti. This fruit was, however, quite sour, and sells very slowly. The market was plentifully supplied with Bananas, received by the *Mikado*, from Honolulu, and with Pineapples and Limes by the last Panama steamer. Oregon Apples were received in large quantities by each steamer, and sold at high prices. Oregon and California Apples retailed at $1.75 to $3.50 per box.

About the 23d of last month (April) the list of seasonable vegetables was rapidly increasing, the addition being Summer Squash and String Beans. Asparagus especially was very plentiful and fine—so much so that it was sold at 3c. per lb. in many instances. This will prove a warning to the cultivators of that favorite vegetable, that sufficient beds of it have been made for market use for a year or two to come. Green Peas and Rhubarb also were in abundance, and prices were rapidly declining. Cucumbers were maintained, as the receipts were still limited to small lots raised under glass. Onions sud-

denly became very scarce, and prices showed an important advance. The market was well supplied with Potatoes, and rates were easier. The supply of String Beans was, of course, very limited, and the price ranged from 40c. to 50c. per lb.; very little being sold at the latter figure. Summer Squash was also quoted at 50c. per lb., and Windsor Beans at 8c. New Potatoes continued unchanged, the price of old crop being well kept up. Sugar Beans were selling at 10c. per lb.; Sweet do. at 8c. to 10c.; Common Bay at 6c. Horseradish was 15c. to 20c. per lb.—a decline on former rates. Rhubarb was down to 5c. to 8c. Asparagus could be had at almost any price the purchaser chose to offer, although the nominal prices asked by retailers ranged from 5c. to 8c. Kale was sold at 50c. per doz.; Herbs at 50c. per dozen bunches; Oyster plant, 75c.; Spinach, 8c. per lb.

Strawberries were the chief feature in the fruit market, and notwithstanding the frost in many districts there was a threatened glut in the market of this delicious fruit. One pound baskets were selling about the last of April at 15c. to 25c. each.

Another cargo of Tahiti Oranges found its way into the retail market, and the supply of native Oranges was still kept up. Pears were scarce and poor. Imported tropical fruits were in good supply at unchanged prices. A small lot of Cherries was received on the 23d of April from Vacaville, Solano County, and for early specimens were in good condition and pretty ripe. They sold at $1.50 per lb. As the season advanced, cheap Oranges were disappearing, and for good to choice California 50c. to 75c. per dozen was asked. Tahiti Oranges were selling at $1.00 per dozen for the best, and from that figure down to 50 cents, by market men, though peddlers sold an inferior kind at a lower price. Other kinds of seasonable fruits were unchanged about the last of April.

The arrival of Cherries is considerably earlier than usual, the first lot last year coming to hand on the 8th of May. Strawberries were coming forward freely, but prices were still rather high. The steamer *Reform* brought 250 chests of a hundred pounds each every day from Santa Clara County, and small lots arrived from other points. The fruit, yet small although of good flavor, was disposed of at from 15c. to 20c. per lb.; and hawkers with their rickety wagons and lean horses yelled, "Strahbreez! Two bits a pun!" through the streets.

The market was well supplied with Oranges, both foreign and domestic, and prices were beginning to weaken, on account of the increasing abundance of Strawberries. Oregon and Californian Apples were retailing at $1.75 to $3.50 per box.

Last week an inquiry was made about Cranberries, and it was remarked that none are growing wild in California. Perhaps it is only known by a very few that they do grow here. They are to be found along the Corte Madera Creek, a stream emptying into the San Gregorio, and are like the Cranberries of Oregon for size and flavor. They are eaten in pies, and also from the stem, and pronounced equal to the best.

A small quantity of unripe Cherries were received about the 10th of April, and sold at $1 to $2 per pound. Tahiti Oranges were very plentiful at 50c. per dozen; the Los Angeles crop gave signs of exhaustion. Gooseberries appeared during the last week in April, selling at 50c. per pound.

In the first week of May, Cherries were coming in fast from the Pleasant

Valley orchards. Cucumbers from the same source have also been very plentiful this season, I. M. Bassford having already received $1,200 for them.

New Potatoes were more plentiful about May 1st, but the price remained high. Cauliflower was very abundant, and large shipments have been made to the East. Other vegetables were in plentiful supply, and prices had declined.

On the 2d of May, Strawberries sold at 12c. to 15c. per lb. by the chest. The reports are to the effect that the crop is unusually large this season, which will soon put the prices down to about 10c. per pound retail. The probabilities are that they will not go very much lower, because the packers will can the fruit when it reaches that figure.

THE BOTANY OF WAR.—According to the Savannah *Republican*, after General Sherman made his march to the sea, in his track there sprung up a new and unknown grass from the soil, which the farmers called "Sherman Clover." It would grow up in the most unexpected places, and it is said would root out Bermuda Grass; and as a strange similarity, it is noted that after the Franco-Prussian war of 1870-'71, in many districts of France a new vegetation sprung up, evidently the result of the invasion. We may add to this account that a Paris professor has arranged a regular catalogue of plants discovered for the first time in France after the invasions from abroad. As some of these plants were well known to Germany, it was suggested that the seeds might have been brought along in the forage bags, or with the forage itself transported from Germany and turned out on French soil. A new plant is also said to have been introduced after the march of the allies to Paris in 1815.

Editorial Gleanings.

DOUBLE PYRETHRUMS.—Within the past seven or eight years there has sprung up abroad a new set of candidates for public favor, known as "florist's flowers." These are the Double Pyrethrums, belonging to what are known, in English parlance, as Feverfews. They are derived from two species, *P. carneum* and *P. roseum*, both natives of the Caucasus. They are hardy perennial plants, producing large double flowers resembling China Asters or Chrysanthemums, running through various shades of color—white, yellow, lilac, and red; from pale flesh color to the deepest shades of crimson; some varieties combining two shades of color, as white and red, in the same flower. The flowers of some varieties are strap-leaved or long, and ligulate; in others they are anemone-formed—that is, the central florets are tubular and the outer florets are ligulate.

Unfortunately in this country florists care little for perennial plants, and have not paid much attention to these. Few, if any, have them in their catalogues. But as seeds of them can be obtained in our seed stores, those desirous of growing them can obtain seed at small cost. Of course when raised from seed many will revert back to the single form, and others may not come up to the full standard of perfection required in a florist's flower; but, even the single ones are pretty, so that no great disappointment can arise. We have raised, from seed, some beautiful double varieties, and find them perfectly hardy and of easy cultivation—only requiring good rich soil, a light mulching of manure, and an occasional watering during a dry time. They flower the second year from the seed. We can confidently recommend them to

our readers as a most desirable addition to their list of perennials.—*American Garden.*

Maintaining Fertility in Orchards — At a recent meeting of the Western New York Horticultural Society, the question, "How can the fertility of large orchards be most economically maintained?" was discussed at length.

President Barry remarked that large orchards must have manure just the same as small ones. Green crops are not sufficient. A farmer who plants 100 acres in an orchard without knowing where to get manure is as unwise as one who should buy 1,000 sheep with nothing to feed. Farmers must grow or feed more stock. This is the natural mode of getting manure, and he believes the best. He had known nurserymen to buy and feed sheep and cattle in the winter solely for the manure. Thus they received pay for feed and labor, and made the manuring extra. Farmers can do likewise. He practices drawing fresh stable manure every third or fourth year, and applies it as top-dressing in fall or early winter. Using the manure fresh, it goes much further, and a very slight application is sufficient. Pears should be manured with something lightly every autumn. Coal ashes are good for a top-dressing; wood ashes and lime are excellent. The great object is to keep the surface light. In applying stable manure to Pear-trees, always use it sparingly in fall or early winter, and never plow under. In contact with the roots stable manure may cause blight. Used as a top-dressing there is no danger.

Prize for California Raisin Grapes.— The Sacramento *Agriculturist* of the 14th of April says: "Last year, during the progress of our State Fair, James Rutter, of Florin, having some very fine specimens of raisin Grapes on exhibition, packed a box of them and sent them by express to the fall meeting of the Nebraska State Horticultural Society. They were placed on exhibition, and were the leading attraction in the pavilion, being viewed and examined by upwards of 40,000 people. Yesterday Mr. Rutter received the following letter from J. T. Allen, president of the society:

"'*Mr. Rutter—Dear Sir:* I am instructed by the society to inform you of a resolution passed at their annual meeting, March 1st, tendering you the thanks of the society, and that the society's silver medal will be sent to you for your splendid exhibit of Grapes sent. The medal will be sent as soon as engraved. Your exhibition of Grapes was the prominent feature of our Fair, and coming as it did unsolicited, merits the thanks of the society, and I personally thank you.'"

An Extensive Eucalyptus Plantation. —W. H. Mathews has, on the ranch of J. H. Byers, about ten miles south of the town of Colusa, on the west bank of the Sacramento River, about 50,000 Eucalyptus-trees of the *Victoria angustifolia*, or narrow-leaved iron-barked variety, which he intends planting on the ground in orchard form about ten feet apart, during the next sixty days. The reason for planting Iron-barks instead of Blue-gums, is that the former resist the severe frosts of the State better than the latter.

Mr. Mathews has come down to San Francisco to purchase 50,000 more trees of the same variety, which he also intends planting this spring. He says he will plant the last-named 50,000 trees

on a piece of rich never-broken land, containing about 100 acres, raising Cotton the first year between the rows of trees, and Sugar Beets the second year, as in two years the trees will probably throw too much shade for successful Cotton culture.

He has raised 50,000 trees to a height of from two to eight inches from two and a half pounds of seed, gathered from trees grown in Oakland. This certainly proves that California seeds will germinate as well as imported. In fact he used equal quantities of imported and California, and found the result so much in favor of that grown here that he used only those trees grown from California seed. Mr. Mathews has 225 acres of land in places within a radius of six or eight miles, on which he intends planting Eucalyptus-trees. He is a young man, and can afford to wait for his trees to attain a very respectable size before there will be any necessity for cutting them down for sale.

The Potato Disease. — The Royal Agricultural Society of London has, along with other investigations, been prosecuting inquiries into the cause and prevention of the Potato disease. Three years ago Earl Cathcart offered a prize of £100 for essays on the prevention of the disease. His offer resulted in eliciting no fresh information, and failed of direct benefit. But it stirred the society to active dealing with the subject, and prizes were offered for Potatoes reputed to be proof against disease. Two prizes were promised at the beginning of 1874, for Potatoes of existing varieties, and two more are to be awarded five years hence, for varieties that may be originated meantime. Six varieties competed for the first prizes: To subject these to a practical test, one hundred pounds of each variety were sent to twelve stations in England, four in Scotland, and four in Ireland. During the summer a botanical inspector visited each station, and found disease affecting the Potatoes in every instance. Thus far, no progress has been made in the discovery of means for preventing the disease; but much valuable information has been acquired from the statistics collected that will bear upon the most important point. Above all, it has been ascertained what conditions of soil and moisture confine the disease to the narrowest limits. Prof. de Barry, who has been studying the disease from a scientific point of view, refers its origin to a fungus (*Peronospora infestans*) which first attacks the leaves, and after consuming the nutriment afforded by them, seizes upon the petiole, and so proceeds to the tubers. A further report of the Committee of Inquiry will be published soon.

Egyptian Corn. — Some "Egyptian Corn," lately imported, is, we presume, the Durra, a cereal akin, botanically, to Broom Corn, but producing more seed—frequently 125 bushels to the acre. It is one of the chief articles of Arab diet, and well deserves a trial in California, especially in sandy soils supplied with irrigation, such as they have at Los Angeles and Anaheim. Dates and Durra are the two staves of life in the Levant, where the climate and soil are similar to those of our warmer valleys. The Dates it is impossible to have here yet, on account of the newness of our State, the high rate of interest, and the slow growth of the tree, which bears fruit for the grandchildren of the planter; but none of these objections can be made to the Durra.

Two Marvelous Flowers.—The *Horticulturist* gives an account of two novelties among flowers which it is almost tempted to treat as fables until their verity is established by personal inspection. The following is a description of them:

"One is a black Lily in Santa Clara, California, which has three large blossoms, each nine inches long, and perfectly black outside of the green petals. The other is to be seen at Constantinople, and described by an eye-witness as belonging to the Narcissus genus of bulbs. The flower represents a perfect humming-bird. The breast, of a bright emerald green, is a complete copy of this bird, and the throat, head, beak, and eyes are perfect imitations. The hinder part of the body, and two outstretched wings, are of a bright rose color, one might almost say flesh-colored. These wonderful bulbs should have been sent to the Vienna exhibition. They will be in abundance by the time of our Centennial celebration in 1876. And yet they can hardly be greater curiosities than the strange and mysterious '*Sancta Spiritu*' from South America, with its life-like representation of doves."

Cranberries are not grown in California. Most of those sold in this market come from Wisconsin, though a few of the small variety are brought from Oregon and Washington Territory. Cranberries can not be profitably raised except on fresh-water marshes especially prepared for the purpose. There is, probably, nothing in the climate of this State to prevent the successful cultivation of the fruit if a suitable location can be found. The seed of the berries sold in this market would doubtless grow, or plants could be obtained by mail from the East for an experiment on a small scale.

California Roses.—Santa Barbara now puts in a plea for the largest Rose. Less than a year ago Dr. L. N. Dimmick placed in his grounds a Rose plant, the King of Noisettes, Maréchal Neil. This has extended over a trellis arching one of his garden walks. Within the last six days a shoot some three feet in length has grown from the foot of this trellis. On this stalk, surrounded by half a dozen vigorous buds, hangs to-day the champion Rose of the world in size and perfection. The Maréchal Neil is a cupped variety of rose, having a lemon tint and with a delicate and delightful perfume. This Rose is 16¾ inches in circumference; its shorter diameter five inches: the measurement in various directions from tip to top of petals is over six inches! The depth of the Rose is fully three inches. This we claim is the largest Rose on record. Another marvelous thing we noted before leaving the grounds of Dr. Dimmick—113 buds on a Rose truss of the La Marque variety. A common felt hat covered the space in which were counted the above number of buds.—*Santa Barbara Press.*

Plants for Greenhouses.—Persons in the habit of buying plants at greenhouses know how fresh and delicately green they look when they are taken out, and how apt they are to droop down afterward, from the effects of the change from the warm moist air of such houses to the dry atmosphere and draughts of the sitting-room. It is stated that if the plants are enveloped for a few days in thin soft paper, leaving an opening at the top, they will

become acclimated without feeling the change. Sprinkle the leaves daily, on both sides, with a small wisp-broom, with warm water.

American and European Trees. — A few years ago there appeared in the "Proceedings of the Philadelphia Academy of Natural Science" a paper on the identity of relative characters in numerous allied species of American and European trees, in which it was shown that American trees are comparatively dwarfed in their habit. They have smaller seeds, smaller buds, closer nodes, less regular and less twiggy heads, thinner leaves, deeper seratures, and higher autumnal coloring than their near European allies. A European observer has lately added to these notes the fact that American species cast their leaves earlier in the fall than their kindred species in Europe.

Trees on the Road-side.—Continuous rows of stately trees along the roadside add much to the appearance of a farm or country. But it is urged that shaded roads remain wet and muddy much longer after heavy rains than those fully exposed to the sun. This is doubtless true, but as an offset we claim that they are less liable to become dusty, and between the two evils there is not much choice. Deciduous trees only should be planted along roadsides in cold climates, because they afford shade during the season when most needed if at all. Roadside trees may also interfere with the growth of crops in the fields adjoining by shading as well as by the absorption of moisture by their roots; but as we can scarcely secure anything of value without some loss, perhaps the pleasure derived from passing over a shady road during the hot weather in summer, as well as the beautiful appearance of such highways, more than compensate for the slight losses which they entail.

Action of Lightning on Trees. — In a tree which has been destroyed by lightning, the layers are not only shattered and separated into strips, but the wood also appears dry, hard and brittle, as though it had been through the process of curing in a kiln. This is attributed to the instantaneous reduction of the sap into steam. When the sap is abundant, as in May or early in June, the amount and force of the steam not only bursts and separates the layers and fibres, but rends the trunk in pieces or throws off a portion of it. When the amount of steam thus suddenly generated is small, owing to a dry condition of the stem from continual evaporation and self-exhalation, there may be no external trace of the lightning-stroke; yet the leaves will wither in a few days, showing that the stem has been rendered incapable of conveying supplies, and the tree will either partially or entirely die. Still lighter discharges may be conducted down the moist stem without any injury.—*Building News.*

The Petaluma *Standard* reports that the Tar-weed makes better hay for neat cattle than Wild Oats or Clover. Cows like it, and give more milk than when fed on other hay. Half a dozen persons have tried it and all report favorably. Heretofore it has been regarded as a pernicious weed, but it deserves a careful investigation. It should be cultivated and studied with reference to its value as a regular crop. Its existence in our streets and commons indi-

cates hardiness and adaptation to our climate; and the thriftiness of its growth is basis for a hope that it will yield a large crop. California has yet to make its first valuable addition to the list of cultivated forage-plants.

Semi-tropical Fruit-culture in Contra Costa County.—There have been a great many objections raised of late to the Osage Orange for hedging purposes. Many of those who at one time had considerable faith in its adaptability are now, for some reason or other, very strongly opposed to it. But Dr. J. Strentzel, of Martinez, who has devoted many years to systematic experiments in Horticulture, is still very pronounced in its favor. As evidence of its adaptability to the soil of at least Contra Costa County, the doctor sends a huge specimen of the fruit. It is a lemon shaped mass, measuring six inches in length and fourteen and a half inches in circumference. He also forwards a magnificent specimen of the Mandarin Orange, and another of the common fruit, each of which is fresh plucked from the tree, "to demonstrate," so he writes, "that the bracing cold mornings (the thermometer once only twenty-nine degrees above zero) did not freeze out the life of anything, even our semi-tropical guests." Dr. Strentzel's indefatigable zeal in the prosecution of his favorite pastime has demonstrated beyond question that the zone in which semi-tropical fruits can be successfully cultivated in this State is much more extensive than most people are willing to admit.

To Preserve a Bouquet.—When you receive a bouquet, sprinkle it with fresh water; then put it into a vessel containing some soap-suds, which nourish the roots and keep the flowers as good as new. Take the bouquet out of the suds every morning, and lay it sideways in fresh water, the stock entering first into the water; keep it there a minute or two, then take it out and sprinkle the flowers lightly by the hand with pure water. Replace the bouquet in soapsuds, and the flowers will bloom as fresh as when gathered. The soap-suds need to be changed every third day. By observing these rules, a bouquet may be kept bright and beautiful for at least one month, and will last longer in a very passable state; but the attention to the fair but frail creatures, as directed above, must be strictly observed, or "the last Rose of summer" will not be "left blooming alone," but will perish.—*American Artisan.*

METEOROLOGICAL RECORD,

For the Month ending April 30, 1875.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M..... 30.15 in.
do 12 M 30.14
do 3 P. M..... 30.13
do 6 P. M..... 30.12
Highest point on the 1st, at 12 M..... 30.44
Lowest point on the 5th, at 3 P. M..... 29.90

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M..... 58°
do 12 M..... 63°
do 3 P. M..... 62°
do 6 P. M..... 57°
Highest point on the 12th, at 3 P.M., and the 24th, at 12 M..... 81°
Lowest point on the 5th, at 9 A. M..... 44°

SELF-REGISTERING THERMOMETER.

Mean height during the night..... 49°
Highest point at sunrise on the 25th..... 61°
Lowest point at sunrise on the 5th..... 36°

WINDS.

North and north-east on 5 days; north-west on 9 days; south-west on 2 days; west on 14 days.

WEATHER.

Clear on 12 days; cloudy on 5 days; variable on 11 days; rain on 1 day.

RAIN GAUGE.

5th..... 0.02
Total Rain of the season to date.....17.28

THE

California Horticulturist

AND FLORAL MAGAZINE.

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THE AMARYLLIS.

BY F. A. MILLER.

The Amaryllis is a very extensive genus of flowering bulbs, and has gained great popularity of late on the strength of the many beautiful varieties which have been acquired. They are chiefly autumn-flowering, and as such form a most interesting and admirable class of plants. The genus consists of a large number of species, but I intend to mention only a few of them, which are really meritorious.

Amaryllis Belladonna, a native of the Cape of Good Hope, is one of the oldest varieties, and enjoys great popularity. Its showy funnel-shaped flowers are of a delicate rose color, and are borne in clusters upon a thick stem about eighteen inches in height. It owes its name to the color of the flower, "resembling the complexion of a beautiful woman." The flowers are produced before the leaves make their appearance. The flowers are nearly as large as those of the trumpet-shaped white Lily, are similar in form, and agreeably fragrant. As the root-stock increases, several stems will be thrown up, each of which produces from six to ten flowers, making a gorgeous appearance. Several varieties are known.

Amaryllis vittata, a native of South America, is another very conspicuous species, producing fragrant white flowers with red stripes, from four to six upon a single stalk. From this many valuable varieties have been produced, but very few of which have found their way to our shores. From the fact that they are all perfectly hardy here in the open air, I must come to the conclusion that within a few years they will form a most important feature in our gardens. Their culture in pots seems not to be thoroughly understood here as yet, and but few flowers were produced by plants brought here during the past two or three years. This, however, is mostly due to the weakness of the bulbs imported. Only strong bulbs are apt to bloom freely, and they should not be treated by the "starving-out" method, but should receive a good supply of nourishing soil and water during their growing season.

Amaryllis formosissima, known popularly as "Jacob's Lily," is a very interesting species. Its rich claret-colored flowers are produced singly upon a stalk. The form of the flower is some-

what peculiar and odd; the upper segments being reflexed and the lower ones sloped downwards. Although this species is less hardy perhaps than any of the others, it has flowered well with us in the open air.

Amaryllis atamasko is a small-flowering species of North America, and is found rather plentifully in Virginia. Its pretty white flowers are abundantly produced singly upon a stalk. I would recommend it strongly as a border plant, for which purpose it seems admirably adapted, although as a flowering plant it is much inferior to the varieties enumerated before. I mention it chiefly because it appears in many of the American catalogues.

Amaryllis hippeastrum (a term not altogether correct, perhaps) comprises the most beautiful of the genus Amaryllis. But very few of these are as yet offered for sale by the nurserymen of this country; in fact, they are too expensive for the general trade. Some two years ago we imported about fourteen of the best varieties, most of which produced flowers last season, and all who have seen them pronounced the blooms most gorgeous. Apparently these Hippeastrums flower more fully than other species of the Amaryllis. I know I have often heard complaints that the Amaryllis does not produce flowers freely, and I am fully aware of the fact that there are some difficulties in their treatment; but I have not found such with the Hippeastrums; they have done extremely well under a very ordinary method of cultivation. All the varieties are excellent, and I will therefore omit to name any of them.

The cultivation of the Amaryllis is much more simple in this mild climate than in very cold climates. Much more attention is given to their treatment in Europe than is necessary here. They are nearly all hardy here; but some require protection from our strong winds, while others should be screened from bright hot sunshine, at least partially.

A. atamasko will do well in any locality out of doors, and flowers freely by simply letting it alone.

Amaryllis formosissima will not do well if exposed to our strong winds, and should therefore be screened; it succeeds best under glass in a cool house or frame.

A. vittata blooms out of doors, but the flowers never attain such beauty as if grown in a frame or house.

A. Belladonna is the most hardy with us, and if screened from heavy winds will flower to perfection in any warm exposure; it will thrive well in a sunny locality.

A. hippeastrum attains its greatest beauty in a cold house or frame partially screened from the bright sun.

If the Amaryllis is grown in pots, it will now be time to house them; they begin to move with us about the 1st of March. Give them a good supply of water, rain-water if possible, and an occasional sprinkling of the foliage will be beneficial. As soon as they have filled the pots with roots, give them a shift into a larger-sized pot. Very good soil for them is a compost made of four equal parts of leaf-mold, loam, old decomposed cow-manure, and coarse sand. Good drainage must be provided. Never allow the soil to become dry. and if convenient give them a little manure-water once a week. As the plant develops itself, a partial sunny exposure may be given. They will bloom in July and August. When their flowering season is over they should be liberally treated under the same method as described before for at least another month, when they may be placed out of doors, and plunged in a cool and shady

place, where they should enjoy rest until almost the 1st of March. During their resting season they should never be allowed to dry out entirely, but the soil should be kept moderately moist.

Before leaving this subject, I should certainly make mention of another splendid species, the *Amaryllis purpurea*, better known here as *Vallota purpurea*, a native of the Cape, which has been under cultivation here for a number of years, and has become one of our most popular flowering bulbs. Indeed, its brilliant scarlet cup-shaped flowers are quite sufficient to make it a great favorite. Strong bulbs flower readily under the already-mentioned treatment. This plant should be in every collection, and it may now be obtained in most of our nurseries at a reasonable expense.

All varieties of the Amaryllis are propagated from offsets, which are produced abundantly. The Hippeastrums, however, do not make offsets as freely as other species, and their propagation seems to be a slow process. The Amaryllis may also be raised from seed, but the fact that it takes three years' growth before flowers may be expected, makes this method rather tedious.

THE CULTURE OF SEMI-TROPICAL FRUITS.

With the increased attention given to this subject, and the rapid settlement of Florida and the southern counties of California, it seems not improbable that before many years are past we may be drawing our supplies of fruit from within the limits of our own boundaries. With this in view the ratification of the proposed treaty of reciprocity with the Hawaiian kingdom threatens an injustice to our fruit-growers. Already the culturists of Los Angeles County have petitioned their representatives in Congress, protesting against the admission of the fruits of Hawaii free of duty, and it seems but reasonable that the protection afforded by tariff to the iron-merchant, the wool-grower, and ship-builder, should be extended likewise to the horticulturist and the farmer.

Whatever the result, however, the occupation of fruit-growing, particularly when applied to the more uncommon and semi-tropical varieties, is of such a fascinating character, that duty or no duty, protection or free trade, will alike be ineffectual in checking or preventing the increasing interest in this pursuit.

It is not everyone, however, who has the patience to wait for the bearing of those trees which require from ten to fifteen years to mature; but if we may judge from the assertions of those who have reached this happy period, the truthfulness of which we have no reason to doubt, the profit is far in excess of anything which can be realized from any similar occupation. There must be, however, to this, as well as every other picture, two sides, and the beginner can not expect success without first meeting discouragement and partial failure. In southern California the culture of Oranges, Lemons, Limes, etc., is carried on only in certain localities, and such as can depend with certainty upon the means of artificial irrigation. In fact, the whole mode of culture, the country itself, and the people who follow it, are so different in character as to deserve if not actually require a separate description, and it is possible that the hints from actual experience gained in one locality may not be without value to some of those who are following the business in another.

In California, Los Angeles County and its county town of the same name, together with the neighboring valley of

San Gabriel, is the home of the Orange in that State. The proprietors of orchards, however, do not confine themselves to this fruit alone, and while in Florida we hear also of the Guava, the Pawpaw, and the Banana, in California we have the Lemon, the Lime, the Fig, and the English Walnut growing side by side with the Apricot, the Peach, the Apple, and the Pear.

The finest Oranges are grown at San Gabriel on a soil of decomposed granite, where the Sierra Madre range gives protection from the north winds. We assert, and we say it boldly, that they are unsurpassed, even if equaled, in the world for size, and when allowed to remain sufficiently long on the tree, for sweetness and flavor. In the mission garden at this place there are trees planted by the *padres* from seed brought from Mexico, which now, at seventy years old, are in full bearing, and producing on an average 2,000 Oranges each year. Whether it is from a difference in the quality of seed, however, or from the extra care given to the cultivation, the fruit from the trees planted at a later period far surpasses them in size and quality.

Most of the Orange-trees in Los Angeles County have been grown from seed procured from Tahiti or the Sandwich Islands. As a rule the fruit comes true to the seed, with such modifications as may be caused by locality and care. It is somewhat common, however, to bud the Orange into a species of almost worthless fruit known as the "China Lemon," by which three years of growth are saved, but at an expense of longevity if not of quality. The Sicily Lemon, however, when thus propagated, is much easier to raise, as with the Lime it is, when in the earlier stages of growth, much more susceptible to the influence of frost than the Orange, and less likely to recuperate after being cut down.

The Lime, the most difficult of all to bring to maturity, is also the most profitable. Unlike the other trees, they seem to be continually bearing, and we have heard of three trees in one garden producing each year the enormous sum of one hundred dollars each.

There are nurseries in Los Angeles, where immense quantities of semi-tropical fruit-trees are grown, to an extent, in fact, that were it not for the numbers destroyed after transplanting by carelessness and inexperience, the business would be overdone. These trees can be bought of all ages, from one to four years old, at prices varying from ten cents to two dollars and a half each. The greatest error and the most common is in planting both seed and young trees too deep; in the first instance preventing the young germ from breaking through the earth, and in the other depriving the roots of the air which seems necessary to their existence.

After the danger of frost, which is not past until the trees have assumed hard bark, the attacks of the gopher are the most to be dreaded. This destructive little pest, which is sometimes confounded with the ground squirrel, which he in no way resembles, is something between the mole and the rat, boring in the ground and gnawing at the roots of the trees, sometimes not giving evidence of his presence until the mischief is irreparable. He has been known to eat through a six-year old tree in a single night, so that the tree toppled over on being touched. His habits are so certain, however, that when his hole is found, by using a trap, his capture is almost sure. He is a most pugnacious little fellow, and the Mexican boys have a very ingenious way of catching him. A noose is placed over a hole, and when

Mr. Gopher shows himself at noon, as he invariably does, the concealed boy pulls the string and makes him prisoner. The string is then fastened to his tail and he is lowered into another hole. A fierce battle ensues, and both gophers, griping each other like bull-dogs, are brought to the surface.

For six months, or more frequently eight, not a drop of rain falls; the country becomes parched and burnt, and the trees can only be kept alive by artificial irrigation. The scarcity of water will keep the cultivation within certain limits, as in low wet lands which would not require irrigation, the Orange will not grow. At this season the squirrels, who honeycomb the ground in every direction, become almost desperate for food, as also do the rabbits and hares. Young vineyards and orchards, if not carefully watched, are completely destroyed. Away from these the excrements of horses or cattle are eagerly devoured, and we have known them to eat the bark from a tree fifteen years old, as high as they could reach.

The vitality of the Orange-tree, however, in congenial soil, is wonderful; by carefully covering the places where the bark has been removed, the trees seem to experience no harm. They can be transplanted after coming into full bearing by careful pruning and trimming off the bruised roots, and actually improve their fruit by removal from cold and damp soil to a richer and warmer one. Ten years is allowed a tree to bear from the seed, but from this time both yield and profit increase in rapid ratio. It is the disinclination to wait which has prevented many of the residents of Los Angeles from reaping fortunes similar to those acquired by their more far-sighted neighbors; but the introduction of a different class, the patient, slow-plodding agriculturists of the East, is awakening them, and the business of semi-tropical fruit-growing promises to assume an interest and importance second only to the production of Wheat and wine.—*Forest and Stream.*

A COMMON SENSE VIEW OF LANDSCAPE GARDENING AS AN ART.

BY HORTICULTURIST.

Ornamental gardening, it is fair to suppose, has its origin in that desire, common to all mankind above the nomadic tribes of the earth, to possess a home which should differ in some degree from and be superior to the common waste or wild uncultivated lands. The useful—the field or garden-patch—is the first step in civilization after a house for shelter. But no sooner are the necessities provided for, than æsthetic sentiment, which exists, although perhaps in a dormant state, in every mind however rough or savage, makes itself felt, and demands that something shall be done for its gratification.

Simple and uncouth indeed we may suppose the first attempt at ornamentation of grounds to have been. In his strolls through the surrounding woods, the improver's eye is struck with the gay color of some flower, or the beautiful foliage of some umbrageous shrub. He stops to admire it, and with his admiration springs the desire to possess the object. The flower is transplanted to the vicinity of his hut, where under his careful tending it thrives and repays him by its graceful bloom and grateful fragrance. But the very effect of taking care of his floral pet has developed and strengthened the feeling of admiration for some similar beautiful objects in nature, and it is not long ere he is induced to transplant another prize to his own home. Soon he has a

little collection of such, not harmoniously arranged, nor even judiciously chosen; yet, rough though it be, it is a garden, and more, it is a garden which, so far as it is a plan or principle at all, is formed upon what will be shown, a little farther on, to be the only true and correct principle in the art.

From the time when mankind arrived at such a forwardness in civilization that ornamental gardening became a necessary art, and was reduced to certain rules, up to the present time, two great systems may be said to have reigned in gardening.

The first of these, that which was adopted when first the nations emerged from barbarism, when the other arts of civilization were developed, had also the longest dominance, and ruled for many centuries, to the entire exclusion of the ideas which now prevail. The chief idea in this first system appears to have been to make all gardens as *distinct* as possible from similar pieces of ground in a state of nature. Mankind had but just thrown off the shackles of ignorance and barbarism—were not yet in fact quite released from their bonds—and naturally sought to make as clear a distinction as possible between the present and the but too recent past. They were the admirers of the false in art. By art they understood artificiality—by artistic, something labored, and consequently unnatural. Thus we read of the hanging gardens of Semiramis; of the vast spaces, divided into squares, circles, and other artistical figures, which formed the model gardens of Rome; and we meet even yet in Europe with specimens of these primeval barbarisms in gardening: trees trimmed to fanciful resemblances to animals or statues; flower-beds sown in names; sheets of water formed into grotesque shapes; and the still ruder device of endeavoring by means of a painting at some garden wall, to produce the illusion of an indefinite extension of the grounds. In this category must be reckoned, too, the host of sheared red Cedars, Junipers, and Arborvitæs, which, as the forlorn sentinels of the French and Dutch styles of gardening, disfigured but too many of our American residences.

All these, instead of producing the impression intended by their devotees, of a mature state of civilization and a refined taste, argue only a crude and undiscriminating mind, which, having just emerged from the one extreme, the state of nature, rushes at once to the other, and becomes of course unnatural; mistaking alteration for improvement, and hailing that as art which is only artifice.

Let us now look at the other system—that which, introduced by eminent men in England, has spread all over the European and American continents, and is now acknowledged to be the only exposition of the true æsthetic love of nature which prompts to the beautifying of grounds.

The design in this system is not to alter the whole face of nature. Taking for granted the fact, that in nature he must find all that he can possibly want of form or arrangement, and that all beauty for which he can not there find authority must be considered defective as being essentially false, the modern landscape gardener aims simply to *aid* nature—to carry out to perfection her most charming designs.

What the painter aims at in transferring to canvas the beauteous conceptions of his mind; what the sculptor performs when he represents on marble those æsthetic fancies which we call the evidences of genius—this is also the landscape gardener's object. His

aim is, or should be, to be true to nature. Who would admire the most artistically executed painting, or the most finely finished sculpture, if the object represented was deformed? So in the creation of the garden, true taste refuses to acknowledge the legitimacy of that which has no prototype in nature. It is not expected, on the other hand, that the artist will be so mere a copyist of nature, as not to rise above her faults. It is his, so to arrange the various beauties found in different individuals of the genus to be represented, as to form one beauteous and harmonious whole.

With man nature has fallen from her original perfection. We meet nowhere with an object beautiful in all its parts and proportions. But neither is there anything, however homely or unpretending, if it is the product of nature, which has not about it some feature of beauty. It is the artist's mission to study these particles of perfection, and their proper relation to each other, in order that his mind may conceive and his skill execute that which, though viewed as a whole, may be impossible to nature, yet in every individual part adheres most faithfully to the examples set by her. And it is the realization of this conception which produces that agreeable sensation, by which we acknowledge perfection.

ORANGES AND LEMONS.

BY DR. A. KELLOGG.

It has occurred to me that to some of your patrons a brief note collated on this subject might be useful for reference. (See Baron Ferd. Von Mueller's Paper before the Acclimatization Society of Victoria).

Citrus Aurantium.—The Orange (in the widest sense of the word). A native of southern Asia. Attains to the age of 600 years or more. If ever any difference existed between this and *C. medica* they are now obliterated, through hybridization, at least in the cultivated forms.

The following varieties may be distinguished:

1. *Citrus bigaradea*, Duhamel (the "Bitter Orange"). This furnishes from its flowers the Neroli oil, so delicious and costly an odor. It is stated that Orange-flowers to the value of $250 to the acre are obtained for a single year. The rind is used as candied Orange-peel. *Hesperidin* in the rind—*limonin* in the seed, besides a bitter principle.

2. *C. dulcis*, Volkamer (the "Sweet Orange"). Many kinds occur. The best bearer is the St. Michael Orange of the Azores; as high as 20,000 a year on one tree. Neroli oil is obtained from the flowers of this and allied varieties.

3. *C. Bergamium*, Risso (Bergamotte Orange"). From the fruit-rind of this variety bergamot oil is obtained, and also oil from the flowers. The "Mellarosa" variety furnishes a superior oil and exquisite comfitures.

4. *C. decumana*, Linn. (the "Shaddock" or "Pompelmos"). The fruit exceptionally will weigh twenty pounds. The fruit and rind can both be used for preserves.

5. *C. nobilis* (the "Mandarin Orange"). The thin rind separates readily from the deliciously-flavored sweet pulp. There are large and small-fruited Mandarin Oranges; the Tangerine variety is one of them.

Citrus Medica, Linn. (the "Citron" in the widest sense of the word). Indigenous to southern Asia. For convenience sake it is placed here as distinct from *C. aurantium*. Prominent varieties of this may be distinguished:

1. *Citrus Cedra*, Gallesio (the real "Citron.") From the tubercular acid fruit essential oil and citric acid can be obtained, besides the ordinary culinary use of the fruit. A large variety with thick rind furnishes the candied "citronate" or "succade." The cedra oil comes from a particular variety.

2. *C. Limonium*, Risso (the real Lemon). From this is largely pressed the Lemon juice, while the thin smooth aromatic peel serves for the production of volatile oil or condiments. The juice of this fruit is particularly rich in citric acid. A large variety is the "Rosaline Lemon."

3. *C. Lumia*, Risso (the "Sweet Lemon.") This includes the "Pear Lemon," with large pear-shaped fruit. Rind thick and pale; pulp not acid. This variety serves for particular condiments.

4. *C. Limetta*, Risso (the real Lime.) The best Lime-juice is obtained from this variety, of which the "Perette" constitutes a form.

Citrus Australasica, F. von Mueller (shrub east coast Australia). Fruit oblong, subcylindric, two to four inches; tastes like a Lemon. Culture might improve it.

Citrus Planchoni, F. von Mueller. Forests near the southern coast of eastern Australia. A noble tree, forty feet. Fruit globular, size of Walnuts; called "Native Orange."

Citrus Japonica, Thunberg (the "Kumquat" of Japan). A shrubby "Citrus," with fruit of the size of Gooseberries. On account of their sweet peel and acid pulp they make excellent preserves.

Succulents are better adapted for window-gardening than are foliaged plants generally. The dry atmosphere is not so injurious to them.

GERMINATION OF FERNS FROM SPORES.

Professor Thistleton Dyer recently gave a lecture on this subject, before the Royal Horticultural Society, in which he traced the growth of the spore until the young Ferns made their appearance, and showed that after the growth commences a kind of fecundation or fertilization analogous to that of flowering plants takes place. "As this is singular, and doubtless a novel idea to many horticulturists, we will give," said he, "the facts of the case. A Fern-spore is a minute round body, with two elastic coats one within the other, and the hemispherical cavity inside the inner coat is filled with that peculiar living matter made familiar to us by Huxley and others under the name of protoplasm. When the spore falls upon a moist and suitable surface it swells and protrudes two or three tube-like cells, one of which elongates and develops into other cells; until a green, flat, liverwort-like expansion is formed called the prothallus, and familiar to every gardener who has sown Fern-spores, since the appearance indicates the growth he expected to call forth.

"Now we come to the interesting stage when fertilization takes place. If a well-developed prothallus be examined under a good lens a series of small, white, hair-like rootlets will be found protruding from its under surface, while around its margin will be found one or more notches or indentations. Among the rootlets, however, are two series of cysts or cells of a more or less hemispherical shape, and both containing organs of a different nature. In one series of cysts or receptacles we find round loose cells not unlike the parent spore in general appearance, but of a more delicate texture. When these are fully developed, the cyst in which they have been

generated becomes ruptured, and they fall or are projected out on the surface of the moist soil or prothallus.

"Now each of the little cells contains a minute quantity of fluid in which is confined a minute spiral body like a vinegar eel, but very much smaller, and as the cells soon burst, in water, these little eel-like bodies are set free, and possess the power of moving with incredible velocity in the water, while they are so minute that the most gentle dew on a leaf is sufficient to enable them to traverse it in all directions. These little bodies are called antherozoids, and possess a power analogous to that of pollen in flowering plants. These eel-like bodies are common to different forms of cryptogamic or flowerless vegetation, and are the very agents which enable the Potato disease (or *Peronaspora infestans*) to increase so rapidly when once it gains a footing. Careful examination of the liverwort-like prothallus toward its margin, however, reveals another series of cysts (*archegonia*), and these contain a proembryoic cavity at their base, which may be likened to the ovary in flowering plants. Now if one or more of the male eel-like antherozoids in their movements come in contact with the cavity in the female cells, the result is a kind of fertilization similar to that which takes place when pollen is wafted on to the stigma of flowering plants, and as soon as this takes place the young fern begins its growth."

The professor illustrated the different organs in succession on a blackboard, and remarked that gardeners often looked on the first growth or prothallus as analogous to the seed-leaves in flowering plants, but that in reality this was not the case, the prothallus representing in fact, an intermediate generation in the life history of many cryptogams. Another singular fact explained is, that the male organs have as yet been detected only in Osmunda, while other Ferns produce male and female organs at different periods, as if to facilitate inter-crossing. As a practical deduction from the above facts it was suggested by the lecturer that a clever and careful manipulator might be able to produce hybrid Ferns by removing the antherozoids by means of a drop of water on the hair-like point of a sable brush, and applying this to the archegonia or female ovary-like cells of another species. In some cases this result is believed to have been effected accidentally in nature, especially among Gymnogrammas. In connection with the lecture there were exhibited rare specimens of *Pteris serrulata*, *Pteris tremula*, and a supposed natural hybrid between these species, which made its appearance in a batch of young Ferns raised at Chiswick a year or two ago.—*The London Gardener.*

ANGLING—ALLIED TO HORTICULTURE.

BY E. J. HOOPER.

The pleasures which fly-fishing and angling afford to the horticulturist and admirer of nature, if he should be fond of the art, as some of our readers probably are, may perhaps serve as an excuse for introducing the subject here. There is no other field-sport which affords more enjoyment to the lover of beautiful and varied scenery, for to him how many sources of amusement and study are opened out in connection with his pursuit! If he is fond of Botany an ample field lies before him; and his *Hortus Siccus* may be enriched by many fine and rare specimens, gathered as he wanders along the canyon's side, to or from or even during his fishing. Does

ichthyology interest him? Yes, it is very apt to; and the prey he is pursuing affords him examples in abundance, and food for observations, hereafter to be practically applied to his craft. Is he studying entomology (so closely allied to the science of Horticulture), what a field expands to his view, among the many insects he has to imitate, in order to lure the silvery-speckled and golden-streaked trout from the streams and pools. If the natural history of birds, their faculties, architecture, or eggs, afford him pleasure, here also will he have ample scope for adding to the treasures of his knowledge. But if he be engaged in none of these studies, yet will his eye be delighted, and his mind composed by the varied objects he meets with in his healthful fishing excursions; and he may truly say, with Bryant, in his delight:

"The fragrant Birch above him flung
Her tassels in the sky;
And many a vernal blossom sprung
And nodded careless by."

Trouting in a mountain brook is an experience of life so distinct from every other, that every man should enjoy at least one in his day. The embowering woods will enchant him. The songs of countless birds above and the intensely colored Californian wild-flowers by his path beneath, the mocking-bird's welcome notes, the pensive cooing of the dove, and even the shrill chattering of the jay, all call forth a joyous feeling in his heart. In fact, every object he sees, every occurrence he meets with, opens a mine of information, and redoubles his enjoyment. Bryant says again:

"These shades are still the abode
Of undissembled gladness; the thick roof
Of green and stirring branches is alive
And musical with birds, that sing and sport
In wantonness of spirit; while below,
The squirrel, with raised paws and form erect,
Chirps merrily.
Throngs of insects in the glade
Try then their wings, and dance in the warm beam
That waked them into life. Even the green trees
Partake the deep contentment, as they bend
To the soft winds; the sun from the blue sky
Looks in and sheds a blessing on the scene.
Scarce less the cleft-born wild-flower seems to enjoy
Existence, than the winged plunderer
That sucks its sweets. The rivulet
Sends forth glad sounds, and tripping o'er its bed
Of pebbly sands, or leaping down the rocks,
Seems with continuous laughter to rejoice
In its own being."

Yet, with all these adjuncts to his store of amusement, he will of course return home better satisfied if his creel be well stored with trout or salmon; to which result it is hoped the few following remarks on fly-fishing, bait-fishing, and spinning with a spoon-bait, may possibly contribute.

Of all fresh-water fish the trout is the most beautiful, and for the diversion it affords the angler, as well as for its superior qualities, is only next to the noble salmon. Its very uncertain disposition and wariness make its capture very interesting; one day taking well the fly, and another some particular bait, as the worm, shrimp, or grasshopper, and the next some other variety of food. But fortunately for California, there are yet plenty of these speckled beauties to be found, and the present effective artificial breeding of both them and salmon, with the judicious game laws, will preserve them in continued plenty, as witnessed lately in the successful capture of many salmon-trout* in

* So called; but in reality there are no salmon-trout in California—only the trout (*Salmo irida*) native to the State. The eastern brook-trout have been introduced into some of the private but not yet into the public waters of the country. There are also in Lake Merced

lakes San Andreas and Merced, the first belonging to the Spring Valley Water Company, and the fish in the last to the Acclimatizing Society. The chief, and this season the best method of catching them in these lakes, is by trolling or spinning from a boat a small spoon, to be allowed to float out some one or two hundred feet or more, the boat being rowed at a moderate rate.

Next in rank to fly-fishing as a lively and scientific mode of angling, in our estimation unquestionably stand minnow and spoon spinning, whether we regard them as an elegant pastime or a difficult or at least delicate art. And although our captures with them may by no means equal in number those taken with the fly or real bait in some waters, they will in general surpass them in size and quality.

To show how different are the dispositions of European and the Pacific slope or western American trout, or the "salmon-trout," the idea in Europe of these fish taking the spoon-bait in clear waters, of limited size, is ridiculed, and sportsmen say there that these fish must certainly be famishing of hunger, or seize it merely from motives of curiosity, before they would bite at anything so unnatural. We have often thought that a good imitation of the "Abbey," green or gray drake-flies, or the brown salmon-fly so successful here north, combined of any material which would keep them floating high and dry on the surface, like the natural insect, might be a valuable invention even on this coast.

The best sort of rods that we know of, adapted to all kinds of fishing, whether for fly-fishing for salmon or trout, boat-trolling, or bait-fishing from the bank, is either the $25 rod, all made of Lance-wood, with four or five spare joints or tops; or the $12 rod, all the joints of Ash or Hickory, except the tops, which are formed of Lance-wood. These and all other sporting apparatus can be obtained of Liddle & Kaeding, Washington Street, San Francisco. For trolling in lake San Andreas or Merced a small spinning spoon-bait is necessary, to be fastened to a gut leader six or seven feet long, with a very small and light lead or sinker to cause the bait to sink about from four to six feet.

The trout in lakes San Andreas and Merced are either what are called "black trout" or "silvery trout." Lake Merced contains the larger fish of the two; they chiefly running from two to six pounds, while the San Andreas trout average about three-quarters of a pound. Lake Pilarcitos, about twenty-three miles from the city, contains plenty of brook-trout, and is a free water.

many salmon (*Salmo salar*), and all the fish there are now successfully taken by bait-fishing as well as the spoon.

Importations from Australia. — For several years, or ever since the establishment of steam communication between this city and the Australian colonies, this market has been supplied with a Lemon of superior quality from Sydney. It is known in the colonies as the Lisbon Lemon, and has proved itself well adapted for transportation long distances by always arriving in good order. For the first time the trees are now obtainable here, a shipment by steamer "Mikado" having just been received by O'Connor & Co., 426 Sansome Street. The same firm have also received several hundred plants of the Norfolk Island Pine.

For a general mulch there is nothing equal to the soil itself. A thorough pulverization of the surface is the same as a coat of saw-dust, cut straw, etc.

SOME GOOD ROSES.

BY F. A. MILLER.

[Concluded.]

A most important point in the quality of a Rose is its form. We find that in all popular classes of flowering plants certain standards or rules have been established which make a variety worthy of cultivation. So it is with the Rose. A good flower should have a perfect outline, must be double to the centre, the petals should be substantial, and their position regular, independent of the general form of the flowers. Outside of these general qualities, certain terms are applied as to their form, viz: "globular," "cup-shaped," "shell-shaped," "compact," and "flat." Of these, the cup-shaped Roses are generally considered the most beautiful, and next to these may be considered the shell-shaped, although some very excellent Roses are neither cup-shaped nor shell-shaped.

While these forms apply more particularly to the flower when at its height of perfection, we must not lose sight of the fact that the bud of a Rose deserves our admiration equally as well. In fact the bud is the most desirable for a bouquet. Very few varieties, if any, combine excellence in bud with perfection in flower, and, generally speaking, the varieties which produce very fine buds, do not furnish very elegant flowers when in full bloom. I would favor therefore, as far as the general form of a Rose is concerned, the making up of two classes, of which the one produces the finest buds and the other the finest flowers.

All the Noisettes and all the Moss Roses are very handsome in bud, and particularly the latter are desirable only when in bud.

Of the Hybrid Perpetuals, comparatively few produce very fine buds: General Jacqueminot (popularly known as Pauline) is far ahead of any other in its class.

Of Tea Roses, we have quite a good number which furnish most exquisite buds. The well-known Safrano, Catherine Mermet, Isabella Sprunt, La Sylphide, Madame Blachet, Reine du Portugal, and Souvenir d'Elise Varden are all very beautiful.

Of the China (Bengal) Roses, Mrs. Bosanquet forms a most charming Rose when about half open; Madeline and Marjolin de Luxembourg are also very good in bud.

Of Bourbon Roses, the most exquisite bud is furnished by the old and well-known variety "Gloire de Rosamene."

Of beautiful Roses when in full bloom, we have many excellent varieties as to perfect form. I can only name a few of them here, which may be counted among the very best. These are mostly confined to the class of Hybrid Perpetuals: Alfred de Rotalier, Anna Alexieff, Charles Lefebvre, Jules Margottin, Mademoiselle Bonnaire, Géant de Batailles, Eugene Appert, Comtesse de Chabrilliant, Beauty of Waltham, John Hopper, Victor Verdier, Lord Palmerston, and Ornament des Jardins, are all most exquisitely formed Roses.

Of Tea Roses, but few produce fine expanded flowers. La Pactole, Regulus, Bougere, Devoniensis, and Madame de Vatry may be classed as some of the best.

The following Bourbons are known to expand their flowers in very excellent shape; Catharine Guillot, Souvenir de la Malmaison, Louise Darzens, Acidalie, Louise Margottin, Model of Perfection, and George Peabody.

Undoubtedly there are Roses which are superior to those mentioned here under the various heads, and which

have not yet made their way to this country. After an absence of twenty-two years from Europe, the great field of competition and production of new varieties, I should not feel surprised at all to find there many valuable sorts of Roses, heretofore unknown to us here. As I intend to visit all the leading nurseries of the East, the present summer, I shall certainly keep a careful lookout for new and first-class Roses and bring them out here if possible.

CULTIVATION AND DROUGHT.

J. D., Blair County, Pa., says: "By very frequent stirring deeply plowed land no drought will prevent a crop." True—a very important truth, and one well worth repeating in your paper every week during the summer droughts. By the destruction of the weeds the fertility of the soil, is of course, secured for the growing crop: but besides this, such cultivation promotes the growth of plants in four ways:

1. It destroys the weeds, which exhale the moisture of the soil with great rapidity while they are growing, and to a greater depth than is dried by the rays of the sun. By placing a sash or a pane of glass upon growing weeds, the upper surface of their leaves will show the large amount of moisture they exhale, the evaporation of which is arrested by the glass, and which would be retained in the soil by the destruction of the weeds.

2. Ground thus often stirred, and loose, absorbs most of the water of occasional and brief showers, and retains it until much of it settles into the soil below; whereas much of the water thus falling runs off rapidly from a hard surface.

3. The mellowed surface becomes more thoroughly warmed than a hard soil by the noonday sun, and gives off that warmth more gradually during the night, and the plants are thus surrounded by an atmosphere warmer and of more uniform temperature, during the whole twenty-four hours.

4. But the greatest advantage of frequent cultivation in our dry soil is, that the loosened soil acts as a mulch, arrests the ascent of the moisture by capillary attraction, and keeps the soil in which the roots are acting moist, and in good condition to imbibe and retain all the moisture that reaches it through the loosened and warmed soil upon the surface. To secure this benefit of cultivating the land, it ought to be done just as soon as the soil becomes friable, after every shower, whether there be any weeds to be eradicated or not.

It is a mistake to suppose that the roots of plants are benefited by direct contact with air in the mellowed soil. Air is always injurious to them, and especially so if it be hot and dry. While the plants are growing their roots should not be exposed to the air, nor should the soil in which they grow be disturbed. The full benefit of cultivation will be secured if it be only deep enough to furnish a few inches of fine and loose soil upon the surface. It is often said that the loosened soil absorbs moisture from the atmosphere, and thus aids the growth of plants; but everyone can see that the surface dries much more quickly for being stirred, and it is very clear that what little moisture is thus received in the night is quickly evaporated, and can not reach the roots, or the soil in which they work.—George Haskell, *Ipswich, Mass.*

Fowls are recommended to be kept in orchards, for destroying insects.

COLORS IN NATURE AND FLOWERS.

BY AN AMATEUR.

To cultivate the taste, to educate the mind to perceive and appreciate the beautiful in nature, is a duty which we owe to ourselves and to the fair world in which we are placed. To attain to this refinement of taste may certainly not be so indispensably necessary to us as to the poet or the painter, but it is eminently desirable that so pure and refined a pleasure should be ours, which may assist to wean us from inferior pursuits, elevate our groveling minds above the low level of passion and care, and help us to feel more reverence and love for Him who hath decked the earth with such numberless and diversified beauties.

In accordance with the invariable simplicity of nature, from the three primitive colors—blue, red, and yellow—are produced all the varied tints we behold. These, compounded in the wondrous kaleidoscope of nature, are amply sufficient to produce the varied beauties of flowers, and the splendor of the rainbow.

The coloring of the sky can scarcely fail to impress the least susceptible as being extremely beautiful, and well does the landscape painter know what pains it has cost him to imitate it with anything like success. The deep blue, so intense and yet so unsubstantial, and especially the graceful clouds that float along upon its surface, changing in their hues every moment, are to him a constant source of study and delight, which, while he increasingly admires, he despairs of adequately depicting. And then the glorious rainbow, his model of coloring, how distinct without harshness, and soft without confusion! How well defined is every tint, yet how imperceptibly blended. What gorgeous colors are often seen in the west at sunset—what profusion of gold, and crimson, and purple, as though the clouds in their richest attire clustered around the couch of the king of day, determined that he who had run his race so brilliantly should repose in royal splendor! How sweetly and insensibly the yellow tints change into red, and these into purple, till the gray mantle of twilight falls around and closes the scene! Insensible, indeed, must he be who has not stopped and lingered to admire such beauties as these.

The coloring of the landscape varies very considerably, according as it is seen under the influence of light or shade; but whether contemplated in summer or winter, sunshine or storm, under all aspects it will be found to possess some special beauties. In the early morning the dazzling sun floods the landscape with his silver glories, and distant objects are crowded and indistinct, presenting to the eye only masses of gray, and the absence of all detail except in very near objects. How beautifully at noon, when the gorgeous clouds are slowly sailing along, do the shadows glide over the fields, while the sun in meridian splendor gilds the sparkling streams! How charmingly does a yellow harvest-field in the foreground, with its brown sheaves and busy reapers, contrast with the deep blue of the distance. At evening the gray twilight again masses the distant objects, and, as the last streaks of day linger in the west, the whole landscape assumes a subdued tone, and tall trees and lofty rocks appear with unwonted distinctness, yet still without harshness, against the sky. How insensibly the distant hills and mountains melt into the atmosphere. There again stretches away a continuity of wood, with its varied tints, and here a silvery stream or lake

reflects the placid sky and lends life and loveliness to the scene.

Now as to the coloring of flowers. No objects in nature have such brilliant coloring, especially in California. In them we have colors in the most delightful combinations, and tints modified by difference of surface and texture in endless variety. Perhaps yellow is the commonest color in flowers, and blue the rarest; red occupying the middle station. Of these the tints of the red flowers are more diversified than those either of yellow or blue. The many shades of color between the Nasturtium and the Sweet-william could not, we think, be paralleled by either of the other colors. It is interesting to observe how the flower of a plant invariably harmonizes in color with its green leaves, some by similarity and some by contrast. How finely does the snowy blossom of the Convolvulus of the canyon-side harmonize with its large, well-defined, empurpled leaves. How beautifully do the rich warm orange flowers of the Nasturtium contrast with the light-green leaves on which they repose. How becoming the cold-green leaves of the double Poppy to its blossom. How admirably do the little white stars of the Jasmine, or the elaborate Passion-flower, contrast with the dark leaves behind them. But if the blossoms of the Marigold were viewed in connection with the green leaf of the Passion-flower, even an unpracticed eye would quickly detect the want of harmony between the flower and the leaf. Some few plants, as the Marvel of Peru, strangely produce flowers of different colors from the same root, but this is of rare occurrence in the vegetable world.

It is also interesting to observe how exquisitely the various tints are blended in the individual petals, and how symmetrically these in their turn are arranged so as to form a complete flower; as, for instance, in a well-developed Dahlia. How inimitably, in the delicate tints of the Rose, does the blue blend with the warm blushing red of the centre of the flower! In other flowers, the colors are not so softly blended, as the Nasturtium, in which the red is dashed as it were on the orange, yet without the least harshness. In some the petals are striped and variegated with a different color from the ground, as the Tulip and the Geranium; and in others each petal is of a different color at the inner part, as the Coreopsis. But, however fantastically the colors may be disposed, or however strangely they may contrast, there is always a harmony of coloring, and a softness of effect, which must be pronounced faultless even by the most fastidious.

TIMBER LANDS.

The House, February 23d, passed the bill providing for the sale of timber lands in the States of California, Oregon and the Territories. It is a bill that will meet with general approval. It provides, in brief, that any person or association of persons may purchase *not to exceed* 160 acres of any timber lands, "unfit for cultivation," at the minimum price of $2.50 per acre. This, of course applies only to surveyed but "unoffered" lands. The application must be made through the local Land Office as with other public lands. The applicant must take a rigid oath that the entry is for his own use and benefit, not for the purpose of speculation; that is, "that he has not made any agreement or contract with any person whatever, by which the title which he might acquire from the Government should inure to the benefit of any person except himself, which statement shall be verified

by the oath of the applicant before the Register or Receiver of the Land Office within the district where the land is situated; and if any person on taking such oath shall swear falsely, he shall be subject to all the pains and penalties of perjury, and shall forfeit the money paid for said lands and all right and title to the same, and any conveyance which he may have made, except in the hands of *bona fide* purchasers, shall be null and void."

The bill furthermore requires that the notice of intention to apply for a patent to such lands must receive due publication as in case of a mining patent. After which, if there be no adverse claimants or rights filed, the patent must issue on payment of the price named.

CLOAK-CUP MORNING-GLORIES,

BY DR. A. KELLOGG.

A long time ago—during the last generation, 1860–62—we especially invited public attention to the rare grace and perennial verdure of a woody twiner common around the Bay of San Francisco, and in many parts of the State, even to the Mono side of the mountains east.

The native Cloak-cup Morning-glory (*Calystegia sepium*, L.) is one of the hardiest and freest growers known, particularly in moist localities, where it beautifully festoons trees and shrubs, climbing fifteen to twenty feet.

We challenge any gardener to show us a climber of more grace and beauty, *all the year round*, for adornment of verandas, summer-houses, rustic bowers, archways, garden-screens, etc.

The California form has several flowers on each flower-stem, instead of only one, as described. These open consecutively: in short, it is always in bloom here. When first open they are white, or chiefly so, becoming purplish with age.

We have three or four species or good varieties, but they are much smaller, and of comparatively little importance.

The Chinese variety (*C. pubescens*) is double-flowered, pink-colored, and crimped up irregularly; quite as luxuriant as the native; thickening up and hiding angular and unsightly objects; covering as with a mantle of charity every natural defect of the landscape, rural retreat, or cotter's door. Why then do we not cultivate them?

REMEDY FOR MILDEW.

Some years ago I read, in a German periodical devoted to practical chemistry and chemical technology, edited by Dr. Elsner, that molasses, mixed with water, was a certain remedy for mildew on Gooseberries; but no proportions were stated. A few days afterwards I noticed that a Gooseberry-bush in my garden looked as though it had been sprinkled with flour, so much was it affected with mildew. I immediately mixed some molasses with an equal quantity of water and applied it to the bush with a common syringe, immersing some of the branches in the mixture. The next day the mildew had disappeared, the black spots only remaining on the leaves where the mildew had destroyed the epidermis. Since then I have repeated the application every year with the same result.

I find that it is better to take rather more water than molasses. The efficacy of the remedy is evidently based on the fact that it excludes the air from the leaves, forming a thin cuticle on them and thus suffocating the mildew. The first rain will dissolve it and carry it off. Several years ago a weak solu-

tion of common glue was recommended as a remedy against mildew on Grape-vines—the action and the effect being the same as with the molasses—but I found that it was much more convenient to use the molasses than the glue. Not having the opportunity to try either of these remedies on Grape-vines, I do not know whether it will destroy the mildew on them.

In the same work a Mr. Roberts proposed another remedy for mildew, which he called "sulphozone." He found that precipitated sulphur had no effect on mildew; that common sulphur pulverized, was much better, but that the best was flour of sulphur. He has convinced himself that the flour of sulphur, which is produced by sublimation, retains a great deal of sulphurous acid (not sulphuric acid,) less of which is found in pulverized, and hardly any in precipitated sulphur. He added that flour of sulphur impregnated with more sulphurous acid than it naturally contains, is found, by physicians, to be a more powerful remedy for destroying the insects which produce the itch than the flour of sulphur in its natural state. He prepared a powder which contained a quantity of sulphurous acid four times that of the sulphur. In applying this he found that a comparatively small quantity was required to be as effective as the ordinary flour of sulphur.

His suggestions may be worthy of experiment on plants infested with mildew, but should be conducted cautiously for fear of injuring the plant. The flour of sulphur, as ordinarily used for checking this pest, should be moistened with some sulphurous acid, but in what proportion should be made a matter of experiment.—*Dr. Siedhoff, to the American Garden.*

PLANT flowers—they will reward you.

NOTES ON MARANTA MAKOYANA AND MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM.

BY J. H., SOUTH AMBOY, N. J.

Among the popular novelties of recent introduction, entitled to a prominent place, is this lovely Maranta. It is a fine addition to this splendid class of ornamental foliage plants, admirably adapted for planting in a Fern or Wardian case. The leaf-stalks are slender, erect, and of a reddish purple. The ground color on the upper surface of the leaf is a greenish yellow traversed by veins of dark green, beautifully ornamented on each side of the midrib by oblong blotches nearly two inches in length and of a deep full green. These blotches are very decided and well defined, showing handsomely on the under surface which is a wine red, giving to the whole plant a very distinct and attractive appearance, equal to if not surpassing the gorgeous splendor of *Maranta Veitchii* or *Lindenii*. There are also some novelties deserving attention, as being particularly suitable for carpet bedding, such as *Mesembryanthemum cordifolium variegatum*—a plant that has only to be seen to be admired and to become a universal favorite. It is undoubtedly the best variegated foliage bedding-plant that has yet been introduced. I do not make this statement upon the strength of what I have heard, read, or conjectured, but upon the result of a practical test, under no very favorable auspices. I planted it out late in the season, in one of the hottest driest positions possible, along with a collection of other succulents. During the dry weather we had in the past summer in this locality, such excellent bedding succulents as *Echeveria pumilla*, *E. secunda*, and *E. secunda glauca*, shriveled and turned brown, and

finally had to be taken up. This gem remained in perfect health, its innumerable crystal-like specks glistening in the sunshine — an object replete with beauty. It has been proved that spring struck cuttings are very superior to those that are struck in autumn.

THE PROFITS OF FLAX CULTURE, AND ITS INFLUENCE ON THE SOIL.

It is commonly said that Flax exhausts the soil rapidly. This is true if the Flax is pulled; then nothing is returned to the ground. Flax sown for the fibre and lint, and not for seed, is the kind commonly used in Ireland, and it takes the strength of the land, so that for continued culture suitable manures must be applied.

But the Flax mostly sowed thus far in Oregon has been sown for the seed. It is shorter and more branching. Its fibre is strong and valuable for many purposes, but it is mostly thrown away. This Flax is cut with a reaper or header and thrashed like Wheat.

Colonel T. R. Cornelius states that he sowed this seed upon land that would have lain fallow, and gained a three-fold benefit. First, it grew so thick as to choke the weeds entirely; second, he got a crop of seed equal in value to the Wheat crop of the previous year; third, the Flax stubble plowed in enriched his land and put it in as good order for Wheat the next year as if it had lain fallow. Some of his neighbors failed of a good crop of seed that year because they sowed too late and upon too dry ground. It needs moist land. If these two conditions are regarded, there seems to be no reason to let ground lie fallow every other year. If this kind of Flax will kill the weeds, give a crop of seed of equal value to one of Wheat, and enrich the soil with stubble, farmers can increase their permanent profits by its culture.

But a fourth benefit can be gained. Soil too wet for other crops can be used for this one.

A fifth and greater benefit than all can be gained by saving the Flax straw for the sake of the fibre. William Reid, Esq., who is doing so much to bring our north-west coast into proper notice, relates that a few years since the government of Australia offered a bounty of $25,000 for 1,000 yards of linen, made of their Flax. The difficulty of the task was that the Flax raised there s filled with gum, which the weavers of Dundee could not extract. It injured their looms. The fibre was very strong and good for ropes and cables, if kept under water, but when dry they would crack and become worthless.

But the great bonus induced them to try the experiment. By much perseverance the 1,000 yards were made and the reward was paid, but the cloth was gummy and of poor quality. The chemist also who succeeded in extracting the gum spoiled the fibre, and that Flax had to be given up. While this trial was in process, a friend of Mr. Reid's sent him a hank of Flax, raised for Mr. Holman, of Salem, Oregon, for the seed. Mr. Reid was surprised at its softness, fineness, and strength of fibre. He showed it to some of the linen manufacturers of Dundee. They were more surprised. They doubted the story of its production in America, and thought that some one had deceived him. He asked what they would give per ton for such Flax. One man offered £55 or $275 per ton, and another £60 or $300 per ton, and pledged themselves ready to bargain for ten years, as the Flax supply in Ireland is failing every year.

Mr. Reid sent a sample to Belfast, the great linen manufactory of Europe.

That sample brought Mr. Smith and the Williamson Brothers from Belfast to Oregon last year. They introduced the Flax-seed which produces the long fibre, and raised over 200 acres of it. This lint has been sent to Belfast, received, and reported in their journals. The success is so remarkable that the most sanguine are surprised. The Messrs. Williamson have already hired 400 acres for next year's crop, at a rental of $15 per acre.

Mr. Reid remarks that Flax will bring out Oregon and Washington, even if we had nothing else.

The papers report that Mr. Holman has engaged our farmers to sow 12,000 acres this year for the seed alone. The straw or fibre for the most part will probably be thrown away as in years past. Yet this Flax, prepared and sent to Dundee, is worth from $200 to $300 per ton. If not sent, at that price it will bear to be made into burlaps, twine, and cordage in Oregon as well as in California.—*Bulletin.*

THE STINGING TREE.

One of the torments which the traveler is subjected to in the North Australian scrubs is a stinging tree (*Urtica gigas*), which is very abundant, and ranges in size from a large scrub of thirty feet in height to a small plant measuring only a few inches. Its leaf is large, and peculiar from being covered with a short, silvery hair, which, when shaken, emits a fine pungent dust, most irritating to the skin and nostrils. If touched it causes most acute pain, which is felt for months afterward—a dull, gnawing pain, accompanied by a burning sensation, particularly in the shoulder and under the arm, where small lumps often arise. Even when the sting has quite died away, the unwary bushman is forcibly reminded of his indiscretion each time that the affected part is brought into contact with water. The fruit is of a pink fleshy color, hanging in clusters, so inviting that a stranger is irresistibly tempted to pluck it, but seldom more than once, for, though the Raspberry-like berries are harmless in themselves, some contact with the leaves is almost unavoidable. The blacks are said to eat the fruit, but for this I can not vouch, though I have tasted one or two at odd times, and found them very pleasant. The worst of this nettle is the tendency it exhibits to shoot up wherever a clearing has been effected. In passing along the dray-tracks cut through the scrub, great caution was necessary to avoid the young plants that cropped up even in a few weeks. I have never known of a case of its being fatal to human beings, but I have seen people subjected by it to great suffering; notably a scientific gentleman, who plucked off a branch and carried it some distance as a curiosity, wondering the while what caused the pain and numbness in his arm. Horses I have seen die in agony from the sting, the wounded parts becoming paralyzed; but strange to say, it does not seem to injure cattle, who dash through the scrubs full of it without receiving any damage. This curious anomaly is well known to all bushmen. —*Cassell's Illustrated Travels.*

DON'T SHOOT THE SMALL BIRDS.

The classic Oaks of Berkeley are being devoured by caterpillars, and to the visitor who for the first time sees the place overrun by myriads of these indefatigable little crawlers it seems as if every green leaf and blade of grass must soon disappear. Apparently,

however, they are fastidious in regard to their diet, and avoid the strongly-scented and aromatic Blue Gums and Cypresses, for within the plantations of those trees not a caterpillar is to be seen. In all the other parts of the University grounds they swarm; colonies of them have spun gossamer nets in the boughs of the Live Oaks; they take possession of the paths, and one can not step without crushing them; they crawl over the sides of the students' cottages and even invade the sanctity of the professors' gardens and residences; they drop on the heads of the young people in the picnic grounds, and float wriggling and kicking in the waters of the brook. The students indeed bear the visitation with the composure of philosophers. Possibly the plague keeps their friends away and diminishes the distractions to which they are subjected by the visits of "the profane vulgar." Seriously, however, it is a pity to see the Oaks stripped by these voracious little creatures, and the students of the Agricultural Department might profitably exercise their ingenuity to rid the place of such pests. One of the lessons which the annoyance teaches is that the lads who shoot the small birds destroy the farmer's most efficient allies in his continual struggle with the insect hordes that ravage his fields and orchards. This truth has at last, after generations of ignorant prejudice and misapprehension, been recognized in England, and an act has been passed prohibiting the taking or shooting of about eighty varieties of wild birds, from the 16th of March to the 1st of August; although, for some reason or other, the blackbird, the skylark, and the thrush have not been placed under the protection of the law. The next legislature would do well to stop the destruction of small birds during the breeding and rearing season, so that we may escape the possible danger of grasshopper and grub plagues in our hitherto favored State. The difficulty at Berkeley, perhaps, is due to the shyness of most of the wild birds, which rarely live near human habitations; but there is the sparrow, a sociable fellow, as little afraid of a student as a street *gamin* is of a policeman, and a dozen imported from New York would be as useful at Berkeley as they proved in the Central Park when imported from London. In conclusion, we would appeal to the good sense of our boys and young men, and ask them not to shoot the small birds.—*Call.*

ALDEN PROCESS OF FRUIT-DRYING.

Highly favorable reports come from all the Alden drying-houses; while the other methods of artificial dessication are either failures, successful in a minor degree, or not yet sufficiently tried to establish their value among people in their vicinity. The inventors usually claim high merits for their plans, but no method of artificial drying, save the Alden, has been extensively adopted or is generally known even by name in California. In reference to the Alden drier at Sonoma, the Healdsburg *Flag* says:

"It is the intention to start the factory this year by the first of April. The company have contracted with General Vallejo and others for large quantities of Green Peas at $37.50 per ton, delivered at the factory. They will run on Peas until fruit is sufficiently ripe. They have also contracted for a large supply of Onions, and, if they find it practicable, will add Potatoes to the list of their products, hoping thereby to continue running the year round. The ruling price paid for Apples deliv-

ered at the factory, last year, was $10 per ton; Pears, $12; Plums $12 to $20. The factory now has three evaporators, and can cure six tons of Peas, four and one-half tons of Apples or Peaches, three and one-half tons of Pears, or three tons of Plums every twenty-four hours.

THE RESPIRATION OF LEAVES IN THE DARK.

An important paper by Deherain and Maissan, upon the respiration of leaves in the dark, has lately been published in *Comptes Rendus*. Among the more important conclusions reached by the authors in their researches are: First, that the quantity of carbonic acid which is thrown off by leaves in the dark increases with the increase of temperature; second, that the quantity of carbonic acid thrown off is comparable to that yielded by the cold-blooded animals; third, that leaves kept in the dark absorb more oxygen than they throw off carbonic acid; fourth, that leaves continue to throw out carbonic acid in an atmosphere deprived of oxygen.

The authors present the following hypothesis upon the physiological uses of this internal combustion which takes place in the leaves, as the result of their numerous experiments. The immediate constituents which are necessary to the growth of the plants, and to the formation of new organs, are in part formed in the leaves. This growth is especially favored by warmth in the dark; a principle well known to gardeners, who cover plants, the development of which they wish to accelerate, under glass, in which case a part of the light necessary for the composition of the carbonic acid is reflected, but an elevated temperature is secured. This heat in the dark is especially favorable to an active respiration, as we find that the quantity of carbonic acid increases in proportion to the increase of temperature in the leaf, so that there seems to be a relation between the rapidity of growth and the energy of respiration.

This can easily be appreciated, when we assume that a certain portion of the heat must enter into action, in order to the formation of the intermediate principles. The internal combustion, which is indicated by the absorption of oxygen and the throwing off of carbonic acid, is probably the source of the heat necessary for the formation of the new immediate constituents.

An Eccentric Peruvian Plant.—In speaking of the wonderful fertility of the soil in Peru, I have never spoken of a little plant, or leaf, they have here, which I never met with in any other place or country. I do not know the botanical name, and I hope that some botanist or *savant* can give me the name and species. The natives take a simple pale-green leaf, something like a Fern, and pin it to the wall with a common pin stuck through it—just pin it on to the plain adobe wall. Sometimes they fasten it up with a tack. The leaf itself is not so large as a Geranium leaf. Incredible as it may seem, from this leaf will spread out tiny tendrils and shoots, and delicate leaves will form, spread, run, and cover the whole wall. I had one in my own side-yard, or corral, that covered the entire side of the wall, and it grew from one small leaf, pinned on to the adobe to hold it in place. It becomes a thrifty running-vine. I would not believe it possible but that I have seen it repeatedly and successfully tried. — *Chicago Tribune.*

EUROPEAN SYSTEM OF BASKET-PLANTING.

BY CHARLES MOHR.

This system, so popular among nurserymen in Europe, is as yet not adopted here; though its merits are so great, and, at the same time so cheap and easy, that certainly your nurserymen should avail themselves of it.

Gardeners in Italy and southern France do not make any use of greenhouses or sashes, but for tropical plants. Their manner of growing semi-tropical and other valuable evergreen trees and shrubs, as Oranges, Lemons, Magnolias, Camellias, Azaleas, Rhododendrons, Coniferas, etc., consists in planting them, instead of in pots or boxes, in plain-made baskets of Willows, sinking them into the ground in such localities as are most appropriate to the plants.

Naturally the larger roots will be confined in the basket, but the smaller roots, which penetrate through the small openings, will derive nourishment and moisture from the surrounding earth. This saves a great deal of time, which otherwise would be spent in irrigation, where the plants are potted or boxed. In fact, the plants treated in this manner have the same healthy and robust appearance as if they were planted in the open ground; and the facilities of moving and transporting them are so great, that no other system can equal it. All that is necessary to be done is to dig out the baskets carefully. In case of shipping, add an emballage of moss and cloth, and the plants will arrive safely at their place of destination.

In San Francisco, where baskets certainly would be too dear, boxes made of small open laths will answer the same purpose.

Editorial Portfolio.

RHODODENDRON CALIFORNICUM.

We give in this number of our journal a true representation of this beautiful California flowering shrub, which grows with great luxuriance in Santa Cruz County and a few other localities.

The *R. Californicum* belongs to a numerous family of evergreen flowering shrubs, which are considered in the East and in Europe valuable acquisitions for the gardens and conservatories. Here on the Pacific Coast they have until lately commanded but little attention; but we believe that there are at present a pretty good number of these plants in cultivation in this city and its vicinity. They do not, however, do so well here as in some other parts of the world, but inasmuch as the *R. Californicum* grows to such perfection within a few miles of San Francisco, we have every reason to suppose that some of the other sorts could also be grown with satisfaction in our gardens. The efforts which have been made by our gardeners and nurserymen without much success can be by no means considered final. We saw some good varieties of this plant at Mr. Harmon's place, Oakland, in his conservatory. *R. Californicum* is found growing in masses along the margin of creeks, and in hollows, in a damp sandy soil. It attains the height of from four to six feet, having a beautiful dark-green, glossy foliage, and clusters of flowers of a delicate rose color. Its flowers are developed during the early part of May, and remain in bloom for some time. The specimen from which our plate was taken was found growing at Waddell's Mills, Santa Cruz County. The original painting, from nature, was executed by A. W. Saxe, of San José,

through whose kind permission we are enabled to introduce it, and to furnish our readers with a representation of one of the many native floral beauties of California.

This genus of plants, by the attention of modern culturists, has been rendered truly splendid, and is now indispensable to every well-furnished garden. It contains about twenty hardy species at least, some of them being natives of the coldest mountain regions. They do not seem benefited by exposure to the direct rays of the sun. In a hot sunny place the foliage is often scorched, the growth stinted, and the flower-heads few and small. The soil usually prepared for them is a peaty or marsh soil, with an addition of sand or loam. The plants are more extensively raised from seed than by any other method, though both layers and cuttings may be employed.

INSECT PESTS IN CALIFORNIA.

We have strong reasons for believing that the different species of caterpillars that we find committing such ravages on fruit-trees, especially Apple, and also on the Oak and some other trees, are old inhabitants here, and it is quite possible their birth may have originated in this country, though until lately they have not been found very numerous. It seems our many newly planted orchards have attracted them, or their late rapid increase has caused them to spread out on all kinds of vegetation. During our visit to Napa Valley last summer, we observed millions of white moths, or the perfect insects, flitting up and through the Oaks there. They had been preceded, of course, by as many millions of caterpillars. We are informed that this year they are even more numerous than the last. They have invaded the orchards terribly, and if they are not destroyed as soon as they appear as they do often in clusters, it is fearful to think to what an extent in future they may commit ravages. It is comparatively easy work to destroy these clusters in various ways early in the morning.

HORTICULTURAL DEPARTMENT AT THE MECHANICS' INSTITUTE FAIR.

Preparations for the Horticultural Hall at the great Fair to commence on the 17th of August are progressing quite favorably. The garden in the hall is being made with activity and energy, and the exhibition there promises to be effective. It will cover an area of 200 by 75 feet at the south-east corner of the Pavilion. Access to it will be gained at its south-east corner, through a broad and easy entrance from the Pavilion. Fifty feet of the south end will comprise a sort of plateau or terrace to be paved with varicolored tiles, and devoted especially to the use of exhibitors of plants, cut-flowers, etc.

THE PLAN OF THE GARDEN.

The remainder, which is 150 by 75 feet, and is reached from the terrace by a broad and handsome flight of descending steps, will constitute the horticultural garden proper; it has been laid out by A. P. Hall, the landscape artist, with curving walks neatly bordered, fountains, bowers, and other pleasant accessories. There will be a large fountain about the centre, a rockery north of it, and at the north end a real cataract. About the outside will be creeping plants, trailing vines, and trees planted in lines and clusters. Palms, Ferns, evergreens, and so forth, have been already set out and are growing finely. Grass was sown some months ago, and has come to such maturity as

to make its cutting necessary. It will form a fine sod by midsummer. The sides of the horticultural building will be covered with boards, and the roof with canvas, of which it will require 3,000 square yards. Medals, premiums, and diplomas will be awarded to exhibitors in this department as in all others. We trust our nurserymen and florists will be well and generally represented, and that their show will confer honorable reputation to the State and to themselves.

MARIN COUNTY—SAN RAFAEL, SAUCELITO, ETC.

We have received a neat pamphlet, indeed almost a book, written by George W. Gift, containing an interesting, intelligent, and very fair description, not only of California in general, but of Marin County in particular, its climate, health, wealth, and resources; also, a series of carefully written and well considered articles describing the very healthy site of San Rafael, in which the mildness and equability of its climate are explained, and its exceedingly beautiful and romantic scenery portrayed. We can bear testimony to the truthful statements contained in these sketches of one of the most important and valuable of our coast districts, as we have had the pleasure of visiting it on several occasions, and inspecting some of the rich dairy establishments and other interests carried on there. The land is chiefly adapted for fine grazing, but some grain and many excellent fruits and vegetables are successfully raised. The climate of San Rafael for invalids is not surpassed, if equaled, by any in the State. This pamphlet should be read by everybody who is desirous of knowing anything about this San Rafael paradise.

PROPOSED NEW TOWN OF NEWARK.

Among the many choice and beautiful sites for towns and rural residences on the Pacific slope is the location for the above-named town. Here the land is about as rich as nature ever makes it, and the climate is favorable not only for all our common fruits, but for many of the semi-tropical. In our recent visit to this advantageous location for suburban places for our business men and small farmers, we saw Orange-trees in bearing about twelve feet in height (at the old San Jose mission, near by, they were eighteen feet), and whose stems were four inches in diameter. They were in perfect health, and with their blossoms, shining leaves, and their fine fruit, presented most lovely pictures. This valuable land can be reached either by rail or steamboat in a short time. Like Saucelito, San Rafael, and a few other choice spots for dwellings, gardens, and other country improvements, Newark is now about to take its well-deserved position among our bay-shore attractions.

WOODWARD'S GARDENS.

The march of improvements of many kinds is still onward at this well-arranged and well-kept public resort for amusement and recreation, and also instruction in several both animate and inanimate subjects of science—especially natural history. The botanical department, under the able management of Mr. Charles Mohr, is advancing as well as all lovers of Horticulture and Floriculture could desire. His group of rockeries in the conservatory is most tasteful and artistic, and adorned with a choice varied and rare selection of Ferns flourishing most luxuriantly. Overhead on the walls are many beau-

tiful and luxuriantly growing climbers. At one end of the conservatory there is another handsome and picturesque rockery, adorned with a fine collection of Cacti. But the very latest embellishment in the grounds, and designed by Mr. Mohr, is a romantic one-arched bridge of rock-work, thrown over the narrow passage-way between the two ponds, one of which contains the circular boat. Near the bridge is an octagon rustic summer-house of excellent workmanship, with a rock-work foundation. On advancing to these structures in the path from the main cabinet building they present themselves to the admiring gaze of the visitor with Weeping Willows and Australian Acacias forming a rich and graceful background; and the effect of the bridge is to enlarge the view, and add much to the beauty of the miniature lakes.

The orangery to the left of the rotunda, which was formerly the grapery, contains the finest varieties of this favorite fruit, together with the best species of Lemons. In the side borders are Palms. Altogether, the horticultural department of these popular gardens is greatly improved, both under glass and in the open air, and does much credit to Mr. Mohr's skill and management. The plant and tropical greenhouses are in the finest order, and are continually being added to by the rarest plants. The Fern-house, where once was the aviary, is filled with a splendid exhibition of this most interesting and elegant genus of plants. The museum of natural history, directly opposite the entrance gate, has lately undergone a thorough re-adjustment in all its compartments and cases. Under the able operations of Mr. C. Stephens and Professor F. Gruber, all the specimens have undergone a complete scientific classification and labeling.

The marine and fresh-water aquarium, under the superintendence of Professor C. Schuman, still upholds all its most interesting features. Both the sea and fresh-water fishes of many varieties are doing well, and some of them, especially the different species of trout, are much increasing in size.

Another lofty fence is being erected on the north-west side of the grounds, to act as an effective screen against our strong summer trade-winds, and to protect invalids, and persons in delicate health, when visiting and perambulating the gardens. Thus the public-spirited proprietor is evidently quite liberal in his expenditures in all these improvements in catering to the pleasures and enjoyments of his visitors.

ROBERTSON'S NURSERY.

Nearly opposite the long-established nurseries and plant-houses lately of Edw. L. Reimer, but now of W. Meyer, corner of Folsom and Nineteenth Streets, is the neat, well arranged and managed nursery and floral place of William Robertson. This business has been carried on for some years, and the stock turned out by the skill of Mr. Robertson, as to the growth and reliability of his trees, shrubs, and plants, has given general satisfaction to the public. His depot of sale is 106 California Market.

CATALOGUES RECEIVED.

From D. M. Ferry & Co. Detroit: "Descriptive Seed Annual for 1875." Certainly one of the handsomest catalogues in the United States. It contains a beautiful colored engraving of their Peerless Water-melon, and also a splendid colored plate of the Emperor William Pansy, a celebrated new vari-

ety of the most brilliant indigo blue' shaded and penciled with black in the centre, with a white and yellow eye. The flowers are of immense size, most perfect form, very freely produced. It is one of the finest Pansies yet introduced.

From William Rennie, Toronto, Ont., Canada: "Descriptive Seed Catalogue for 1875, of Field, Garden, and Flower Seeds." Chiefly vegetable seeds, with some flower seeds, with neat plates of both, but mostly of vegetables.

From George F. Sylvester: "Annual Catalogue for 1875, of Garden, Flower, Tree, Agricultural, and Herb Seeds." 317 Washington Street, between Battery and Front, San Francisco, Cal.

From J. M. Thorburn & Co.: "Annual Descriptive Catalogue for 1875, of Vegetable and Agricultural Seeds; also, of Flower Seeds, Beautiful French Hybrid Gladiolus, and other Bulbs." No. 15 John Street, N. Y.

From William Bull: "A Retail List for 1875, of Select Flower, Vegetable, Agricultural Seeds, and New Plants." King's Road, Chelsea, London, S. W. This is the leading firm in England.

NEW AND RARE PLANTS.

Crisped Pelargonium, Queen Victoria.—As our readers know by this time, our botanists are unable to find any valid distinction between that class known in old times as the Horse-shoe or Fish Geraniums and the old Pelargoniums that were once the glory of every early summer show. They are all now Pelargoniums, and the other class instead of being bedding Geraniums are "Zonal" Pelargoniums — though large numbers have no "zones" or "horse-shoes" on their leaves. There is no blame to botanists—they have to follow the truth in all cases, no matter what temporary inconvenience may be caused thereby. Yet it was so nice in practice to distinguish the two great classes in that way. We now have to explain always what we mean by a "Pelargonium." Those we refer to to-day are not of the old scarlet "Fish" or "Zonal" class, but of the "other." It promises to be of great interest as the founder of a new race of that class. Mr. Chitty, of the Bellevue Nurseries, thus describes it:

"This magnificent Pelargonium represents a new type of this valuable flower known as the frilled or crimped-edge type. To say that this variety is handsome conveys but a faint idea of its marvelous beauty. The flowers are not double, but from the peculiar crispy petals, their extra number, and great fullness of form, have the appearance of being so. The color is a rich vermilion, all the petals being broadly margined with pure white, and the upper ones blotched with maroon; the flowers are produced in immense trusses; the plants flower quite small and continue long in flower. This is the most valuable market variety ever introduced, as it is also one of the very best for general decorative purposes."—*Gardener's Monthly.*

NEW FRUITS.

The Peerless Water-melon, from D. M. Ferry & Co., at Detroit, Michigan, is considered one of the best Watermelons known Messrs. Ferry & Co. consider this Melon unquestionably the finest in cultivation, and that it will probably supersede all others. The Casaba and Improved Nutmeg are among the best of the Musk varieties.

A MULCH of well-rotted manure is invaluable for plants at this season.

CULTIVATION OF FRUIT AND ITS PROTECTION, AND REPORT ON THE FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Year by year in California, and indeed in all the States, the forests are being stripped off, exposing the hills, mountains, valleys, and plains more and more to the fierce winds of winter, and in California, in summer, to the powerful westerly trade-winds; and her fine spreading Oaks, in single trees, in groups, or in groves, are being speedily destroyed for fuel and other uses.

One of the things we most need in this State is shelter, independently of trees for fuel and manufacturing purposes. And this can readily be accomplished in a short time by the planting of deciduous and evergreen trees, especially the latter. While deciduous trees answer a good purpose for protection from winds in summer, evergreens, besides forming a good shelter, have the additional advantage in all seasons of the year of affording a delightful spectacle to the eye. The Monterey Cypress and the Eucalyptus are admirably adapted for this purpose, independent of the last tree furnishing useful wood for several economical uses; and if a single screen of the Cypress is not sufficient, then double belts of trees may be formed, by planting Eucalypti and Australian Acacias, as well. When trees are planted in belts or hedge-rows, evergreens of many varieties will be found preferable. Besides those we have named, Norway Spruce, Scotch Pine, Norway Pine, American Arborvitæ, and American Spruce may be used. The Scotch Larch, though not an evergreen, is a rapid grower, and will soon make a tree of considerable height. The red Cedar is also pretty good to mix in with the above-named sorts, though it is not a rapid grower. The Hemlock, which is liable to injury when exposed, will do pretty well when planted in belts with other evergreen trees. The White Pine will bear the pruning-hook and shears well, and the trees which have attained too great height may be headed in. The Norway Spruce can be treated in the same way, and can be profitably employed for hedges of ordinary size. Objections are raised against thus planting trees about fields and orchards, to the effect that no crops can be raised in the shade of such timber; that fruit-trees can not be planted near them, that even on the exposed or sunny side the roots extend into the ground and exhaust the soil; and that ordinary field crops would suffer. We can not deny that this would be true to some extent, though not so far as may appear at first glance; but as the good far outweighs the evil, it should still be done.

There are other advantages besides shelter to gardens and orchards, and protection to buildings. Every man so planting will add very much to the value of his place by the additional beauty it receives from such groves and belts of trees. He is also raising wood and timber that will sometime be of great value when wood and timber become scarce and dear.

Horticultural and agricultural societies, as well as the Government, should offer liberal premiums to those who set out or raise from seed such groves or belts of trees, whether deciduous or evergreen. Every sensible man in the country mourns over the sad havoc that has been made by thoughtless men of the past or present generation, who have so ruthlessly destroyed the native growths of all kinds of timber. Let every thinking, careful man see what he can do to restore these trees, or at least furnish proper shelter to his own

grounds, and, indirectly, the grounds and fruit-orchards of his neighbors. Plant liberally, and take good care of the trees until they get well established, and they will soon gladden the eye of the owner, and accomplish the object for which they are designed.

When we lately visited San Leandro, a little beyond Oakland, we had the pleasure to see on Mr. Ford's place there some extensive fine and beautiful screens of the Monterey Cypress and some other suitable evergreens, as well as many of the larger timber-trees, flourishing in great perfection, and forming a capital shelter for his large orchards of various kinds of fruit. Mr. Ford has raised them all from the seed at a small expense, and no doubt he is amply repaid for his outlay and trouble of planting, care of them, etc.

About the 10th of last month (May) Apricots were in season, though neither ripe nor cheap, 50 cents per pound being asked for the few that were offered. Gooseberries were then selling at 5c. and 10c. per pound, but the demand was very limited. Cherries increased in supply, but were mostly of inferior character. There has been no season when so many poor Cherries and Strawberries, early in the season, were offered for sale. Tartarian, May Duke, and Governor Wood were the principal varieties of Cherries then in season. Tartarian ranged from 35c. to 50c. per lb., and May Duke and Governor Wood at from 25c. to 35c.

On the 15th of May no important shipments of Tomatoes had been received and prices were very high. New Potatoes were more plentiful, but the prices were kept up. An important reduction had taken place in the price of Onions, in consequence of free arrivals of new. The supply of Cherries was daily increasing, and prices were steadily giving way. Strawberries became very plentiful about the latter part of May, and much cheaper. No prime lot of Apricots had yet been received, though several consignments, partly ripe, were sent forward. The indications were that there would be a fair abundance of all kinds of late fruit, at least, notwithstanding the reported damage by the April frosts. It is becoming more and more evident that the injury was greatly exaggerated.

The first ripe Currants and Raspberries made their appearance about the last week in May. The former sold at 25c. and the latter at 40c. to 50c. per lb. Apricots were a little more plentiful, but came forward rather slowly, and were generally very small and tolerably juicy. The supply of Strawberries was much lighter than is usual at this season, and the crop now appears to be somewhat deficient. The prices will be no doubt lower when the fruit becomes more abundant.

The last shipment of California Oranges has probably been received, and the dependence of the trade in this fruit must henceforward, this season, be upon the Tahiti variety. California Lemons were still in fair supply, and will continue to come forward a month or two longer.

Some English Gooseberries appeared in the stalls about the middle of last month, and retailed at 12½c. per lb.; common kinds, as the Houghton, commanded no more than 5c. Cherries were abundant, but they do not cheapen as rapidly as might be expected.

Cucumbers grown in the open air are beginning to come in, and sell at $1 to $1 50 per dozen. Some grown in hothouses command $2 a dozen by wholesale, but retailers do not keep many on hand—only enough to fill orders at about 30c. apiece. Strawberries come

into the city at the rate of two and a half tons daily, and as a consequence they are cheap—selling at the stands at 10c. to 25c. a pound by weight, and at 40c. to 50c. per 4-pound drawer for fresh; and where they have been in for a day, peddlers sell the fruit as low as 30c. a drawer. Cherries are plentiful, but the condition of most of them is not first-rate. The best retail at 50c. a pound, and common can be bought as low as 12½c. Currants are so green as to be unsalable. Gooseberries, 8c. to 15c. a pound, the latter figure for English, which are fairly ripe. Apricots are an addition to the fruit market, but are unripe, and being held at 50c. a pound, market men find but little sale for them. Oranges, Pineapples, and Bananas are unchanged. Mangoes, three for a quarter. The price of California Oranges ranges from 50c. to a dollar per dozen. Tahiti Oranges are not in the best condition, and can be had for 50c. a dozen, and even lower. Pears have nearly disappeared, though a few might yet be found. Apples have advanced in price, good to choice selling readily at 8c. to 15c. a pound. Early fruits will be somewhat backward this year on account of cold weather and frosts that came on some months ago. With the exception of Apricots, however, it is anticipated the yield of most kinds will be as great as last year.

The crop of Strawberries shows signs of weakening already. The supply is smaller and the quality inferior to past years. The frost played sad havoc with the crop in the early stages of its growth. It is expected that there will be a great improvement in the condition of the second crop. It is to be hoped so, otherwise this delicious fruit will lose much of its legitimate popularity. Cherries do not promise to be very cheap this season. The supply is very moderate, and the high price asked for good descriptions keeps the demand within reasonable bounds. Tartarian are still selling at 35c. to 50c. per lb.; and other kinds at from 15c. to 30c. There is a fair supply of Apricots, and prices are now down to 12½c. @ 30c. Raspberries are unchanged at 50c. per short pound baskets, and Currants range from 15c. to 20c. Half-grown English Gooseberries retail at 12½c., and common at 5c. New Astrachan Apples are now in the market, and are quoted at 8c. to 10c. per lb. Tropical and semi-tropical fruit is selling at the usual figures.

The first Blackberries of the new crop were received recently from Alameda. The variety is the Aughinbaugh, and is the earliest known. The shipper says he could have had them in market twenty days earlier but for the April frost. Another small lot arrived, and brought $1 per lb. A few wild Blackberries have also come to hand, and sell for 50c. per lb. Green Apples and Madeline Pears are plentiful, the former at $1.25 to $1.50, and the latter at $1.50 to $1.75 per basket. The Strawberry crop is turning out to be very short.

A few varieties of fruit were added to the market the first week in June—Apples, Pears, and Peaches—but none of them were ripe. Such as they were, however, they brought extremely high prices, the first Peaches selling at two bits apiece. About June the 4th they were all cheaper; Peaches (fairly ripe), 40c. to 50c. per lb.; Pears, green, at 6c. to 8c.; and green Apples, 4c. to 6c. Red Astrachan Apples were received and sold yesterday at 6c. to 8c. Blackberries were beginning to come in more plentifully, and Lawtons were selling at 30c. to 35c.; and the choicest from across the bay at 50c. per lb. The old

crop of Strawberries made a poor appearance, but sold at quite an advance over the last week, from 15c. to 20c. per lb.; second crop were in better condition and brought 25c.; the few Chile Strawberries that came in commanded 50c. to 60c. Raspberries now sell at 35c. per basket. Cherries and Gooseberries were unchanged. Currants were 8c. per lb., a heavy decline since the week before last, when they sold at 20c.; the quality has improved at the same time. Apricots of the common kind were cheap enough for anybody, and could be had as low as 6c. per lb. The better kinds of Royals and Moorparks were higher, and could not be had for less than 20c.

Forests and Rain-fall.—As we have given what purports to be positive and exact figures that there is no influence on the general climate by trees, it is but fair that we give the positive and exact figures on the other side. Here are some:

MM. Fautrat and Sartiaux have lately presented to the French Academy the results of certain experiments to test the disputed question whether forests increase or diminish the rain-fall. Over the centre of the Halette Forest they fixed the pluviometer, psychrometer, etc.; a similar set of instruments under similar conditions being placed above clear ground, 300 metres distant. Between February and July the total rain-fall above the forest was 192 mm., above the clear ground 177 mm., or 15.5 mm. in favor of the forest. As regards degree of saturation, the psychrometer above the forest showed an excess of 1.3 per cent. over the other; thus confirming their conclusion that forests are vast apparatuses of condensation."

Editorial Gleanings.

A ROSE OF THE GARDEN.

A beauteous Rose was once my special care,
In favored nook 'twas nursed; there, as it grew,
I watched its op'ning beauties come to view;
And its sweet fragrance filled the grateful air.

The friendly foliage lent an added charm,
For beauties, half concealed, are thus enhanced,
And through the flutt'ring leaves the sun but glanced,
So now I thought my treasure safe from harm.

But ah! I had not counted all the foes
That blight a budding life, and so my Rose,
Though sheltered from rude blasts and scorching rays,
Was plucked by a cruel hand ere half its days
Were numbered, like some human flow'ret doomed
To die neglected, when it scarce had bloomed.

—*Victoria Magazine.*

Choice Pelargoniums for Winter Bloom.—The habits of some of the Zonal Pelargoniums are admirable for winter blooming, and the varieties to be chosen for this purpose are such as generally bloom the most freely. I always choose for myself those of a dwarf habit in preference to others, and can recommend them as best adapted for room and greenhouse culture. Among the best varieties, I would name among others equally suitable, the following, namely—Dwarf Glow, a bright scarlet and a very fine bloomer, literally covering itself with showy puffs of brilliant flowers; Vulcan, another scarlet of fine habits, and grown in trusses. Then I have grown with much satisfaction Vesuvius, a red rich scarlet. It is a dwarf among the dwarfs, blooming freely, and very easily cultivated. Then we have the old and well known Peony, whose rich salmon, shaded with pink, every one admires. This you will

sure to place in your window-box, as it will almost take care of itself. Add two fine plants of pure white — the Bride and the White Swan—and you will have all the whites that you need. These two, I think, can not be surpassed for in-door bloomers, and, possessing all requisites of good, hardy flowers, you may have confidence in them. There are others we have seen well adapted for the purpose of window-gardening and room-culture, but we trust the above selection will give the best satisfaction to our lady gardeners, and having proved them ourselves we know whereof we speak.

The Best Way of Pruning Standard Roses.—A very successful Rose culturist says that in pruning standard Roses every shoot of last year's wood should be shortened to three or four buds. If not pruned in this severe manner, the head will become straggling, the shoots weakly, and the flowers small. Only as many shortened shoots should be left for blooming as will keep the head properly supplied without crowding; bearing in mind that each of the three or four buds left will produce a shoot. Attention must also be paid to have the head properly balanced. Where the head of a standard has been improperly treated, and, in consequence, the shoots of several years, now old wood, are too extended, then cut the shoots of the old wood back to within a few inches of their origin, and so form a new head. The portion of old wood retained will push shoots, which generally bloom the following season; and if they should not, they will not fail to do so every subsequent one, if properly treated. Severe but judicious pruning is essential to secure success in blooming the Rose. An annual manure dressing on the surface of the bed should be given, to be washed in by the rains of winter and spring.

Tree-planting. — Mr. Hodges, superintendent of tree-planting in Minnesota, has presented a forcible argument for encouraging the planting of trees by picturing the condition of Minnesota twenty-five years hence if some measures are not taken to make the growth of trees in that State exceed the consumption of timber. In an address to the State Agricultural Society, he says: "A million or more of population, our pineries exhausted, the Big Woods well thinned out, the Mississippi drying up, St. Paul and Minneapolis three or four hundred miles above the head of steamboat navigation, the mercury forty degrees below zero, and the wind blowing a hurricane, is not the idle reverie of a dreamer." The consumption of wood in the State is estimated to strip 150,000 acres annually. The St. Paul and Pacific First Railroad Company has planted four million young forest-trees, and Mr. Hodges says that a section of prairie land planted with forest-trees will within ten years exceed the profits from ten times as much ground in Wheat. This estimate of profit is probably based on the expectation of great scarcity of wood, which, however, should not occur, if Mr. Hodges' double argument to the farmers themselves and to their pocket-books is accepted by any great number of them.—*Public Ledger.*

Ampelopsis Veitchii.—Mr. Donald G. Mitchell, in a recent essay on rural adornment, gives very high and just praise to *Ampelopsis Veitchii*, a lovely new vine which has come to us from Japan, and which is by no means so

well known yet as its merits deserve. It is smaller and of finer habit than our Virginia Creeper, clinging with much greater tenacity to either wood, brick, or stone, and carrying the greenness of its foliage well into November. Even then it yields to the cold with great reluctance, its leaves changing through a rich brown to a dark maroon, and dropping at last in flakes of deepest crimson. Were it only an evergreen, it would, Mr. Mitchell thinks, more than match the Ivy. The same vigorous creeper is also prominent in the plant-decorations of Wellesley, near Boston. In the latest volume of the Massachusetts Horticultural Society it is said that the unique and picturesque porter's lodge, at the entrance gateway to that magnificent estate, is completely overrun by *Ampelopsis Veitchii*, and the writer declares that "this hardy vine of rapid growth, fine foliage, and wonderfully adhesive power has perhaps no equal." He adds that "on some of the trees it has mounted to the highest branches." It is also used elsewhere on the grounds, and with noteworthy effect, especially in the draping of a Druidical arch of rude stone with rock-work connected.—*N. Y. Tribune.*

Crimson-flowering Currant.—The double-flowering crimson Currant is an elegant small shrub of easy culture, and, although not so showy as some other kinds, still it is one of those plants that will repay a close and intimate acquaintance. The species with single flowers, from which the double sort was produced, is a native of the Rocky Mountains, in Oregon and in Washington Territory. The flowers are produced in long drooping racemes or clusters, and at a distance resemble a bunch of our common red Currants when fully ripe.

Trees on Boundary Line.—The New York Court of Appeals not long since decided that a man has no right to the fruit growing upon branches of a tree overhanging his land where the trunk of the tree stands wholly upon the land of his neighbor. But the law regards the overhanging branches as a nuisance, and they may be removed as such; or the owner of the land shaded may remove them if he is careful not to commit any wanton or unnecessary destruction in so doing. Where the trunk of a tree stands on the line, the owners of the adjoining land have a joint ownership in the tree and fruit, and neither one has a right to remove it without the consent of the other.

METEOROLOGICAL RECORD,

For the Month ending May 31, 1875.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.08 in.
do	12 M.	30.08
do	3 P. M.	30.07
do	6 P. M.	30.07
Highest point on the 10th, at 9 A. M.		30.25
Lowest point on the 7th, at 9 A. M.		29.95

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		62°
do	12 M.	66°
do	3 P. M.	65°
do	6 P. M.	61°
Highest point on the the 24th, at 12 M.		74°
Lowest point on the 20th, at 6 P. M.		55°

SELF-REGISTERING THERMOMETER.

Mean height during the night	49°
Highest point at sunrise on the 24th	54°
Lowest point at sunrise on the 1st	45°

WINDS.

North and north-east on 5 days; north-west and west on 25 days; south-west on 1 day.

WEATHER.

Clear on 26 days; cloudy on 3 days; variable on 2 days; rain on 2 days.

RAIN GAUGE.

7th	0.07
14th	0.04
Total Rain of the season to date	17.39