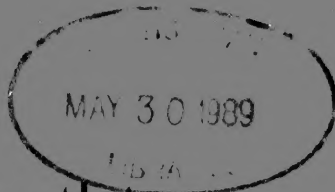


Wm H Dall 1890
U.S. National Museum

VOLUME VII.

APRIL, 1891

WHOLE NO. 59.



THE
West American Scientist.

A popular monthly review and record for the Pacific Coast.

CONTENTS.

	PAGE
The Tuna	<i>C. R. Orcutt.</i> 153
A Visit to Lake Maquata	<i>C. R. Orcutt.</i> 158
Pacific Coast Bulbs in the East	<i>F. H. Horsford.</i> 164
Edward M. Haight	<i>C. R. Orcutt.</i> 165
<i>Crotalus Pyrrhus</i> in California	<i>Leonard Stejneger.</i> 165
Notes on Pacific Coast Plants	<i>F. H. Horsford.</i> 167
<i>Fritillaria Recuroa</i>	<i>F. H. Horsford.</i> 168

C. R. ORCUTT, Publisher.

Corner Fifth and C Streets, SAN DIEGO, CALIFORNIA

EDITORIAL AND MAILING ROOMS, ORCUTT, CALIFORNIA.

ORCUTT NEWS COMPANY, REDLANDS, CAL., GENERAL AGENTS.

PRICE, 20 CENTS.

PER YEAR, \$2.00

THE TUNA.

(From the *Pacific Rural Press*, xli. 189.)

Probably no class of plants is more greatly admired or more thoroughly detested than the Cactaceæ—admired for their oddity, for their beauty of form, for their lovely flowers and for their luscious fruit, the cacti are detested to almost an equal extent by the average cattleman or rancher as a useless cumberer of the ground.

The flattened oval or elliptical stems of the tuna, abundantly armed with a formidable array of spines, is the type of one of the most familiar forms of cactus, and perhaps better known to English-speaking races as Indian figs or prickly pears.

Among the numerous known forms of *Opuntia* there are several species which are very generally known to the Mexicans by the name of tuna. *O. tuna* and *O. ficus-indica* are the two species to which this name is more frequently applied, but the common wild varieties or species of flat-stemmed *Opuntias* are very generally included without distinction.

These cacti are very widely utilized in Mexico and in portions of the United States along the Mexican border in a countless number of ways. The cattleman, after burning the spines from the tender, succulent joints, will feed them to his stock with profitable results; or, in a treeless region, he will plant them as hedges around his corrals or cultivated fields, thus utilizing what in the previous case he destroys—the plant's natural defense against total extermination.

Growing in dry, sandy or rocky soil, they thrive where scarce any other vegetation can exist. Planted around the Californian Missions in the most fertile spots, they attain a most luxuriant growth. Thus, they are naturally adapted not only to thrive in sterile districts and to prepare the barren soil for other classes of vegetation, but they are equally at home under the most advanced stages of cultivation.

The Cactaceæ are without exception, I believe, indigenous to the American continent and the adjacent islands, but the tunas in numerous varieties have become extensively naturalized and are also cultivated with considerable profit in the south of Europe. In Sicily, *Opuntia vulgaris* is said to thrive in volcanic districts, which would otherwise be barren of vegetation.

The Mexican names nopal and tuna refer to the same species of plants, but nopal refers to the leaf-like stem, while tuna refers to the fruit. From being used to indicate a part only of the plant they have come to be generally applied to the whole.

The tunas, naturalized around the Missions of Southern California, were brought from Mexico by the Spanish padres, who trained them into hedges around the Mission gardens and buildings. They grow from ten to fifteen feet high, producing an abundance of large, well-flavored, edible fruit.

P. W. Reasoner, in the *American Garden* (xi. 532), in writing of 'native Florida cactuses,' gives the following interesting account of the occurrence of two species of tunas in that State:

'Next, and of more importance, is *Opuntia tuna*. This famous species, so well known as a hedge plant in Mexico and the West Indies, abounds on every high, sandy beach from Tampa bay around Miami, and, perhaps, still farther north on the east coast. It quite often grows in impenetrable masses, four or five feet high, and is characterized by large oval joints, six or eight inches long. It is covered with two sets of spines, some small and chaff-like, but whose close acquaintance is not to be courted, and others an inch or more long, as sharp and strong as needles, and quite as formidable as any cactus we have seen. The yellow flowers almost invariably have a rosy tinge, and the plant is beautiful, both when in bloom and when covered with the large, rich, purple berries or prickly pears.

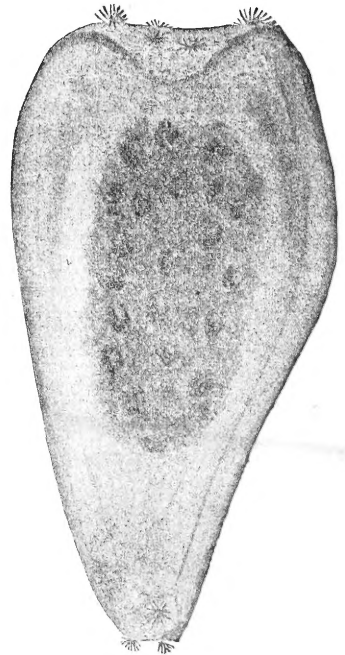
'Besides its use in tropical America as a hedge plant, it is used as one of the principal cochineal plants. It is quite hardy and will stand several degrees of frost unharmed. The fruits, covered with occasional tufts of small chaff-like prickles, are two or three inches long, somewhat pear-shaped and pumpkin-colored. They are produced in the greatest profusion. We know of an array of glasses of marmalade, and jars of the richest wine-colored sweet-pickles, made from the fruit, and as tempting as an epicure could wish.

'Equally famous is *O. ficus-indica*, the 'Indian fig' cactus. This species has escaped from cultivation and has become naturalized in a few places in south Florida, especially on Key West. It, also, is very hardy, and would doubtless prove so in north Florida. It is a most striking and picturesque plant, attaining, in a few years from the cutting, a height of ten or twelve feet, with immense flat joints a foot or even fourteen inches in length. The scale-like spines often drop off and leave the surface perfectly smooth, so it is not very prickly nor difficult to handle. The fruits are larger than those of *Opuntia tuna*, and are yellow in color. The pulp is sweet and has very few seeds. It is very much liked by most people who are familiar with it, and we have seen those who preferred it to such popular and delicious fruits as the orange and banana. The fruits are known as 'Indian figs' in the West Indies, and stray specimens occasionally find their way into the New York market from some West Indian vessel.'

In *Garden and Forest* I have called attention in a note to the possibility that the manufacture of syrup from the fruit of the *Opuntia* may at no far distant day become an important industry in Southern California. The juice of the fruit which these plants produce in great abundance, may be extracted in a cider press like the juice from apples, and boiled down to a fruity syrup indistinguishable in flavor from that manufactured from the watermelon. Excellent vinegar or wine may also be made from the juice. Three



Tuna Colorado.



Wild Tuna.



Tuna Manse.

varieties or more are found naturalized around the California Missions, called the tuna, tuna colorado (red tuna), tuna manse (tame tuna) respectively by the inhabitants of Mexico. They are extensively cultivated in Mexico for their fruits, and a great variety of forms occur in that, their native country. Dr. Edward Palmer, a noted botanical explorer, has contributed an interesting article on opuntia fruit as an article of food to the *West American Scientist* (VI 67), which has been widely quoted and is reprinted in the annual report of the California State Board of Horticulture for 1890, page 133, and elsewhere. In the same report is given a plate illustrating the fruit of the tuna colorado and the tuna manse, and also of the wild tuna (*opuntia engelmanni*). See engravings used herewith.

Gerald Hastings (*American Garden* XI, 475) says: 'Several species of opuntia, particularly *O. tuna*, yield the red, green or yellow fruits known as prickly pears. These are sweet and juicy and extensively used as dessert by the Mexicans and inhabitants of Southern Europe. Their juice is used as a water-color at Naples, and for coloring confectionery in the West Indies.

OPUNTIA FICUS INDICA—Haworth.

'During the eighteenth century Mr. Philip Miller, of Chelsea Gardens, England, brought several cacti into notice, at least eight being credited to him and described in his *Gardeners' Dictionary* in addition to those already known. Martyn's edition of Miller's *Gardeners' Dictionary* enumerates among others, *Cactus ficus indica* and *C. tuna*. Not having access to the above works, I am unable to learn with any degree of certainty as to the characteristics of the types of these species. Apparently the most reliable description accessible to me is in Forster's 'Cacteen,' of which the following is a free translation:

'Native of South America, cultivated south of the Rio Grande under the name *Nopal castellano*; naturalized in Italy and Sicily; tall, broad-spreading plant, with a cylindrical, woody, thick stem when old (up to 45 cm. long and 30 cm. broad in size), green, thick (2½ cm.), thinner on the edge, elliptical, with small reddish leaves; areolæ regularly distributed, sunken, thornless or rarely covered with a few single, small, bristly, white spines. Flowers large, brimstone yellow. Fruit very large and edible. Grown in large quantities in Sicily for its delicious fruit. Four varieties, with yellowish, blood-red, whitish and seedless fruit respectively, the two latter considered the best.'

The tuna colorado naturalized at the old Mission of San Diego, which I take to be a type of *O. ficus indica*, produces a rather insipid fruit, not very sweet, mealy, closely resembling in taste and flavor a frozen apple. The color is a crimson lake inside and out, the epidermis slightly dulled by a glaucous blush. Seeds numerous, over 200, easily separated from the pulp. The fruit is ovate, 3½ inches long,

2½ inches in diameter, smooth, with over sixty areolæ of fine spines distributed over its surface, a fourth bordering the deep-brownish umbilicus which is an inch across. Spines usually few, short and weak; whitish, often entirely absent.

OPUNTIA TUNA—Linn.

'A native of Mexico and Columbia. Tall, broad-spreading plant, large, rather long (10 to 20 cm.) ovate or elliptical stems, the edges curving, with pointed green leaves seven mm. long. Covered with bunches of spines growing close together at base of stems, and wider apart at top, like gray felt in color, the upper spines brownish-yellow, underneath four to six stiff, bodkin-like, light yellow spines of unequal length (9 to 21 cm.) Petals the shape of rose leaves, mucronate; stamens yellow; stigma five-lobed; green.'—Forster's Cacteen.

The tuna which I take to be this species bears a very juicy, sweet, delicious fruit, yellowish-green when mature, nearly three inches long and two inches in diameter, with fewer seeds (about 150). The greenish-white, firm pulp is very cool and refreshing, from which the seeds do not readily separate as in the tuna colorado. The slightly glaucous epidermis of the fruit is similarly armed with an equal number of areolæ of fine, short spines, very disagreeable, but easily disposed of by an expert—though dangerous to a novice if he should stand to windward while brushing them off the fruit, when they are liable to blow into the eyes with disastrous results. The average Mexican or Indian learns to handle these fruits with utter indifference to the spines.

The spines are abundant and rather formidable in appearance on this beautiful plant, but are really one of the most useful characteristics of the plant, making it very useful for hedges and fences.

OPUNTIA TUNA MANSE.

The color of the fruit of this tuna outside is of a deep ochraceous-buff, slightly glaucous, irregularly mottled and blotched with crimson, giving it a bloodshot appearance; inside the outer coating is of the same coloring, but the pulp inclosing the seeds is of a light greenish-yellow.

This is the most abundant of the three forms of tunas naturalized at the San Diego Mission, and like the others is credited with a Mexican nativity. The fruit is nearly globose, with a yellowish umbilicus, pitted in the center, an inch in diameter and smaller proportionally than in tuna or tuna colorado. Seeds more numerous (about 250). Areolæ and spines on fruit and stems differ but slightly if any from *O. tuna*, from which the plants may not be readily distinguished except when in fruit.

C. R. Orcutt.

A VISIT TO LAKE MAQUATA.

It was in August, 1884, that I first learned of the existence of Lake Maquata. Leaving the forest of the piñone pine (*Pinus Panyana*), on the table lands of northern Lower California, behind us, my father and I had descended the abrupt eastern slope of the mountains, into the great Cantilles cañon, among thousands of lovely Blue palms and stately Washington palms that line the bottom of this famous cañon, which justly rivals the Yosemite in the beauty and grandeur of its scenery.

Near the mouth of the cañon, our Indian guide, Captain Jose, told us of the big lake beyond us where thousands of large fish might be had for the catching. He described the fish as fully two feet in length, and very good eating, but told us in Spanish it was a 'long ways'—I think he said five leagues. We could not prevail upon this unusually intelligent Indian to accompany us to the shores of the lake, and rather reluctantly we retraced our steps from the land of the palms to the region of the pines.

It was in July, 1884, that the Colorado river floods inundated extensive portions of the New river district, and other sections of the great Colorado basin, or desert, as it is commonly called. Where the Colorado river mingles its water with the Gulf of California are many millions of acres of fertile, alluvial lands but slightly raised above sea level. With a high tide in the Gulf the Colorado river back-waters, and in seasons of unusual summer floods overflows its banks near its mouth for many miles. New river thus had its origin, the overflow forming a channel for itself from the banks of the Colorado, in a northerly direction, to the lowest portion of the great depressed basin, which at Salton, on the Southern Pacific railway, is two hundred and fifty feet below the level of the sea.

Laguna Maquata is a smaller depressed basin, within the area of territory known as the Colorado desert, its northern end lying perhaps ten miles south of the United States boundary, in the Mexican territory of Lower or Baja California, between the Peninsula and Cocopah ranges of mountains. Its surface is doubtless below sea level, but the sediment deposited by the muddy waters of the Colorado has created a permanent barrier between it and the Gulf of California, whose waters in the pliocene age unquestionably rolled over the whole region for fully two hundred miles north of its present shores.

In January and February, 1890, in explorations on horseback on the Colorado desert, I came several times into full view of a portion of Laguna Maquata, which on maps of Baja California is usually designated as *muy salada*—very salt. At that time it was entirely dry, at least as far as my members of the party I was with could observe in closer inspection which they gave it. Probably in no place does the lake exceed a few—say five—miles in width, but in length, this then dry lagoon apparently extended to the southward for

sixty or seventy miles, along the western base of the Cocopah mountains—a low range of barren hills of forbidding aspect. Along the shores of the dry lake were found numerous remains of the unfortunate fish, the former denizens of the defunct lagoon. All the skeletons observed were of the mullet (*Mugil Mexicanus*), and of these the coyote, or desert wolf, had left but the barest evidence.

Millions of fresh water snails and clam shells were strewn over the bed or along the former shores of the lake, sufficient evidence that it had once been filled with fresh water.

During the summer of 1890, apparently reliable reports reached me to the effect that the Colorado river had again overflowed its bank, inundating anew the New river country as in former years, and filling to the brim the Laguna Maquata with water teeming with fish—like unto the season of 1884. The barren, but naturally fertile, desert plains had been transformed—so ran the reports—into a jungle of tropical luxuriance, a Paradise for man or beast. The mesquite trees were loaded with their crisp bean pods, the grass was growing as high as a horse's back, and all the sloughs and lagoons were full of water and delicious fish.

With the coming of cool autumn weather, early in October, I again entered the confines of the Colorado desert with a suitable outfit and an efficient companion. En route from San Diego we had received slightly conflicting reports from parties who claimed to have recently crossed the plains of the desert from Yuma, Arizona. Several white men affirmed that there was an abundance of fresh water both in the lagoons of New river and in Maquata lake. One aged Mexican, whose acquaintance I had previously made, kindly advised me to depend on the large cañons in the Peninsula range of mountains for my water—not on lake Maquata. I learned that a friend of mine, with nearly twenty years' experience in the region, came near perishing from not finding water at *Las Posas de los Indios*—Indian wells, while others reported an abundance of water in the adjacent lagoons. The water at Coyote wells, however, was universally condemned as unfit for man or beast, from being so strongly impregnated with the deadly alkali.

Reaching the ruins of the old Rock house, on the Summit station on the old Ft. Yuma and San Diego stage line, we filled our cans with the pure water from the mountain springs—a solitary spring in the solid granite, really about half way between the desert plains and the summit of the first barren mountain ridge. The 'nine miles' from here to Coyote wells, through a deep, rocky cañon and over a sandy plain, proves to be fifteen long and weary ones. At Coyote wells the dark-colored, repulsive pool of water would have been a delight to the thrifty New England housewife, since, with it, she could easily dispense with her ash barrel and lye! Two small mesquite trees alone mark the vicinity of Coyote wells, the old adobe stage station being completely razed to the ground, and the alkali

plains are otherwise almost destitute of vegetation. A little patch of salt grass (*Distichlis maritima*) grew in the vicinity of one of the mesquite trees, and here my former acquaintance with the region stood me in good stead, for I knew that comparatively good water could be obtained in this vicinity. Cleaning out a small hole near the tree, by the moonlight (we had reached the place just at dusk), I had the pleasure the following morning of finding a limited supply of water, sufficient for our needs. It was very suspiciously sweet at first (alkali water is sweet to the taste) and we had to use it sparingly, but after a while it became sufficiently pure for us to drink with impunity, after we had dipped it dry a dozen times or more.

The first night our horses were without hay, and had only a feed of grain. Of necessity we hitched them to one of the mesquites, and by morning we found they had gnawed off all the bark on the trunk of the tree that they could conveniently reach, and eaten the twigs and leaves that were in reach also. The day after our arrival we traveled to the southward over the desert for two or three miles and cut a supply of hay with our axes! The only true grass in this arid region of agricultural value is a very rigid species, that grows in scattering clumps, one to three or four feet high, and generally called gietta (*Hilaria rigida*). This grass is very nutritious, rich in the starch elements, and very brittle. It is not specially attractive at first to horses or cattle, but they soon learn to eat it with avidity, and a single cluster is often sufficient for an animal for a night. A stout grubbing hoe is the best implement for the haymaker when harvesting gietta, but a pick is almost equally useful, or in the absence of either it can be easily broken off with the foot—but the foot needs to be well protected by a heavy boot in the latter case!

Leaving Coyote wells early the following morning, after we had completed our haying, we travelled to the southward over a but little travelled natural road, sandy and gravelly or stony in places, toward Signal mountain—the northern end of the Cocopah range. We came in sight of the Maquata basin early in the afternoon, the lake being some thirty miles from Coyote wells, and became convinced that reports of water in the lake were true, a long and narrow strip of water being plainly visible along the western base of the Cocopah range and glistening in the sunlight. Evidently only a portion of the lake bed, however, was thus covered with water, but as we approached the shores of the lake our anticipations rose higher and higher.

As we approached the shores of the lagoon we traversed broad sandy arroyos in which numerous ironwood trees (*Olneya Tesota*) were growing. Nearer the lake were a few shrubby clusters of mesquite, but only occasionally was a bean pod visible. Arrow weed (*Pluchea Corealis*) and mock willow, and a few other plants usually considered good indications of fresh water, were soon observed. These plants grew in considerable luxuriance, and fresh water may

almost invariably be obtained by sinking wells in their vicinity at less than twenty feet depth.

Leaving the belt of mock willows we drove into the hard sun-baked bed of Laguna Maquata proper and struck out straight for the nearest visible water. A mile was traveled in silence, yet another mile, and still a third, and then the truth burst upon us. We were following the deceitful wiles of the ever alluring, ever delusive mirage! We were still, apparently, as far from the edge of the water, which at first appeared scarce half a mile distant, as when we started, and when we stopped our team in disgust, the beautiful phenomenon revealed itself to us fully.

Gradually, like a bank of fog, it receded to the southward, and rose above the surrounding banks of the lake. Fantastically shaped rocks seemed to rise up in the background, and a vision of a city in the desert might well have been imagined. Many a time before had I seen this interesting phenomenon and equally as inviting, mythical lakes of water, but never before had I been so thoroughly deceived and misled. Well might a lonely wanderer on the sands of the desert, half crazed by the heat and thirst, be enticed on to his death by such a deception, though in rational moments one acquainted with death by the region would not be thus cruelly defrauded.

The surface of the lake bottom was bare of vegetation, but strewn with fragments of fish bones and fresh water snail shells in countless millions. Now and then a coyote could be seen leisurely trotting along on his way home from dining out, or perhaps in search of his supper—or both.

Driving to the westward toward the Peninsula range, we soon left the bed of the lake behind us, and entered a series of sand dunes like those on our ocean beaches, that seemed to border the western shores of the lake far to the southward. Among these sand hills absolutely no vegetation was observed, but now and then fragments of salt water clams or snail shells were found, particularly of the genera *venus* and *cerithidea*—probably the last organic vestiges of the former dominion of the sea over this region. Beyond these sand dunes we reached a mesa-like formation, resembling the famous citrus lands of Southern California. Here on a little rise or prominence, near a patch of luxurious gietta grass we decided to camp for the night, and leaving my companion to prepare our evening meal, I started to search for water in the cañon a few miles distant.

It was a little after three in the afternoon when I left the wagon on my self-imposed quest. If water was not found I knew that in the morning we should have to retrace our steps to Coyote wells, as our water supply would by that time be exhausted. As we left the bed of the lake we had seen what appeared like water in the same direction as at first observed, but after our experience with the mirage we were naturally skeptical. Near the summit of the Peninsula range, in one of the long cañons on its abrupt eastern slope, we

had also observed what was unquestionably pure running water, but it was too far away to be practically available for our needs, except in dire necessity.

Taking my bearings in relation to the more prominent landmarks afforded by the mountains surrounding the vast amphitheatre in which we were encamped, I started in a direct line for a huge finger rock that rose perhaps a thousand feet above the plains, near the mouth of one of the great cañons that rise in the pine country on the top of the Peninsula range. In light walking trim, with only a small canteen partially filled with water, and my light pick, which answered well for a cane, it took me to nearly seven o'clock before I had reached the foot of the mountain range. After traversing the plains for two or three miles I had struck the fresh trail of five or six deer, which greatly encouraged me as they were travelling in the same direction as I had planned to follow, and were evidently going to water. I consequently followed this trail as long as daylight lasted, but lost it before the stars came out distinctly.

About this time, when daylight vanished, I realized the fact that I had not dined. During the whole day I had felt not the slightest inclination to drink, but having left water behind me I felt an insufferable thirst, as if I could have easily emptied a gallon canteen. But a little water remained in my canteen and this I decided to husband in case I should be unable to return to the wagon in the dark before morning. Fortunately, however, I just then ran against a tall cactus belonging to the genus *Echinocactus*, and by the aid of my pick I cut a generous slice out of its top, and removing the spines and skin I found a refreshing repast at my hand. The crisp, fleshy pulp of this cactus will quickly allay thirst and is an important article of food with the Indians. The Mexicans make a preserve of it similar to the citron of commerce. It is juicy and tender, and the first taste was as grateful to me as an apple would have been, and, after satisfying myself, I put a chunk in my pocket for future use if desired.

Thinking that I must be near to water, I ventured on by the starlight (the moon I knew would not rise before morning), but after stumbling over huge bolwders and crossing a ravine where I had to descend a nearly perpendicular bank, twelve or fifteen feet in height, I decided that it was unwise to continue my exploration for water. Following down one of the sandy arroyos till I came to the open plain, I took my bearings the best I could from the stars—the mountains, which I had at first depended upon as landmarks, having disappeared or become unrecognizable in the dark, and was soon making a bee line for camp.

Once I stumbled against a dead cactus which had been washed down from some of the cañons I had left behind, and from the persistence of the spines, which quickly developed an attachment for my leg, I was made rather painfully aware that it belonged to the

genus *Opuntia*—which I always detested. Fortunately the open plains of the desert which I had traversed were nearly destitute of cactus growth or this experience might have been repeated oftener than agreeable. Once a diminutive fox crossed my path, and followed me for a ways a few steps behind me, but no other sign of animal life was encountered.

About eleven o'clock I caught sight of the light of a lantern on my wagon, nearly a mile away, and directly in line with the star which I had been using as a guide for several hours past, and I soon joined my companion and we had turned in together for the night—or for what remained of it.

After sunset my friend and I had both observed that there really was water in the lake, as the phenomena of mirage are visible only by sunlight. I had, however, previously decided that the mirage had doubly fooled us, and had led us away from the genuine water. Early the following morning, therefore, we again faced the water, and in an hour had approached as near the edge of the lagoon as the muddy margin along the water would permit with a team. Approaching nearer on foot I finally reached the water, which at the outer edge was scarce a quarter of an inch deep. Digging a hole in the mud and allowing the water to accumulate I was able to dip up a little in my hands and to taste. One taste was enough. The Mexican maps were correct—it was *muy salada*, in fact, as salt as ordinary brine is usually made, rendered much saltier by evaporation than the water of the ocean.

On the further bank of the lagoon, which was probably considerably deeper than the shore I visited, there was a flock of birds resembling sea gulls, but at the distance of perhaps half a mile or a mile (so deceitful are the distances) I could not positively identify them. We spread not our net for the wary fish in this dead sea of the new world, we fired not a shot, we cast not a line, but silently and quickly we turned our faces in the direction of the north star, and made the best time practicable back to Coyote wells. Brilliantly shone the sun above our heads and sent the thermometer in the bottom of our grub box above 100° F. Old Boreas, as if to celebrate our return, gathered from far and near, and concentrating his forces around Coyote wells succeeded well in diverting our minds from the ignominious end of our fishing (or rather, botanical) excursion to the land of Laguna Maquata. My companion could not light his fire, and we went supperless to bed—he could not even light his pipe, and consolation there was none.

The next morning, after a day of fasting in the wilderness in good earnest, we enjoyed a hearty breakfast and set our faces into the west where lies San Diego. That night we camped at Dos Cabezas springs, which proved to be the manufacturing and distributing centre of winds and cyclones for the Pacific coast. A little stout hut of stones proved a very agreeable place of refuge from the wind and ra

which succeeded the typical sandstorm of the desert, while the pure mountain water which flowed from the granite cliffs somewhat reconciled us to our fortune. Thus ended a visit to Laguna Maquata.

C. R. Orcutt.

PACIFIC COAST BULBS IN THE EAST.

From Garden and Forest, iii. 180.)

Many of the species of *Calochortus* and *Brodiaea* from the Pacific Coast, especially those from California, are somewhat difficult to manage in our cold Eastern climate. The ocean currents of that coast have such an influence on the climate that even in the northern portion of Washington along the coast the winters are quite mild as compared with the same season further east. Some of these bulbs when wintered in an ordinary cellar begin to grow about the last of February, and by the time the ground is ready for them in spring this early growth has so exhausted them that they have little vigor left. They are not hardy, and if planted in autumn without protection will not survive our severe winters. Perhaps a very cool cellar might prevent this winter growth, but I question it. The only way I have been able to flower many of them has been to plant early in autumn and protect with three or four inches of leaves. If planted before the weather is too cold they become well rooted before winter. I believe that most of them will bear some freezing, and it seems to me that it is the alternate thawing and freezing of plants that winter kills so many. If they can be kept from thawing before spring after they have once been frozen, the cold is not so injurious. By covering them with three or four inches of leaves, though not enough to keep out all frost, they will remain frozen and dormant until it is time to remove the covering in spring.

Mexican bulbs are quite different in their manner of growth, and may be wintered in a cellar with perfect success. They will not usually start to grow before the last of May or first of June, even if planted as early as the ground can be prepared in spring. The *Fritillarias* from California and Oregon have done much better planted in autumn and treated in this way; and the lilies, though much more hardy than the other bulbs, seem to do better when covered. No doubt deep planting may answer for some of them, but if the soil is of the right kind I would prefer to plant five or six inches deep, with a light covering, to eight or ten inches.

Most early-flowering plants, if not all of them, should be planted early the previous autumn. August or July even, is not too early for some of them. The Dog's tooth violets, *Chionodoxas*, spring beauties, *Trilliums*, etc., are never as strong the first season when planted in spring or late in autumn as when set in August and September. They do not flower so early nor last so long.

The lilies from the Pacific coast are most of them early bloomers,

in flowering *Lilium Washingtonianum* or *L. Humboldtii* when planted in spring, and they seem to require more time to become and should be planted in early autumn. We have seldom succeeded established than most plants. *L. pardalinum* has been the hardiest species. In a light loamy soil *L. parvum* and *L. rubescens* do finely, but in clay or clay loam they refuse to thrive. *L. Parryi* is a more southern species, yet it seems hardy with deep planting, and is not hard to grow. Its beautiful canary-yellow flowers appear with those of the earlier flowering sorts. It needs more moisture, however, than the other species.

F. H. Horsford.

EDWARD M. HAIGHT.

It is with deep sorrow that we have to record the early death of our valued friend and associate, Edward M. Haight, late of Riverside, California, on the eighth of May, 1891, at the home of his father, Mr. A. D. Haight. E. M. Haight was born in Mound City, Kansas, removing to Riverside with his parents over fifteen years ago, and at his death was twenty-eight years of age. He was of a retiring disposition, devotedly attached to his chosen studies in the natural sciences. Ornithology and oology were his favorite branches, and he was widely known as a taxidermist and naturalist. The *Golden State Scientist* and the *Collectors' Illustrated Monthly* were magazines issued by him for a time, and later he purchased the *Old Curiosity Shop*, a monthly, which he was compelled to dispose of on account of failing health.

He gained many personal friends, and his loss will be felt by a large circle of correspondents, among whom he had gained a reputation for honest dealing.

C. R. Orcutt.

CROTALUS PYRRHUS IN CALIFORNIA.

One of Mr. Orcutt's most interesting additions to the herpetology of California is the rattlesnake mentioned in the above heading. It belongs to the group characterized by the rostral and prenasal being separated by small scales and not in contact with each other.

So far as I am aware only six specimens of this snake have ever been collected. The type was obtained by Dr. Elliott Coues in Cañon Prieto, near Fort Whipple, Arizona, and was described by Professor Cope in 1866 (*Proc. Phil. Acad.*, XVIII, pp. 308-310) as *Caudisona pyrrha*. It was afterwards figured in the fifth volume of Wheeler's Report on the Explorations and Surveys west of the 100th meridian, pl. xxii, although at the time of the publication of that volume it was supposed that no specimen was collected by any of the parties of Wheeler's expedition. However, it was afterwards found that a head of a small specimen sent home by Dr. O. Loew from the Mojave Desert, Arizona, belonged to this species. We next

hear of a specimen in Dr. T. H. Street's account of reptiles collected by him during the cruise of the U. S. Steamer 'Narragansett,' engaged in the survey of the coasts of Lower California (Bull. U. S. Nat. Mus., No 7.) A large specimen (total length 1.070 meter) was captured on Angel Island in the Gulf of California and deposited in the National Museum. The fourth specimen was obtained in the same place by Mr. Chas. H. Townsend during the visit of the U. S. Fish Commission Steamer Albatross in 1889 (Pr. U. S. Nat. Mus., XIII, p. 144) and is likewise one of large proportions (length 1.230 meter).

These were all the known specimens up to 1890, during which year Mr. Orcutt obtained two specimens in the Colorado Desert, San Diego Co., Cal., which with usual liberality he presented to the National Museum. One of these, a fine example, intermediate in size (0.940 m.) between the type and the large specimens from Angel Island, was caught 'near Mountain Springs' in June, while the other, a much smaller individual (0.480 m.), with a head about the same size as that collected by Dr. Loew, from the same locality, was collected in October. These are, so far, the only Californian specimens.

The species received its systematic name from the unusual color of the type specimen, which is described as being 'pale vermillion' (though in another connection the 'general tint' is said to be 'bright salmon red') 'varied with yellow on the sides of the belly, with numerous large reddish-bay hexagons, which become transverse bands on posterior two-thirds of length; yellow below.' Though having been kept in alcohol for more than twenty-five years the specimen still retains a good deal of its original brilliancy.

None of the specimens obtained since show a similar coloring. So far from being 'red' rattlesnakes, they are decidedly 'white,' and in Mr. Orcutt's letter his specimens are in fact referred to as the 'white rattlesnake.' In all of them the ground color is a slightly buffy white, more or less sprinkled with black dots, giving it a kind of 'pepper and salt' appearance. The large blotches on the back are very wide (transversely) and of a brownish clay color, becoming brighter posteriorly; the borders of these blotches are marked with more or less isolated blackish spots. In Dr. Street's report the paleness of his specimen is attributed to fading in alcohol, but as Mr. Orcutt's specimens were received quite fresh, it is evident that it is the type which is unusually colored and not the others. As might be expected, the markings are better defined in the smaller specimens than in the two larger ones from Angel Island.

The affinities of the present species are decidedly with *Crotalus mitchellii* from the southern extremity of Lower California, as already pointed out by Prof. Cope. Garman has referred it to *C. confluentus* as a variety, at one time even expressing the opinion that it might be only an individual variation, but the additional material proves its distinctness from *C. confluentus* and nearest allies beyond

a doubt. But whether the acquisition of more specimens may not eventually result in the necessity of uniting *C. pyrrhus* with *mitchellii* is another question.

The original character relied upon for the distinction of these two species, viz.: The number of loreals, there being one in the type of *C. mitchellii* and four in that of *C. pyrrhus* breaks down upon an examination of the specimens which have come to light since. In this respect Mr. Oreutt's larger specimen is particularly interesting inasmuch as on one side of the head it has a very long lower preorbital, the condition which obtains in *C. mitchellii*, while on the other side this plate is divided as in the other specimens of *C. pyrrhus*.

I have not the type of *C. mitchellii* at hand now, but a second specimen was collected by Mr. L. Belding, at La Paz, L. C., in 1882, and judging from this the chief difference seems to consist in the double row of small scales interposed between the rostral and the prenasal, while in all the known specimens of *C. pyrrhus* there is only a single series. By this means the nostrils in *C. mitchellii* appear to be placed further back, and the space between nostril and eye is correspondingly shortened.

Leonhard Stejneger.

NOTES ON PACIFIC COAST PLANTS.

(From *Garden and Forest*, iii. 283, etc.)

One of the prettiest *Brodieas* we have seen came from Oregon under the name of *B. Hendersoni*. Its flowers, six to twelve, are in an umbel three-quarters of an inch wide, creamy white with a yellowish centre. A prominent dark purple stripe runs the whole length of the sepals both outside and inside. The leaves are from the base, long and narrow, and the naked stem is about a foot high. It would be useful for cutting.

Another showy little plant is the *Allium serratum*, from California. It is about ten inches high, with a naked stem and a many flowered umbel of rose-purple flowers half an inch wide. Like our *A. tricoccum* the leaves die down at time of blooming, leaving only the flower-stalk visible. It may not be hardy. Ours were covered with leaves during the winter.

Calochortus pulchellus, now in bloom, has pretty nodding yellow flowers an inch wide, on short stems. The plant is low, only four to six inches high, bearing in succession two to five flowers. It is not suitable for bouquets, but is well worth growing as a garden plant. It probably needs protection in winter.

Geranium incisum, from Oregon, is also a pretty species, with rose-purple flowers, with darker stripes [than *G. maculatum*], an inch wide. The plant is usually about a foot high, is hardy and well worth growing.

Brodiea multiflora bears a close, round umbel of sessile, bluish-purple flowers half an inch wide, but they are so close together that

they have a different appearance from most of the Brodiaeas. The long naked stems grow about twenty inches high from a bulbous root, and the leaf is long and grass-like. It is a strong-growing species, but should be protected in winter.

Allium folcatum, from Oregon, grows only four inches high, but its umbel of dark rose-purple flowers is very large for its height. The flowers are about half an inch wide. The divisions of the flower are very narrow, which gives it an odd appearance. Its very short stems make it worthless for cutting, but it is an interesting garden plant, remaining a long time in flower. It is probably not hardy.

Allium acuminatum is usually a low plant, six to eight inches high, with a good-sized umbel of pretty rose-purple flowers. The flowers are half an inch long, and about as wide at the opening, on pedicels three-fourths of an inch in length.

Zygadenus venenosus has a bulbous root and long grass-like leaves. Its flowering stem is usually a foot or more high, almost naked, and bears at its summit a dense short panicle or head of nearly white flowers a third of an inch wide, and having a yellowish centre. It is perfectly hardy in this climate, and will do well in light or heavy soil in the sun.

Allium hæmatochiton, from Southern California, is a small species, six or eight inches high, bearing an umbel of six to twelve small white flowers with greenish stripes and reddish-brown centre. It is a tender plant and should be wintered in sand in the cellar.

Camassia esculenta, now in flower, grows from ten to twenty inches high, with long, grass-like leaves from near the root, and bearing at the top a loose spike of violet-blue flowers, five inches long. The flowers are an inch or more wide and there are from ten to twenty on a spike. These are valuable for cutting. The bulb is easily wintered by protecting with a thin covering of leaves.

Too much cannot be said in favor of the white California *Trillium* (*T. sessile* var. *Californicum*), with beautiful dark green leaves, and large, almost pure white petals, often two inches long by three-fourths of an inch wide. The durability of both flowers and foliage and its perfect hardiness makes it second in value to *T. grandiflorum* alone.

F. H. Horsford.

FRITILLARIA RECUROA.

(From *Garden and Forest*, iii. 264, May 28, 1890.)

Fritillaria recuroa, which has been mentioned in a former number of this paper, is now in bloom, and it is certainly one of the most attractive plants from the Pacific coast. The plant can be grown readily in a light loamy soil, with a thin protection in winter. It blooms early, and its scarlet, lily-like flowers are of long duration, and it will be useful for cutting.

F. H. Horsford.

Ayer's
Sarsaparilla
The Best
Blood Medicine

So say Leading Physicians and Druggists, and their opinion is endorsed by thousands cured by it of Scrofula, Eczema, Erysipelas, and other diseases of the blood.

"Ayer's Sarsaparilla has won its reputation by years of valuable service to the community. It is the best."—R. S. Lang, Druggist, 212 Merrimack st., Lowell, Mass.

Dr. W. P. Wright, Paw Paw Ford, Tenn., says: "In my practice, I invariably prescribe Ayer's Sarsaparilla for chronic diseases of the blood."

Dr. R. R. Boyle, Third and Oxford streets, Philadelphia, Pa., writes: "For two years I have prescribed Ayer's Sarsaparilla in numerous instances, and I find it highly efficacious in the treatment of all disorders of the blood."

L. M. Robinson, Pharmacist, Sabina, O., certifies: "Ayer's Sarsaparilla has always been a great seller. My customers think there is no blood-purifier equal to it."

"For many years I was afflicted with scrofulous running sores, which, at last became so bad the doctors advised amputating one of my legs to save my life. I began taking Ayer's Sarsaparilla and soon saw an improvement. After using about two dozen bottles the sores were healed. I continue to take a few bottles of this medicine each year, for my blood, and am no longer troubled with sores. I have tried other reputed blood-purifiers, but none does so much good as Ayer's Sarsaparilla."—D. A. Robinson, Neal, Kansas.

Don't fail to get

Ayer's Sarsaparilla

PREPARED BY

DR. J. C. AYER & CO., Lowell, Mass.

Sold by Druggists \$1.65. Worth \$5 a bottle

JOSEPH GILLOTT'S
Steel Pens

FOR ARTISTIC USE in fine drawing,
Nos. 659 (Crowquill), 290 and 291.
FOR FINE WRITING
Nos. 303 and Ladies', 170.
FOR BROAD WRITING
Nos. 294, 389 and Stub Point, 849.
FOR GENERAL WRITING
Nos. 332, 404, 390 and 604.

Joseph Gillott & Sons, 91 John St., N. Y.
HENRY HOE, SOLE AGENT.

Sold by All Dealers throughout the World.
Gold Medal Paris Exposition, 1878.

OUR NEW **FREE** **FREE**
Gold Watch
WORTH \$100.00. Best \$25 watch in the world. Perfect timekeeper. Warranted heavy. SOLID GOLD hunting cases. Both ladies' and gent's sizes, with works and cases of equal value. ONE PERSON in each locality can secure one free, together with our large and valuable line of Household samples. These samples, as well as the watch, are free. All the work you need do is to show what we send you to those who call—your friends and neighbors and those about you—that always results in valuable trade for us, which holds for years when once started, and thus we are repaid. We pay all express, freight, etc. After you know all, if you would like to go to work for us, you can earn from \$20 to \$60 per week and upwards. Address, **Stinson & Co., Box 512, Portland, Maine.**



E. V. VAN NORMAN, M. D.

PHYSICIAN . . .
— AND —
. . . SURGEON.

OFFICE, 927 SIXTH STREET.

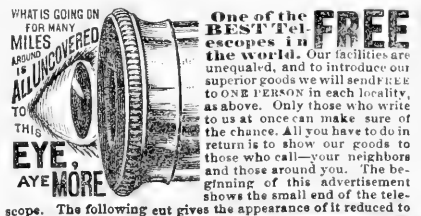
Office Hours—10 to 12 a. m., 1 to 3 p. m., and Evenings. Residence, Corner 5th and Maple Streets.

Telephone 174.

SAN DIEGO, CALIFORNIA.

WHAT IS GOING ON FOR MANY MILES IN ALL UNCOVERED TO THIS EYE. AYE MORE

One of the BEST TELESCOPES in the world. Our facilities are unequalled, and to introduce our superior goods we will send FREE TO ONE PERSON in each locality, as above. Only those who write to us at once can make sure of the chance. All you have to do in return is to show our goods to those who call—your neighbors and those around you. The beginning of this advertisement shows the small end of the telescope. The following cut gives the appearance of it reduced to



about the fiftieth part of its bulk. It is a grand, double size telescope, as large as is easy to carry. We will also show you how you can make from \$3 to \$10 a day at least, from the start, without experience. Better write at once. We pay all express charges. Address, H. HALLETT & CO., Box 880, PORTLAND, MAINE.

Increase the beauty and convenience of YOUR COLLECTION by using

NEAT LABELS,

Supplied by the OBSERVER, Portland, Ct.
Perfect in quality, and acknowledged the standard in size and style. Send for Price List and Samples. Have you seen

THE OBSERVER,

A medium of interchange of observations for all Students and Lovers of Nature, devoted to all departments of Nature Studies. Send for sample copy. Address

EDWARD F. BIGELOW,

Publisher and Printer,

No. 5 Waverly Avenue, Portland, Conn.

Speiser & Guernsey's Cyclopædia of

THE MANUFACTURES AND PRODUCTS OF THE UNITED STATES.

comprises Every Article made in this Country - Indexed and Classified - and under each article the names and addresses of

THE BEST MANUFACTURERS.

Complete in One Royal Octavo Vol. of over 1300pp
Price in Cloth \$6 In Morocco \$8 In Flexible Leather \$10.

INDISPENSABLE

to Buyers of Articles in all lines and Invaluable as a Statistical work.

Orders received at office of this Paper -

Look! See! Buy! these Packets!

- "A" 50 varieties of stamps for 5c.
- "B" 25 varieties better for 10c.
- "C" 10 varieties unused European, 15c.
- "D" 10 varieties unused, FINE, 25c.
- "E" 20 var. unused and an Asiatic coin, 50c.
- "S" 50 varieties India, Ceylon, old U. S., etc., some new, 20c.
- "W" 10 unused 10c.

Gummed Hinges FREE.

California Stamp Co., Santa Ana, Cal. Box 226

AGENTS WANTED!

To sell our "UNITED STATES SECRET SERVICE" during the War, by Gen. L. C. Baker, its organizer and chief; and "HARD-TACK AND COFFEE," a story of the inner life of the Army. Also our indestructible, interchangeable "METAL BACK ALBUM."

Apply to The J. Dewing Company,
813 Market Street, - San Francisco.
Mention this paper.

BOTANISTS.

WE desire a few more reliable collectors of native West American tree and flower seeds, bulbs, ferns, cacti and other plants.

Please write us what you can collect, season of supply, prices, and descriptions of those most desirable for cultivation.

THE ORCUTT SEED & PLANT CO.,
San Diego, California.

HENRY C. LANGREHR,

COUNTY SURVEYOR,

Homestead, Timber Culture, and Entries and Filings Made Railroad, Water Supply and Irrigation Location and Construction, etc., Maps, Plans and Estimates Furnished.

1313 D STREET, SAN DIEGO, CAL.
P. O. Box 84.

COWAN BROS.,

FINE WATCHMAKERS

MAIN STREET, RIVERSIDE, CAL.

PEOPLE'S ONE PRICE STORE

Boyd Block, Main St., between 7th and 8th, RIVERSIDE, CAL.

CLOTHING Gents' Ladies' and Children's Shoes, Gents' Furnishings, Hats, Boots, Trunks, Valises, Blankets etc. My Motto: Quick Sales and Small Profits.

JULIUS BERNSTEIN.

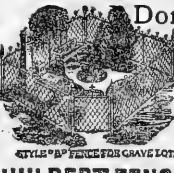
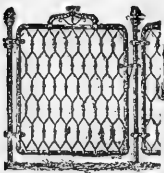
F. P. BRÜNER.

NOTARY PUBLIC

Conveyancer of Deeds, Etc.

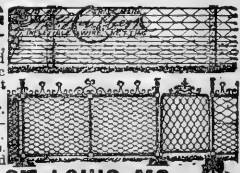
With Wells, Fargo & Co.

Sixth and F Sts., San Diego, Cal.



Don't BUY FENCING

Until you get our Price List of Ornamental and Farm Fences, Gates, Iron Posts, Tree Guards, Barbed and plain Wire, Nettings, Wire-work, & Hulbert Field Loom for both Picket and Netting Fences only \$5. Galvanized Steel fence lasts forever. Donations for churches and cemeteries. Your name on gates. Catalogue free; write for estimates. We ship everywhere. Agents wanted



STYLE "A" FENCE AND GATES.
SPECIAL RAIL, CHAINLINK, BRASS

STYLE "B" FENCE FOR GRAVE LOTS.

HULBERT FENCE and WIRE CO. OLIVE ST. ST. LOUIS, MO.

MINERALS.

C. F. CARR, 126 STATE ST., MADISON, Wis.

THE WORLD'S FAIR COLLECTION OF Minerals and Curiosities mailed by us is highly spoken of. New California Bulletin and lists, with box of curios, only ten cents. Naturalists' supplies. U. L. Hertz & Co., Napa City, Cal.

NATURAL HISTORY.

CEYLON, JAVA, BORNEO AND NEW Guinea insects, especially Lepidoptera and Coleoptera, single or in lots. Also orthopterans and dragon flies, and land and fresh water shells. Prices low. H. Fruhstorfer, care of German consulate, Soerabaja, Java.

DR. EDWARD GRAY, BENICIA, CAL., sole Pacific Coast agent of Gundlach Optical Co. Microscopic objectives of this company on hand and to order. Send for price lists. Gundlach photograph lenses to order. Agent of Queen & Co's Acme microscopes.

AURELIUS TODD, TAXIDERMIST, Eugene, Oregon, offers the following shells and curios:

<i>Lineapina ericulata</i> Stry	20 cs
<i>Glyphis aspera</i> Esch	05
<i>Aeinea mita</i> Esch	03
" <i>spectrum</i> Nutt	per 100 \$1.50
" <i>patina</i> Esch	" " 1.00
" <i>pelta</i> Esch	" " 2.00
" <i>persone</i> Esch	" " 2.00
<i>Nacella instabilis</i> Cld	05 to 20
<i>Mytilus Californica</i> Couv.	05 to 30
<i>Cardium corbis</i> Mart	05 to 30
<i>Saxidomus nuttalli</i> Couv.	25
" <i>squidibus</i> Desh	25
<i>Tapes staminea</i> Couv.	08 to 08
" <i>Var. rudrata</i> Desh	10
<i>Machæna patula</i> , Byron, 2d class	10
<i>Schizothorus nuttalli</i> Couv.	20 to 40
Stamens	10 to 15
Sea eggs	50 to 25
Sea shells or sand dollars	50

In addition to the above, we have about fifty sets of eggs and a few skins of the Turbitt Puffin, which we offer at the remarkably low price of 75 cents each for the former and \$1.50 each for the latter, postage extra.

The whole lot of eggs we will sell at a special bargain.

Ten per cent. discount on orders of \$5.00; and twenty per cent. on orders of \$10.00 or more.

Postage on shells will not be prepaid unless orders amount to \$10.00 or over.

NATURALISTS' SUPPLY DEPOT, ESTABLISHED by Brewster & Knowlton, Boston; Adirondack & Capen, Boston; A. L. Ellis & Co., Pawtucket. Consolidated, 1884, by Ellis & Webster, succeeded, Sept. 1, 1885, by Frank B. Webster, Boston. Dealers in all articles required by Naturalists, Oologists and Taxidermists; also, bird skins, birds' eggs, curiosities, and stuffed specimens. Sole agent in the United States for Thomas Hurst's artificial glass eyes. Publisher of the *Ornithologist* and *Oologist*. Send 10 cents for sample copy and catalogues. Frank B. Webster, 409 Washington St., Boston Mass.

PLANTS.

ORCUTT SEED AND PLANT CO., SAN Diego, Cal., offer choice novelties, especially in Cacti, wholesale and retail.

SEEDS.

TWELVE VARIETIES OF CALIFORNIA Wild Flower seeds, 50 cents. Orcutt Seed and Plant Co., San Diego, Cal.

SHELLS.

MISS IDA M. SHEPARD, LONG BEACH Los Angeles County, California, makes a specialty of West American Mollusca.

California Flowers.

Many varieties mentioned in our descriptive list of "California Trees and Flowers," we are at times unable to supply, but on the other hand, we are continually introducing new and desirable trees and flowers to our novelty-loving friends. Descriptions of these, and supplementary notes on "California Trees and Flowers," may be found in this journal.

ANNUALS.

	PER PKY.
ABRONIA any species	\$ 10
ACTINOLEPIA coronaria	10
ALFELARIA	05
ANTIRRHINUM Oreuthimum	10
ARGEMONE any variety	10
BARRIA gracilis	15
CALANDRINIA any variety	10
CASTILLEJA affinis	25
CHENACTIS any species	10
CLARKIA any variety	05
CLAYTONIA perfoliata	10
COLLINSIA any variety	05
COLLOMIA grandiflora	05
DALYIA maculodes	05
EYEDRILLIA vinasta	25
ESCHESCHOLZIA any variety	05
GILIA any variety	10
LANTHERNA glabrata	10
LAVIA elegans	15
LUPINUS var Douglasii	20
LUPINUS any variety	19
NEOMOPHIA any variety	05
ORCHOTHERA lobata	10
ORTHOCAERUS purpurascens	25
PAPAVERO californica	27
PENTACONIA aurea	10
PHACELIA	10
" <i>congesta</i>	05
" <i>farinifolia</i> v. <i>alba</i>	05
" <i>oreuthiana</i>	10
" <i>parvi</i>	20
" <i>velutina</i>	10
PLATYSTEMON Californicus	10
SALVIA erubescens	10
" <i>Columbica</i>	15

Orcutt Seed & Plant Co.

6th and C Streets,

SAN DIEGO, CALIFORNIA.

When Brown Sequard was in America the **Vitalized Phosphites** were presented to him. His remarks were much to the effect that the giving of the active principle of the brain of animals to man should be conclusive of the most happy results and he had no doubt would largely improve brain and nerve power. He then made the observation, "I do not think the principle need end here."

There has been much jeering at the results which Brown-Sequard's discovery produced, but those who have studied the matter (our chemist amongst others), say that there are wonderful results yet unwritten about.

It is nearly thirty years since the **Vitalized Phosphites** were first used and physicians accept the fact that this brain material is the most perfect rejuvenator of the tired human brain. While the "Elixir" from the glands of animals was expected only to increase Virility, the **Vitalized Phosphites**, the special food from the brain of the ox, restores brain power and vitality as well as virility. It rejuvenates all weakened bodily and mental functions, and by its regenerative power to the blood prevents nervous affections.

When the brain of an active man is tired it is a common observation, "Do nothing for a while and rest." In most instances this is an impossibility and nothing but leaving home and all its duties will be of any avail. But when the brain is using a large amount of Vital Phosphites and the food does not, may cannot, supply all that is needed, then, of course, is had to

CROSBY'S VITALIZED PHOSPHITES

the brain and nervous system will be fed and brain work can easily be continued. Brain Fatigue, Nervous Exhaustion is nothing but *Brain Hunger*, often it is Brain Starvation and **Vitalized Phosphites** will always relieve it.

It cured and is highly recommended by Bishops Peters, Stevens and Robertson, Presidents Mark Hopkins, Willard Parker Dudley, Orton, Drapers, Beard and thousands of the world's best brain workers.

All Phosphates are inert, this is a vital nutrient Phosphite from the brain of the ox, and the embryo of wheat.

F. CROSBY CO.

56 W. 25th Street, New York.

For Sale By Druggists, or sent by Mail, \$1.00.

SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01425 0880

The American Scientist

V. 7 (whole no. 59)

April 1891