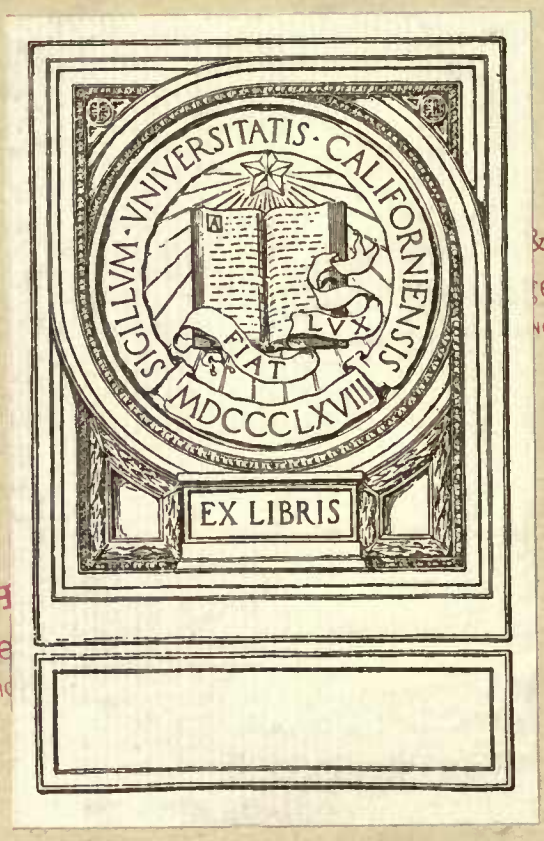

Olives (Scrapbook)

1796
1613
1530
893
2553
637
6

An Olive Inheritance.

An olive grove is a better inheritance than a life-insurance policy, and much cheaper. A grove of ten acres of seven-year-old trees will produce a net annual income of not less than $2,500, or an average of $250 per acre, as has been fully demonstrated by Mr. Elwood Cooper, of Santa Barbara, and by the lessee of the Wolfskill grove, in Solano county. Strange as it may seem, but few persons have yet given any serious attention to the subject of olive culture. It is not because there is any uncertainty about the growth of the tree, for it grows like a willow on good grape land, and without irrigation; nor is it because the market is uncertain, nor the management of the crop difficult. The price is steady and always remunerative, and the producer has the world for a market. Southern France, Italy, Spain and Asia Minor now produce about all the olives and olive oil of commerce, and California is the only portion of the United States adapted to the growth of the olive. The demand always exceeds the supply of both olive oil and pickled olives. The market can never be over-stocked, and with the advance of civilization, the consumption is constantly increasing. No greater security can be given for the investment of money, in any enterprise, than olive culture affords in California. It is, therefore, well worth while to call the attention of the patrons of the *Resources of California* to this most attractive and promising industry.

Land can be purchased in a dozen different counties in this State, which is perfectly adapted to the olive tree, for $50 to $100 an acre. Cuttings can be obtained at $10 a hundred, or $100 for ten acres, since about 100 trees to the acre will be enough when they are fifteen or twenty year old. The plowing and planting can be done for $10 an acre, and the annual cultivation of the ground need not exceed $5 an acre. To sum up the cost of ten acres, we have land $1,000; cuttings $100; plowing and planting, $100; total expenditure $1,200 for the ten acres. In four years the crop will pay all expenses of tillage and harvesting, and the fifth year a profit of at least $15 an acre. Thus we only need to provide for the cost of tillage the second and third years, which is $5 an acre each year, or $100 for the two years; and hence the actual outlay before any returns are available will be but $130 an acre, or $1,300 for an olive grove of ten acres. The income for the fifth year will average $25 an acre above all expenses, or $250 for ten acres; and for the sixth year more than twice that sum, or more than $50 an acre. In other words, in six years the ten-acre olive grove will pay for itself and leave a surplus of one-half the original cost; and the crop of the seventh year, as before stated, will give a net profit of $250 an acre, or $2,500 for the ten acres. The crop of the eighth year will largely increase over that of the seventh, and will gradually increase from year to year thereafter for ten or fifteen years more.

Could a better or safer inheritance for the children of a man in moderate circumstances be named, even in the rich State of California? And it must be borne in mind that the olive tree attains a great age. There are olive trees in Palestine known to be over twelve hundred years old, and still full of fruit every year.—*Resources of California.*

Mr. Cooper's Olive Orchard.

The Santa Barbara *Press* gives the following interesting statement, concerning the operations of Elwood Cooper's olive industry:

On a recent trip to Elwood, Mr. Cooper's farm, twelve miles west of Santa Barbara, a general surprise awaited us. There could be no room for doubt that Mr. Cooper had been very successful in the management of his farm of 2,000 acres, as the four-horse wagon-loads of English walnuts and almonds coming into town recently from his place gave abundant evidence; but we were not prepared to spend half a day on such a farm, with its tens of thousands of trees of various kinds, its hundreds of acres in cereals, and its large dairy of blooded stock, and after a close look at many parts of it, never see a single weed, even by the roadside. That was a real surprise; but the astonishing thing to see was his olive orchard, of about 50 acres, all the trees clean, healthy and strong growers, the branches bending with the enormous weight of the fruit, many of the seven-year trees having a full barrel to the tree, the larger nine and ten-year-old trees having on them two barrels of olives apiece. On the other hand, in Santa Barbara, trees much older will not produce a hatful to the tree, and simply because they are not kept free from the black scale, nor properly pruned and cultivated. For example, near Mayor Fernald's on the south, is a block with two or three acres of olive trees on it, and the ground on which they stand is a mere pasture; the trees are fruitless and worthless, and near the lighthouse more than 200 trees, about ten years old, have just been dug up and cut into firewood. All this neglect and destruction around Santa Barbara would be exceedingly discouraging, had not Mr. Elwood Cooper courageously set himself to work to destroy the scale bug instead of the tree, and he is now rewarded with the astonishing crop hanging on his 5,000 trees, and just ready for the oil mill. Our readers are aware that a barrel of olives will produce about four gallons of oil, worth five dollars a gallon, or twenty dollars to the well laden tree seven years old, and much more to the tree nine or ten years old. As Mr. Cooper has published in these columns his method of dealing with the great enemy of the olive, the black scale, it is only necessary to say here that he uses a force pump fixed on a box placed in a wagon, to throw a strong decoction of tobacco into the tops of his trees, and finds that two men can cleanse 200 trees a day in this way, and leave them free from the pestiferous black scale. He has just completed an oil mill on a large plan, and in the most substantial manner, which is capable of reducing 4,000 pounds of olives every twenty-four hours, will be run day and night for a week at a time, until his crop for the year has been turned into oil. Let olive skeptics go and see the olives and olive trees at Elwood.

VINEYARD AND ORCHARD.

This department will be devoted to the interests of the Viticulturists and Horticulturists of Fresno county. It is under the supervision of GUSTAV EISEN. Correspondence on the subject is invited. Address all correspondence in care of THE REPUBLICAN. Nursery and seedsmen would favor us by sending their catalogues.

Fresno Repub. Sept 10/83

OLIVE-GROWING IN CALIFORNIA.

The writer shares the opinion of the immense importance of olive-culture with men who are far better authority than myself in the matter. The late Mr. Redding left to Californians the patriotic exhortation to look about them for propagating this noble tree, and the lamented gentleman's hopes of that tree and its fruit becoming in no distant future as rich a source of income, and surely a not less solid one than the vine and its grape, will be fulfilled. We can be certain of it. Glowing calculations have been made by journalists and our dailies have been urging the masses to follow in the footsteps of the Coopers, the Hollisters, Kimballs and Wolfskills, who have been in a degree successful. Exaggerations apart, we can take for granted that not every one who puts olive plants into the ground will, in the few years generally said to elapse until the commencement of bearing, reap therefrom as abundant crops the few planters who have with discernment and the aid of the most favorable circumstances obtained results that are surprising. But it is surely worth the attention of every grape-grower who has the climate conditions on his side to give the matter thought and annually set out a proportionate number of olive cuttings or roots, were it only on the roadside or borders of his estate. The reply that the olive tree is too exacting for the planter, inasmuch as it requires at least eight or ten years to requite the trouble taken with it, is not that of a careful husbandman. The patience of the planter will be amply compensated by the knowledge that each olive tree, even if it will not yield much tribute to him who gave it the first care, is a monument of his love for his descendants, who will probably after many generations, when he will have been forgotten, unwittingly enjoy his bounty. Need a modest man's ambition go further? Or is it manly to look only to immediate pay for one's acts of merit? Distant as we are from lands where the olive tree has for thousands of years been a familiar sight and part of the wealth of generations, working together in the same line with nations in climates that, like ours, allow them to benefit from the privilege of growing olives. Do we march in line with them, or are we remaining behind? The profits Spain, Italy, France and other countries are deriving from the fruit of the olive tree amount to hundreds of millions of dollars annually. Algiers, that country in which French vintners reconstruct their fortunes, jeopardized or lost by that dreadful enemy of the vines, where viticulture in the west has only begun, has done more as to grapes in a dozen years than we have done in thirty. Spain and Italy are beginning to realize the rivalry that in Algiers has sprung up as to the cultivation of olives. So much so that a crisis is feared in the great producing countries named, for official statements give us the fact that of the eight million dollars' worth of the product of the olive tree which France annually requires from outside, the lion's share went last year to Algiers, leaving especially Spain, which used to furnish oil and olives to France, in the background.

We possess the necessary elements in California to produce olives, and every one knows that for purity and good, sound quality our olive oil is an article of commerce eagerly sought after and preferred to importations often suspected and always so charged with duty and expenses that it is inaccessible to the small purchaser. On the merits of olive oil as part of our diet I need not dwell. Once accustomed to it for certain table purposes, it will become a necessity to many, and even if with the abundance of nourishing and good fatty substances which Providence has provided the United States with, not called to become the staple which olive oil is in Southern Europe, it will be evident to every one that when produced in quantities in California, it will find numerous buyers and consumers. The present high price, of course, need not be counted upon in the long run, but where it is produced, there is value; and where a group of olive trees is planted the farm's value is enhanced.

There are many kinds of olive trees, and the subject should be studied which variety turns out to be best adapted to each position. The early ripening varieties are undoubtedly the preferable ones for the following reasons: In the aggregate, the heat necessary to ripen the olive is about one-half more than that needed for ripening the grape. In locations where the grape is easy to rear there is not much fear that the olive will not grow as well. Hence, in many southern European districts a grape grower is generally also an olive grower. The maturity of most olive varieties occurs in December, of others in January. Our California varieties seem to ripen at about the same period. The amount of heat derived by the olive after the grape has been turned into must and fermented into wine will render it pretty safe to ripen, although the winter rains and lower temperature as in southern Europe may have interrupted nature's action. But there are varieties of olives that mature with less heat than others, and these should be sought after for propagation. Frosts are less hurtful to the general varieties of

olive trees than to the vine, and there is hardly any danger from that source. The roots of the olive tree, like those of the vine, should be able to extract sufficient moisture from the sub-soil. Irrigation, except on soil that is not naturally adapted to their culture, where there is great scarcity of liquid nutriment, is not necessary; on the contrary, you may give the olive trees space on hillsides where the surface is apparently poor if there is only nourishment deeper down. In any case, we should get our plants from parts that are similar in their nature to our own.

When I mentioned that over-production or want of an outlet might bring about a crisis in southern European olive-producing countries, the advice to propagate the olive tree, and without fear of overdoing it, might appear rather hazardous. But it seems that there is hardly a greater danger in that respect than there is in overdoing grape-growing. A merchandise that constitutes a daily necessity may hardly be over-produced, or deteriorate, or lose its chance of being sold. The greater fear may be a lower and unremunerable price. It may be delayed in being sold, and next it would be considered a great loss if a generally remunerative price should be reduced to one much lower. Economy in the cost of production would be the next protection But, like wine, oil has the property of keeping and improving with age. We are not immediately affected by a decline in the price of olive oil, for, having a protective duty on foreign oil, as long as the law imposing it is vigorously enforced there will be no great fear of being undersold in the United States. And as the number of consumers will not diminish, fifty millions of inhabitants will have among them millions of consumers of olive oil, had we plenty to supply them with. Not many years ago, when petroleum from the United States began to appear in southern European ports and by reason of its cheapness at once drove the common illuminating oil out of the kitchen and parlor lamp, an alarm spread among the olive growers, who reasonably feared a rapid fall in the value of their produce. That they themselves after a while thought their own oil to expensive for burning and took to using the cheaper coal oil, did not diminish the consumer of olive oil for burning. But the dreaded dropping of the value of the latter, the expected surplus, the reality of over production never took place, and I have the word of a man for it who has been doing an export business in olive oil for many years in Greece, that the conjunctures of the world's markets for that article have for a dozen or more years never allowed the accumulation of the crops of more than one year An article seems pretty solid in the commercial world which finds a demand equal to the supply for a period of several years. Practical growers will be able to inform us if even one-half the present price of California olive oil would not be remunerative. I should say that even one-third the present price, where there will be greater quantities of olives raised, will pay the economical farmer, provided he has taken heed to plant the proper variety of trees that yield him a sure crop. There may not be fortunes in the article if prices go to their proper level. But then the expense of the cultivation of the olive tree is but slight, and it may not be necessary to do things on a scale of many hundreds of acres; quite the contrary, the time of experimenting with the many varieties of olive plants, which may extend over a generation, should rather be employed in moderate planting on the part of many, in fact by every one who can, in order to avoid mistakes, which in the case of a tree whose existence is so very long and the rearing of which requires years, would prove disastrous.

Whatever doubts may arise as to the practicability of trials of giving room in one's farm to a certain number of olive trees, do not despise it. Set out a few, for it will in any case be a pleasant thing to rear the salad oil and pickle your olives for your own household. A hundred years ago foreign priests set a splendid example in trying to acclimatize the olive trees in California. We are enjoying the fruit of the few plantations at the Missions. It was a shame that the successors of the Mission fathers did not imitate those early arrivals and that hundreds of olive orchards did not salute those who came over thirty years ago to look for something different from fruits of the tree. But it is not to be excused that the intelligent grape farmer, who has seen his efforts with that fruit crowned with splendid success should neglect a fruit of equal rank, of equal productiveness and profit. Do not let your grandchildren smile at your indifference towards a fruit that is sure to yield millions to future Californians.

To finish up let me tell you that the value of a full grown olive orchard, say after the trees are a dozen years old, in southern Europe ranges from $10 to $16 per tree. Should its value be less in California if the plantation is well conditioned? A thousand trees not occupying many acres planted by degrees each year, say a hundred, will be a rational addition to a property and its creation probably not regretted.

The Hardy Olive.

St Helena Star Sept 14

A St. Helena correspondent who is familiar with olive culture in Europe, writes to the *Call* as follows:

In view of the expectation that olives will in a few years form an important point in our productions, a few facts in relation to their market value may prove interesting. The real value of good commercial olive oil, by the cargo or in considerable quantities for exportation, averages, $180 to $200 per ton, with casks, free on board. This brings the pound of olive oil to about nine cents, if placed in competition with oil producing countries. About ten pounds of olives being required for one of oil, the value of one pound of olives is less than one cent. Calculating values by the price of the imported article arriving in bottles, being surcharged with duty, freight, commission, etc.; and being the price governing the California market, the result is much more satisfactory than the producer. But in making up the budget for the future, and arriving at the figures at which olive oil will probably sell at wholesale when we have to depend on an export market, planters, will ask what is the value of olive oil in the great shipping centers of Europe, and what is the lowest price at which it will pay to plant olives? In fixing the cost of an olive plantation it must be remembered that soil can be utilized that from the protuberance of rocks and other causes, is inaccessible to plow; that the trees require little cultivation; that the oil is an article that can be stored and become more valuable with age Thus being free from the inconvenience that attend ordinary fruits, oil is a safe investment when produced in superabundance, and over production is out of the question, especially in a country where population increases as in the United States and consumers are rapidly growing in numbers.

Agricultural Information from Lower California.

St Helena Star Sept 21/83

Continued.

OLIVES.

My trees are of rooted cuttings and stubs of branches from olive-trees of the vicinity, except those planted in 1880 which are from Loreto, and apparently of the common kind growing in the Upper California Missions. In 1870 I found on the estate twelve trees aged about a hundred years, which yielded in all not five gallons of fruit. They were cut down. One stump sprouted again, and these sprouts were utilized for planting. In former years the old trees are said to have yielded enormous crops. They were located in a gulch near a rock where the heat is now constantly 100 degrees, while here, near the sea, our thermometer seldom ranges above 92 The distance between my trees here is 20 feet. Late in 1878 I planted 30 olives, of which only three germinated, and yield now each about one gallon of olives. In 1879, out of 36 planted 30 succeeded and have blossomed this season and there is some fruit Of 70 planted in 1880 only eleven came into life, of 100 planted in 1881 only ten, and of 150 planted some 50 odd are alive. I have planted alternately an olive and a palm-tree. The rooted olive cuttings have done well. I observe the system to keep the olive-trees low and they present rather the aspect of shrubs than of trees, having branches at a small hight above the ground. The strong northerly winds of the winter season led me to keep the trees in that way. The cuttings planted in the last year had a length of 15 inches, those from Loreto of 20 inches. I deprived young trees from the rooted cuttings of their twigs It seems to have been an injurious proceeding, as those on which the braneches were respected, do well indeed. Mr. F. P. informs Dr. Eron Borstel that according to Ellwood Cooper's rules none of the shoots of first year's growth should be disturbed, as by taking them away the growth of the roots will be affected. Cuttings from my neighborhood planted by me brought forth leaves; these dried up, began to grow again and died again. I planted in December and January; probably October and November would have been the more appropriate planting months. My olives grow on even land of manifold formations, mostly of alluvium from the mountains. The mountains consist of horizontal strata of sandstone and calcareous formations. Quite near is found plastic loam, and the soil near the coast strongly impregnated with salt. The placed land consists mostly of light soil, sometimes at a low depth having a solid crust of earth, on other places at 2 or 3 feet depth layers of sand and stone. At 10 to 16 depth under stone and lime formations and clay sand with stones water is found, the depth of its surface varying according to the distance from the sea. Nearer to the sea the massive crust, probably identical with hard-pan is more pronounced. In the interior of our peninsula olives are said not to do well, while at Loreto and Mulegi there are trees that bear abundant fruit. I may deduce from my observations that olives are more successfully grown in soil containing salt than in soil free of saline contents.

Some years ago I received some oil grown at Muleji, which according to the opinion of experts was of very goo

quality. Varieties that require little moisture and yield a good oil, as well as such that produce plenty and big fruit for pickling will be desirable for here.

In Commondio there are olive trees grown, but only in one garden do they yield fruit. I have heard of one tree in that grove that produces annually some 800 gallons (?) of olives of small size, probably of Acebuche variety. In San Ygnacio the olive trees do not yield fruit. Is this a mistake in the variety planted or is the soil unfit for their growth, or for the growth of any olives?

Both olive and date trees appear to experience a considerably stronger vegetative impulse in winter than in other seasons here. The male palm trees show their full blossoms already in January.

Olive Oils.

San Francisco Grocer and Canner.

Enough has been done by Cooper of Santa Barbara, the Kimballs of San Diego, and the Wolfskills of Solano, in the cultivation of the olive, to demonstrate that the tree thrives well in California, and hence to establish the fact that it is a profitable tree to cultivate. The trees begin to bear at three years, and when five years old will pay all expenses of tillage and harvesting, with a surplus, while the sixth year the crop will pay for the land, the trees, and the tillage for the five years previous, and with good care, the increase is large from year to year for a century longer. Indeed, there are olive trees in Asia Minor known to be 1200 years old, and still in full bearing. There are large areas of land in California well adapted to the growth of the olive, for this tree does not require irrigation. It demands warm, dry land, and will not flourish in moist soil.

Olive cultivation thus offers conditions different from any other profitable fruit crop in California, and these conditions favor the cultivation of plantations of olives in thousand-acre tracts, or in sections of six hundred and forty acres, subdivided into ten-acre holdings, costing about $500, or $50 an acre, with the trees five years old and in full bearing. This would require an annual payment of $100 on each ten-acre tract, or a semi-annual payment of $50. The crop of the sixth year, as demonstrated by the olive growers above named, will pay for the entire outlay at $50 an acre, and when eight years old the trees will produce not less than $250 an acre net income, or $2,500 net for a ten-acre tract. A plantation of 640 acres could therefore be rented, with profit to the manager, at $200 an acre, or $2,000 for ten acres, as it would give him an income of $50 an acre, or $500 on each ten acres, making a total income of $32,000 from a plantation of 640 acres. But there are plenty of men well able to manage such plantations who would be happy enough to be able to make one-sixth of that sum, or $5,000 a year, and there are many others with a small income, such as clerks, teachers, bookkeepers, and all persons on small salaries, who would be independent with an annual income of $1,000, or $100 an acre from a ten-acre tract, with a certain assurance that the income will increase from year to year for several generations. In a pamphlet published by Ellwood Cooper of Santa Barbara, the statement is made that some of his best trees, eight years old, produced two thousand gallons of berries to the acre, and the European standard is eight gallons of berries for one gallon of oil, which gives a product of two hundred and fifty gallons of oil per acre. The oil finds a ready market at $5 per gallon, which gives an income of $1,250 an acre for the best eight-year-old trees in an exceptionally good year. The net income from such a crop would not be less than $1,000 an acre, and there can be no doubt that Mr. Cooper's statement is correct, for he has no motive for deception, and is of such probity of character that his word is never questioned. But the estimates we have made are based upon an income of but $100 an acre, or one-tenth the sum actually realized by Mr. Cooper from his best eight-year trees. Here is a subject certainly worthy the attention of fruit growers.

CALIFORNIA OLIVE OIL.

How it is Made at Santa Barbara, and how the World Appreciates It.

[Santa Barbara Cor. St. Louis Globe-Democrat.]

Adjoining the Hollister place is the 2,000-acre ranch of Mr. Ellwood Cooper, which is the model country place and fruit farm, and has been so well described in Mrs. H. H. Jackson's clever paper in the last number of the *Century Magazine*. It is almost unnecessary to rehearse the statistics of the 150,000 eucalyptus trees of fifty different varieties, the 12,500 almond trees, the 4,000 walnut, the 3,500 olive, the 200 fig, the 200 vine and the odd hundreds of other fruits. Mr. Cooper was the first to introduce the eucalyptus tree to California and has seven miles of windrows and shade trees of this one species on his place. A greater distinction has come to him in the last few years, as the first one in this country to engage in the manufacture of olive oil from olives. Don Josef de Galves brought the first olive slips to California in 1769, and around all of the old Franciscan missions are groves and remnants of olive groves that sprang from those original cuttings. Mr. Cooper planted his first olive slips in 1873, and he has now a fine grove in full bearing, although the trees are mere saplings in point of age to some of the century-old olive trees in Italy and the south of France. To the inexperienced an olive tree looks very much like a willow tree, save that the leaf is darker and the under side of it is of silvery white, that shows with beautiful effect when stirred by the wind. Botanically it belongs to the jasmine family; has an evergreen foliage; produces fruit in seven years when grown from the seed, and in four years when grown from a cutting. It blooms about the first of May, and the fruit ripens from November to January. The olives for pickling are gathered in September or October, before they are fully ripened, and put to their bath of wine, and the oil is made in mid-winter.

ON THE COOPER RANCH

Neatness, system and heaven's first law of order are proclaimed from gate-hinge to weather-vane, and a master hand and a vigilant eye are detected on every side. The oil is made in a wooden building back of the residence house, and the exquisite neatness and cleanliness of the place is even accented by frequent signs warning off all smokers and tobacco-scented people. So particular is Mr. Cooper that he employs no one at the oil-works who uses tobacco in any form, and everything is done to prevent the delicate article from absorbing any taint or odor. The oil-works are kept dark and cool, and at this season are closed and barred. By the kindness of the owner, our little party was shown through, and the various machinery and processes explained to us, beginning with the great pans where the olives are first shovelled in and crushed under two revolving stone wheels. Following that, the pulp is thrown into tanks, pressed, allowed to settle, and then skimmed off, strained three times through cloth, once through paper, and finally bottled. The first quality of the oil is put up in long quart bottles bearing the maker's name on cork and glass. Very little of the second quality oil, resulting from the second pressing of the pulp, is made; but when it is prepared for the market it is put up in pint bottles and duly labelled as second quality.

AS TO THE PROFITS

To be realized from olive oil after the first ten years, one has only to count up the facts to be gathered on the Cooper place. The olives are planted with seventy trees to the acre. The average yield of one tree in a good year is twenty gallons of olives, from which three gallons of oil are made. The oil is sold at wholesale at $1 for each quart bottle, and counting at this rate an acre of olive trees ten years old will give $800 clear returns in oil. During this last winter 14,000 bottles of oil were made on the Cooper place. When one begins to talk about olive oil an endless subject is opened up, and the frauds and adulterations of wines are nothing at all in comparison to the trickery in olive oils. Pure olive oil is almost unattainable in this country, as severe tests and search have proved. Beyond all the thousands of tierces of [illegible] annually exported to Bordeaux and the Mediterranean ports, enough cotton-seed oil is exported from New Orleans to those lands of the olive to fill 25,000,000 ordinary oil bottles. Mr. Cooper, having formerly been engaged in the export business at New Orleans, made a sufficient study of the matter to convince himself that not a bottle of genuine oil ever comes to the United States, and that really pure olive oil is almost unattainable in Paris; while Castile soap pure and fine to be made from olive oil is the greatest luxury of all. A sufficient market is found for this California oil without effort, and epicures [illegible] ecstatic expression when they taste the real thing for the first time. Several of the New York clubs, notably the Union and the Lexington avenue clubs, order their oil directly from the maker to prevent any doubt about its genuineness, and even the Somerset Club sets the supreme seal of Boston's approval on the Santa Barbara oil.

THERE IS A SORRY JOKE

On a certain Chicago club, whose steward hearing of the ways of the great Eastern clubs, ordered a case of this oil. The members of the club not being connoisseurs, rejected their salads, sniffed at the oil in the cruets, accused the cook of using some base lubricator and returned to their lard and the spurious articles under Bordeaux and Lucco labels. To the champion salad-makers and the artists in mayonnaise it is astonishing how little real olive oil will make a delicious dressing, the proportion between it and the cotton-seed products being as one-half.

The olives and the oil are only one branch of Mr. Cooper's interests, and his walnuts and his almonds are gathered by the ton and sold for the thousands of dollars each season. One gets well bewildered with great facts in this region, and after all that there is of practical interests and industries in Santa Barbara there are ranches at Carpenteria, a few miles down the coast, that almost rival the Cooper and Hollister places. At Carpenteria there is the largest walnut orchard in the state, and lima beans are grown there by the wholesale, the chief supply for the market coming from the fields around that pretty town. One ranchman raised 83,000 pounds of lima beans from forty-nine acres, and received $2,400 for his crop. Another raised 24,000 pounds from sixteen acres, and a third one raising 2,500 from one acre realized $187 for that small crop. It might be assumed that they all three knew beans, and at Carpenteria beans almost usurp the place of the weather as the popular and conventional topic of conversation. The seeds are planted by machinery, the vines are cut by a patent bean cutter, and the beans are dried by a patent process, and the beans of Boston and the *frijoles* of Mexico are no less distinctive than these big, flat lima beans of Carpenteria.

AGRICULTURAL.

Some Things Obtained from Experience of Value to the Farmer.

Olive Culture—The Dewelling Prolific Grape—Planting Trees.

OLIVE CULTURE.

The following letter on olive culture was written to the Los Angeles *Herald* by Frank A. Kimball of National City, San Diego: "I have never seen the olive injured by frost in the slightest degree; nor have I seen the tenderest tree protected by cornstalks or any other material. I have not succeeded with cuttings two and a half feet long in any instance; nor have I had good results from planting cuttings twenty inches deep. I have had nothing but failure where the earth was filled in loosely around the cutting. I have planted olive cuttings every year since 1870. I began with cuttings three feet long, and finding no signs of growth at the proper time, dug, threw up and sawed about one-third of the length from the top end, which had become dry, and about the same from the bottom, which had rotted, and planted the balance, all under ground, and got good trees. I have tried all lengths for cuttings, from three feet down to ten inches, and would rather have them eight inches long than increased to twelve inches, but prefer ten inches. For starting in nursery I plant the cuttings with their tops an inch or two out of the ground, and about thirty inches between the rows. The earth thrown up in making the trenches for irrigation will cover the tops. For orchard planting, make a basin about two feet in diameter and say three inches deep, with the cutting in the center, and about level with the bottom of the basin, covering the top three or four inches with earth, and three or four irrigations during the summer, with the earth finely pulverized after each irrigation. There is no reason way at least 90 per cent should not grow. Pack the earth very closely by tramping it with the feet while being filled in around the cutting, beginning at the bottom and continue to the top. I think there is danger in planting cuttings in nursery by simply making a hole with an iron bar, as there is likely to be a vacant space at the bottom of the cutting. I have seen many failures by this practice. I plant with a spade, pressing the earth against the last one in making the opening for the next. By this method the earth is closed closely around the cuttings from top to bottom. Cuttings well planted and well taken care of should bear fruit enough the fourth year to pay for cultivation. Many trees will bear the third year, and I have never seen a well cared for tree that did not bear some fruit the fourth year. Trees transplanted from nursery at [illegible] years old will seldom bear the following year, but should bear well the second year. I have helped pick eleven gallons of fruit from a four-year-old tree which had no extra pains taken with it. The most I have picked from a three-year-old tree was three gallons. I think there is no other tree so tenacious of life as the olive, or which will respond to good cultivation with so valuable a crop in a given time."

San Diego Olives.

Frank Kimball, the well-known olive grower of National City, San Diego County, writes as follows: In your answer to the questions of your Fresno correspondent in the issue of October 20th I note several things which do not correspond with my experience, and as experience is an excellent schoolmaster, I may be able to correct some impressions which your article may leave on the minds of persons wishing to investigate the olive question.

I have never seen the olive injured by frost in the slightest degree, nor have I seen the tenderest tree protected by corn stalks or any other material. I have not succeeded with cuttings two and a half feet long in any instance, nor have I had good results from planting cuttings twenty inches deep.

I have had nothing but failure where the earth was filled in loosely around the cutting. I have planted olive cuttings every year since 1870. I began with cuttings three feet long, and finding no signs of growth at the proper time, dug, threw up and sawed about one-third of the length from the top end, which had become dry, and about the same from the bottom, which had rotted, and planted the balance all underground and got good trees.

I have tried all lengths for cuttings, from three feet down to ten inches, and would rather have them eight inches long than increased to twelve inches, but prefer ten inches.

For starting in nursery I plant the cuttings with their tops an inch or two out of the ground and about thirty inches between the rows. The earth thrown up in making the trenches for irrigation will cover the tops.

For orchard planting make a basin about two feet in diameter and say three inches deep, with the cutting in the center and about level with the bottom of the basin, covering the top three or four inches with earth and give three or four irrigations during the summer, with the earth finely pulverized after each irrigation. There is no reason why at least 90 per cent should not grow.

Pack the earth very closely by tramping it with the feet while being filled in around the cutting, beginning at the bottom and continue to the top.

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I think there is no other tree so tenacious of life as the olive, or which will respond to good cultivation with so valuable a crop on a given area.—*Los Angeles Herald.*

Olives successfully cultivated on St. Simons Island, Ga., and oil made from them has been pronounced by competent judges not inferior to the best productions of France or Spain. The experiment in olive trees has been successfully made, and trees have yielded regular crops since 1835. The oil crop from these islands is annually sold at from six dollars to eight dollars per gallon.

This is an industry that can be followed with profit in California, all that is lacking are the mills to reduce the fruit to oil.

Los Angeles Herald, October 20.

Will olive trees grow in a very sandy soil and will a little frost in winter kill them? Will the olive grow where the orange will not on account of the frost? Where can young trees be bought and what would be the cost? Are they planted the same as peach and other fruit trees and how long before they will bear?

Olive trees will grow in sandy soil or rocky land or gravelly loam or clayey loam of a stiff character, but do not thrive or bear well in damp soil. They bear more heavily on upland than lowland that is often covered by fog. In the latter locality the blight is likely to infest the trees. The olive is more hardy than the orange and grows where there are quite severe frosts; in such cases the tree should be protected by cornstalks, which permit a circulation of air and admit light and at the same time they protect the leaves from frost. This is for the first year only.

The trees are always for sale in Los Angeles, but they are more easily propagated by cuttings about two and a half feet in length. These are set in the earth in a hole made by a sharp iron bar to a depth of about twenty inches. After the cutting is placed in the hole the latter should be filled with water, which fits the earth completely around the foot of the cutting. The hole is then to be filled up loosely and a mound of earth piled up loosely around the cuttiug nearly to the top and kept there the first year. It sometimes happens that the cuttings will not grow the first year at all, but will start out the second year quite vigorously. The tree needs but little moisture where there are copious winter rains. In dry climates about four times a year would be often enough to irrigate the olive plant. The trees do not bear transportation very well and many of them die in consequence of removal; but the cutting is hardy and is not troubled by gophers.

If trees are planted they will need several irrigations during the first summer. They are planted like other trees. But their roots are extremely sensitive and need special care while being transplanted from the nursery to the orchard. The tree bears usually in from five to seven years after planting from the cutting and in from four to six years from planted trees. In regard to the cost of trees the latter will be referred to nurserymen to respond. The *Herald* is not favoring any particular dealer, but during the winter will contain the advertisements of the leading nurserymen who have trees and cuttings for sale. If the cuttings are large the top should be protected by a coating of wax or clay to prevent being dried out by the sunshine. The tree will bear for 2000 years or more and the fruit is very profitable.

OLIVES.—Cor. *Mirror*: In San Fernando valley, Mr. Rinaldo's olive trees exhibit the perfection of healthfulness, thrift and fruitfulness. From fifteen of them he took, this season, enough fruit to make 100 gallons of pickled olives, worth one dollar per gallon by the quantity. These olives are large and fine, and have a name in the Los Angeles market. I asked Rinaldo what attention and culture he gave his olive trees. "What do you do to them?" His reply was: "All I do to them is to take the olives off." It is another proof of the fact which I have noted before, and elsewhere, that the hardy and independent olive tree will not stand nonsense, nursing or pampering. It is a true child of dry climates, stands abuse like the patient burro, and thrives under it. Give the olive tree a chance and it will make a lot of its cultivators rich in the sweet bye and bye. Rinaldo showed me an ingenious, yet very simple, device for pricking (not picking) olives, by which he can puncture a hundred gallons a day, saving much labor over the old tedious process, whereby each olive was handled and sliced separately.

Olives and Almonds.

Orville Register Jan 31/84

The San Diego olive groves are noted throughout the States, and the tree has become thoroughly naturalized, as men and trees are wont to do in America. So now, California olives are in greater request than Spanish in the Eastern States; and the number consumed is something marvelous as it is customary to place a small plate of pickled olives beside each person at dinner. Being Californian, they are, as a matter of course, twice the ordinary size, and very juicy and fresh in flavor. The olive crop is very remunerative, the fruit of one tree occasionaly selling for $50. Like the orange, it does not attain maturity till about the tenth year. Some men devote their whole care to almond growing; one gentleman at Santa Barbara, cultivates 55,000 almond trees.

OLIVE CULTURE.

Press & Star—Nov 10/83

Frank A. Kimball Relates His Experience—A Good Showing.

The Los Angeles *Herald* of October 30th publishes a letter from Frank A. Kimball of National City, on olive culture. As Mr. Kimball has been very successful in the cultivation of the olive, and as his experience may be of benefit to others we reproduce the letter in full. He writes:

EDITOR HERALD: In your answer to the questions of your Fresno Correspondent—issue October 20th—I note several things which do not correspond with my experience, and as experience is an excellent schoolmaster, I may be able to correct some impressions which your article may leave on the minds of persons wishing to investigate the olive question. I have never seen the olive injured by frost in the slightest degree; nor have I seen the tenderest tree protected by corn-stalks or any other material. I have not succeeded with cuttings two and a half feet long in any instance; nor have I had good results from planting cuttings twenty inches deep. I have had nothing but failure where the earth was filled in loosely around the cutting. I have planted olive cuttings every year since 1870. I began with cuttings three feet long, and finding no signs of growth at the proper time, dug, threw up and sawed about one-third of the length from the top end, which had become dry, and about the same from the bottom, which had rotted and planted the balance, all under ground, and got good trees. I have tried all lengths for cuttings, from three feet down to ten inches, and would rather have them eight inches long than increased to twelve inches, but prefer ten inches. For starting in nursery I plant the cuttings with their tops an inch or two out of the top of the ground, and about thirty inches between the rows. The earth thrown up in making the trenches for irrigation will cover the tops. For orchard planting make a basin about two feet in diameter, and say three inches deep, with the cutting in the center, and about level with the bottom of the basin, covering the top three or four inches with earth, and three or four irrigations during the summer, with the earth finely pulverized after each irrigation. There is no reason why at least 90 per cent. should not grow. Pack the earth very closely by tramping it with the feet while being filled in around the cuttings, beginning at the bottom and continue to the top. I think there is danger in planting cuttings in nursery by simply making a hole with an iron bar, as there is likely to be a vacant space, pressing the earth against the last one in making the opening for the next; by this method the earth is closed closely around the cutting from top to bottom. Cuttings well planted and well taken care of should bear fruit enough the fourth year to pay for the cultivation. Many trees will bear the third year, and I never did see a well cared for tree that did not bear some fruit the fourth year. Trees transplanted from nursery at two years old will seldom bear the following year, but should bear well the second year. I have helped pick eleven gallons of fruit from a four-year-old tree, which had no extra pains taken with it. The most I have picked from a three-year-old tree was three gallons. I think there is no other tree so tenacious of life as the olive, or which will respond to good cultivation with so valuable a crop on a given area.

FRANK A. KIMBALL.

National City, California, October 25.

THE OLIVE BOOM.

For the last few weeks no little competition has been going on between large buyers of cuttings and several local proprietors who have had olive trees available have been besieged by the agents or principals of future olive orchards. Load after load of the beautiful green branches have passed through town, some to the wharf to be shipped away, others to convenient places to be rooted and thence transported to neighboring places. The Santa Ynez judging by the olive branches intended for that place, will be a great producing country for fruit and oil in years to come, and the elaborate preparations being made at Sunol, Alameda county, and the thousands of cuttings being shipped there would indicate that much may be expected of that place when time brings fruition. The main source of supply of the cuttings is several old places about town and near here. The prices range from eight to twelve dollars per thousand, with a lively demand.—*Santa Barbara Independent.*

Napa Register Nov 21 '63

An Opening for a New Industry.

While some viticulturist, in this county believe that, owing to the large acreages of new vines planted each year, not only here but in all portions of the State, there will result in a few years an overproduction that will make the business unremunerative, still the large majority are of the firm opinion that the vine and wine industry will always be the foremost one in this fertile valley. Be that as it may, there is a wide field for the cultivation of the soil to other products and in a diversity of products is the assurance of a country's welfare. Napa county presents a splendid opportunity for the culture of the olive, an industry that is meeting with great success in the central and southern portions of the State, though yet in its infancy. To the query whether the tree will grow here the answer can be made that it flourishes in similar soils and climates, and moreover actual proof exists that it may be successfully cultivated here. At the banking house of Jas. H. Goodman & Co. may be seen a branch from an olive tree which bears a number of olives. It was grown at the residence of Geo. N. Cornwell, at the head of Seminary street. Mr. Cornwell purchased two or three small trees about six years ago and and set them out in the yard. The next year he started several others from slips and seeds. They were planted in the ordinary soil, with one exception received no unusual care, were exposed to heat and frost without protection and are thriving finely. The one tree excepted was planted in the flower-garden and hence received irrigation and cultivation, making a little stronger growth than the others. The trees have borne quite a number of excellent olives this year, being the fifth year from the slip and seed. One of the trees planted six years ago is six inches in diameter. Mr. Cornwell has no doubt that the cultivation of the olive could be made in a few years a leading industry and one that would yield very profitable returns There is no waste in working up the olives. They make a delightful table article when pickled and in this form would find a ready sale. When oil is made from them, the first product is the article for table use. The pulp is heated by steam and a lubricating oil obtained; and the refuse matter is said to make more pork, pound for pound, when used as hog-feed, than any other substance know[illegible]

Olive Culture in Napa.

Napa Register

It has been pretty well demonstrated that all fruits, flowers and trees will prosper in this county. Happening up at Napa Soda Springs yesterday we found the practical florist and gardener of the place, Mr. Lawrence O'Toole, busily occupied in setting out and transplanting a large lot of olive trees that have come from the now famous olive ranch of Col. W. W. Hollister near Santa Barbara. These trees are three years old, trimmed back to about eight feet high, and look vigorous, healthy and attractive ly fresh in both bark and leaf. This experiment of an olive orchard in this county will be watched here with a great deal of interest; for besides being a beautiful tree for shade and ornament the olive is a very profitable production as an article of commerce.

S. F. O. Trade Nov 2 '63

OLIVE CULTURE.

In a recent number of the Century E. D. R. Bianciardi contributes an article entitled "Under the Olives" in which the culture of that tree and the manufacture of olive oil in California is very favorably noticed. The recent exhibition of olive oil by Mr. Ellwood Cooper at the fair at Los Angeles has brought this subject more prom[illegible] to the attention of the pub[illegible] from the various accounts it [illegible]ars that the cultivation of the olive in those regions adapted to it promises the largest and most long continued profits of anything that can be grown. There is an old Tuscan proverb which says "Plant a vineyard for yourself, an orange orchard for your children and an olive orchard for your grandchildren." But in California the planter of an olive orchard may reasonably expect to reap the benefit of it himself and then leave it for his children and successors for many generations. Olive trees grown from seed do not bear for many years, but from cuttings, sprouts, and roots come into bearing in from five to eight years, and continue to grow through centuries. Mr. Bianciardi tells of one near Nice, that is known to be over one thousand years old, and in a single year produces 500 pounds of oil. The tree is known to flourish well in the coast region south of Monterey, and San Luis Obispo has been known as the "City of the Olive Tree." The Spanish missionaries knew the value of this tree and planted it at an early date, but Americans know little of it and the groves of the missions have been neglected until they are valueless or have been destroyed. Latterly more attention has been paid to their valuable products and it is probable that ere many years olive culture and oil manufacture will be among the leading industries of the southern coast. From the reports made it is shown to be the most profitable business the farmer could engage in. At a late meeting of the State Horticultural Society it was stated that an olive farm yielded $2,200 to the acre. Mr. Ellwood Cooper of Santa Barbara issued a pamphlet in which he stated that in an orchard of four years growth he had g[illegible]hered over two gallons of berries fro[illegible] trees. In 1880, the trees then [illegible]ng eight years old, some of [illegible], and fullest trees bore forty gallons of olives. One hundred trees per acre at such rates would produce 40,000 gallons, and five gallons of olives will produce one gallon of oil, and one gallon of oil will make five bottles which usually sell at $1.25 per bottle. This of course is an enormous result, and a fourth of it would be a great profit. The figures of Mr. Cooper are very favorable, and should be so encouraging to farmers as to induce the genera[illegible]nting of olive trees

OLIVE CULTURE.

San Diego Union Nov 6 '63

Frank A. Kimball Relates his Experience—A Good Showing.

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FRANK A. KIMBALL.

National City, Cal., Oct. 25.

NOTES ON OLIVE CULTURE.

Press Dem Feb 16/84

Article Number 2.

Frank A. Kimball in National City Record.

Compare this price to that which is now realized in this State, where every circumstance relating to the production of oil is more favorable than in Italy, if we may except the price of labor.

For instance, the tree *here* will bring a paying crop at *four* years from planting the cutting, while in Italy *seven* years from transplanting the tree from nursery, then two or three years old, is as soon as the tree will pay profit,

Here our season for picking the fruit begins in October, usually, and may continue for four or five months, making it possible for a man or boy to harvest 4,000 gallons of fruit, which represents nearly 500 gallons of oil, or a value of, say $2,000, and should be the product of two acres of trees at ten years old. In Syria it is not uncommon for snow to fall to the depth of two feet before the picking season begins, and the snow has to be trodden down with the feet to make gathering possible, and when gathered, the fruit is packed on men's backs, down the mountain sides to the homes of the gatherers.

It has been urged that the olive which has been planted in California, and become fully acclimated, is not the best variety for this locality, that the fruit ripens too late, while the temperature is too low, with a consequent diminution of the quantity of oil. I can hardly consider this a disadvantage and, while we have no early ripening varieties, would strongly urge the planting of the largest possible area of the "Mission" olive, which will have become good sized trees before earlier or better varieties have been proven so and have become acclimated.

And should more desirable varieties be introduced, it will occasion but temporary loss to graft the Mission olive with them, and will certainly place us far in advance of where we would be if we waited till the trial can be made and the hoped for result reached.

If it is found that a little less oil is made from a certain amount of fruit, may not that small loss be far more than compensated for in the economy of harvesting over a long time, rather than be compelled to harvest in a short time?

The habit of the Mission olive whether natural or the result of climatic causes, since its introduction into California, is to branch low, and if these low limbs be removed by severe pruning, the higher limbs will droop and shade the trunk, and right here is where the Mission olive has an advantage over many varieties which send out their branches at an acute angle to the main stock of the tree, thus exposing the trunk to the desiccating influence of our long dry seasons, the tendency being to evaporate the sap which Nature intended should be deposited as wood.

I have tried the experiment and am satisfied that a larger tree can be made in five years by low branching, than in seven years by pruning the low branches and exposing the trunk. All trees trimmed high will have coarse bark and rough, like the bark on old apple trees, but when protected by foliage, the bark remains smooth and green.

Many people are of the opinion that the olive tree may be planted on land which is worthless for any other plant and, as a general conclusion, say the olive will grow anywhere and thrive without care. Experience in Southern California will prove the fallacy of such conclusions and I believe it may be written down as an axiom—that every plant, to secure the best results *must* be planted in soil adapted to its nature, in locations adapted to its habits, and receive such *care* and *cultivation* as would entitle the owner to *expect* satisfactory returns.

Hundreds and perhaps thousands of cargoes of earth have been transported on vessels from the Island of Cyprus to the Island of Malta, carried up the mountain sides on the heads or shoulders of men and women, and added to the poor rocky, sterile soil of the mountains and make it possible to produce the wonderful crops that have made that island, having an area of less than six or eight miles of arable land, the most productive of any similar area, probably, on the globe, there being an annual export of from $6,000 to $10,000 in the product of the olive tree, mulberry tree and the vine.

When the people of Southern or, for that matter, Northern California wake up to a knowledge of the fact that we have the climate and soil every way equal to the most favored spot on earth for the production of these three great staples, required and demanded by every nation of the earth, *then* our lands will be cultivated, and but a short time will elapse before California will stand in the front rank of States, producing the largest returns from the smallest investment of capitol on the smallest area of land.

Press Dem 2/16/84

Irrigation of the olive tree will be discussed in the next.

OLIVE CULTURE.

Considerable attention is being paid to the cultivation of the olive in various parts of the county. There are about 1,500 trees in the county now bearing. These are found principally in the Sonoma Valley at Howe & Hall's place, G. F. Hooper's and General Vallejo's, while others have a few trees, from four to ten in number on the place. Another grove of olives is found on the old Giovanini place near Forestville, where there are about forty trees all bearing, and which this season are full of fruit. A mistake was made in planting these trees, as they were set out more than four feet apart. They are now from twelve to fifteen feet in height. Mr. DeTurk has a large number of cuttings on his Yulupe Rancho. This tree seems to thrive best on sterile hilltops in red soil. It is propagated usually from cuttings or "suckers," and attains a height of from thirty to forty feet. A cutting that was set out in this city two years ago has just begun to show signs of growth. They grow very slowly, and seldom bear under from five to seven years.

Santa Rosa Democrat.

ON OLIVE CULTURE.

Article Number 1.

Frank A. Kimball in National City Record

There seems still to be a great misapprehension in regard to the importance of planting the olive—the impression being general that the tree is of slow growth and of late maturity, so far as the production of fruit is concerned.

I have now on file over [illegible] letters in regard to this [illegible] the variety of questions [illegible] of the generally received opinion.

Cuttings well planted where they remain, and properly taken, planted in January, will be from [illegible] feet high the first year. The next they should not be permitted to grow very much in height—the ends of the branches should be pinched off, and the growth of the tree thrown into the trunk, otherwise, it will grow upward very fast at the expense of the trunk at its base.

It is of primary importance that the trunk should be made strong, particularly on the coast where the trade winds from the same direction for about [illegible] months of the year; and if this tree, or any other, is permitted to grow a slender cane, it has no strength to resist this constant pressure of the wind, and will have an inclination from the wind just in proportion to its strength to resist the pressure—my orchard is the best evidence of this fact.

With the knowledge which all who have planted olives have gained by experience, and which every man is [illegible] and anxious to communicate to wishing to plant—no one need to make a mistake—and what has been done by the best of us in five years can be accomplished in three years.

Judicious pruning is absolutely essential, and consists *not* in letting a great mass of limbs grow to a diameter of one, two or three inches and then cutting them off—thereby injuring, perhaps permanently, the vitality of the tree, and lessening the size of the tree by one or two years' growth—all of which would have been avoided by *pinching* off the ends of branches which are growing too fast, thus throwing the strength of the tree into the part desired; and by rubbing off the sprouts, where limbs are not wanted. By this method of pruning, no wood is made and thrown away—it is *all* in the tree, and just where it should be to make a symmetrical shape.

I was [illegible] to let the trees grow as they would, and am now reaping the reward of [illegible] credulity—I have had to cut away more wood than now makes the top of the tree—of course not all at once, but in the [illegible] years.

[illegible] circumstances compel me to neglect my trees [illegible] in pruning, but in general [illegible] the result was low vitality and [illegible] to resist the scale insect and [illegible] the whole orchard became infested to such an extent that little growth was made during the past season, and almost no fruit this year. I have now mastered the scale and smut by the application of whale-oil soap, applied with a force pump through a spray nozzle.

The time required for spraying is comparatively little, and the cost of soap but a small charge per tree—the whole operation in no way [illegible] the cultivation of a [illegible].

The [illegible] at least we can think ahead to the time when the plant or tree which will produce the greatest amount of food on the smallest area of land will be sought for, and with the greatest care cultivated—a fact historically true in all countries where the olive is one of the possible crops.

Hon. M. P. Wilder, U. S. Commissioner to the Paris Exposition, in his report to the Senate of the United States, says of olive oil: "Oil in some way or other plays a most important part in the domestic economy of Europe. It is not only the source of light, but to a great extent, of life itself. A large portion of southern Europe would perish were the olive crop to fail. Real olive oil most readily agrees with sensitive stomachs, and for centuries has partly taken the place of meat and butter, with large and intelligent populations."

Olive trees live far beyond the memory of man, and some indeed passed the ordinary limits of tradition. At Piscio, in Italy, there is a tree which can be proved historically to be more than 700 years old. There can be but little question that trees on the Mount of Olives 2,000 years ago, are there to-day.

The question is often asked, "Where can 'Queen' olive trees be had?" and the shortest answer is this: There is no distinctive name applied to any variety of the olive—it is simply an arbitrary name adopted by packers. The prepared olives known in common as "Picholinis" are not a variety of the olive, but take their name from an Italian by the name of "Picholini," who discovered the art of pickling the olive.

Browne in his "Trees of America," forty years ago, wrote as follows: "From the value of its products, in a commercial point of view aside from other considerations, the culture of the olive strongly merits the attention of the American agriculturist, and the trial sould be made in every place where its failure is not certain."

A generation ago, in Italy, the market price of the finest olive oil was less than eighty (80) cents per gallon to the producer, and was at that date considered the most desirable crop to raise, [illegible] consequence of its certainty of [illegible] the amount of labor required in its production, and the income per acre.

[To be Continued.]

OLIVE CULTURE.

Considerable attention is being paid to the cultivation of the olive in various parts of this county. There are about 1,500 trees in the county now bearing. These are found principally in the Sonoma Valley at Howe & Hall's place, G. F. Hooper's and General Vallejo's, while others have a few trees, from four to ten in number on the place. Another grove of olives is found on the old Giovanini place near Forestville, where there are about forty trees all bearing, and which this season are full of fruit. A mistake was made in planting these trees, as they were set out more than four feet apart. They are now from twelve to fifteen in height. Mr. DeTurk has a large number of cuttings on his Yulupe Rancho. This tree seems to thrive best on sterile hilltops in red soil. It is propagated usually from cuttings or "suckers," and attains a height of from thirty to forty feet. A cutting that was set out in this city two years ago has just begun to show signs of growth. They grow very slowly, and seldom bear under from five to seven years.

Santa Rosa Democrat

— The olive tree is the rage this season. Every year there is a preference for a special fruit.

Olive Culture.

San Jose Herald November 15.

The business of olive culture is ... great importance a ... will soon be one of the leading indust... of the State. The olive crop of Italy ... one amounts to $50,000,000 annually. California can p... that amount easily and with this p... ive magnitude of the business, her c... should be sure and select the best v... at the start.

Almost daily there are inquiries fr... rious parts of the country for reliable nu... serymen who deal in olive trees and cut tings, which show that the people are steadily realizing the value of this most excellent fruit, which is destined to be one of the great sources of wealth to the State. It is time to be looking around for cuttings for the spring planting in order to secure all that are needed. The Mission and the Queen olive are the principal varieties now cultivated in this part of the country, but if other kinds are wanted there is time enough before the planting seaso... import them from France, Spain or ...

NEW VARIE... &c.

Frank A. Kimball writes me that he finds a great difference in time of ripening in different trees in the orchard of the old Mission, some trees perfecting their fruit in October, while other trees are two months later. This would indicate that according to the position and soil we should plant the variety adapted to it. Maturity seems to depend upon the power of heat that acts upon the tree. Each kind requires a different amount of heat. Unless there are distinct varieties at the Misston orchard Mr. Kimball speaks of, the locality and situation, soil, moisture and degree of heat received in the aggregate, by the trees maturing their fruit in October, should be observed, studied and made models of, for we should suppose that all the circumstances contributing to allow the tree a long rest, after its season's work, will be in favor of its longevity.

To mention a few of the early ripening varieties, which will reach our coast shortly, and, as to the share for the University of California and Prof. Hilgard personally, will receive due care for future practical results, there will be among them the *Manzanillo* olive, requiring only 3,400 degrees of heat (while the Mission olive needs some 4,000 centigrade degrees.) The *Manzanillo* fruit reaches seven grammes of weight, is excellent for pickling and yields good oil.

The *Redonvillo* olive, a small fruit, but of excellent qualities and requiring likewise only 3,400 degrees of heat.

The *Nevarillo blanco*, a copious bearer of pretty large fruit, yielding abundant and excellent oil.

The *Empeltre*, the principal variety of the northern Spanish provinces, multiplied chiefly by grafting, an excellent bearer, yielding oil of prime quality, resists frost, and, therefore, doubtless of great value to the cooler regions of California.

The *Gordal*, as hardy a tree as our Mission, yielding one of the best pickling olives, which holds equally good oil.

The *Verdejo*, a tree having the same merits of frost resistance and yielding fruit alike good for preserving as for oil.

Of late maturing trees the *Marvileno*, yielding enormous sized olives, and some relative to our *Corneruclo Cornicabra* varieties, and the *Picudo*, yielding olives twenty-five per cent larger than the latter, will be improvements.

...ber of different varieties will come and ...ested, and it will be a welcome addition ... ...ecuring ...olive planters the means of a healthy development of the industry, the importance of which seems to be understood at last.—*E. P... Wolff in Press and Horticulturist.*

Drying Olives.

The berries are dried before crushing, as it is necessary to evaporate a portion of the water. If, however, they are left out on the tree until shriveled, which is proof that necessary evaporation has already taken place, no drying needed after picking. This late picking is best. If dried by the sun it requires about fourteen days. This plan cannot be depended upon, excepting years when fruit is early and we have continuous sunlight, with moderately warm weather. By artificial heat ranging from 110° to 130°, the drying can be done in less than forty-eight hours. The crushing and pressing should follow without delay—that is, the fruit taken from the drier in the morning should be crushed and pressed the same day. Long intervals or delays in the process from picking the fruit to expressing the oil tends to rancidity. To make perfect oil requires a perfect system in the whole management. The capacity of the press, the crusher, the drier, and the number of pickers should correspond or be about equal; all fruit picked during the day should be in at night, cleaned the following morning, and go into the drier immediately after the previous day's drying is taken out. The heat or temperature of the drier ought to be so graded as to complete the work in forty-eight hours, and it is better that it should be under 130° than above. Economy will necessitate in the business a system in the different branches of the process admitting of no delays from the beginning to the end.—*Elwood Cooper in Santa Barbara Press.*

Olive Groves of Mentone.

[Harper's Magazine for January.]

The longer one remains in Mentone, the stronger grows attachment to the olive ...s. But they do not seem fit places ...e young, whose gay voices resound ...gh their gray aisles; neither are they ...e old, who need the cheer and warmth ... But they are for the middle- ... are beyond ti... ...ached the peace or ... ...nembered, hard-worked middle- ...he olives of Mentone are small, ...d only for making oil. We saw ...athered; men were beating the ...vith long poles, while old women ...n collected the dark purple ber- ...ced them in sacks, which the ...onkeys bore to the mill. The oil ...are venerable and picturesque little ...lings of stone, placed in the ravines ...where there is a stream of water. We visited one on the side hill; its only light came from the open door, and its interior made a picture which Gerard Douw might well have painted. The great oil jars; the old hearth and oven, the earthen jugs, hanging lamps with floating wicks, and the figures of the men moving about, made a picturesque scene. The fruit was first crushed by stone rollers, the wheel being turned by water-power; the pulp, saturated with warm water, was then placed in flat ...rope baskets, which were piled one ...on the other, and the whole subjected to strong pressure, which caused the clear yellow oil to exude through the meshes of the baskets, and flow down into the little ...oir ...

Olives.

Concord ...

John Garcia, whose ... ...anch is located about two mi... ...ord, has growing two olive tree... ... planted about six years ago. At th... ...e they were two years old. They n... ...bout ...0 gallons of fruit to ea... ...keep on increasing in yield u... ... an age of 25 or 30 years. Mr. Garcia experiences no difficulty in their growth. We believe the tree, if planted in sufficient quantities, would become very profitable to the farmer. Surely many of our farmers would not miss an acre of land set out in this valuable tree, the revenue from which would more than twice exceed that of grain, including their cost and the years they are not bearing. Beside the industry it would open up if generally grown would amply ...those whose enterprise largely con- ... their growth in this county.

OLIVE CULTURE.

S. Barbara

...e, Process of Filtering or Clarifying.

This is a simple process. The most common method is to have a series of ...e or six boxes, one above the other, ...ch with cotton batting in the bottom, the oil passing the sixth will be beautifully clear and ready for market. I use cylindrical tin vessels holding about three gallons each, one fitting in the other in tiers of three, with fine wire sieves in the bottom of each. On these sieves I place two or three layers of cotton batting. The oil is passed from one tier to the other until clear. The clarifying can be done by the sunlight, also, it can be bleached and made much lighter in color, but not without injuring it. When it is adulterated artificial heat is necessary in the process. When once heated it loses a part of the nutty flavor, and is liable to become rancid when exposed to the air. It should be kept in an ordinary cool place, not exposed to sunlight or heat, neither should it be handled any more than is absolutely necessary in the filtering and bottling, and should not be shaken after bottling. The mucilage contained in the oil will not separate for a long time after the oil is ready for use, and, as it does not injure it, is not, therefore objectionable. It will sometimes form in the bottles like globules of water, or in films settling to the bottom as sediment, and when shaken will give it a muddy appearence, which with the common prejudice against all table oils that are not perfectly clear, renders it unsalable, as consumers consult more the eye than the taste. The oil is better when new and fresh, and what is gained in the appearance by its remaining a longer time in the tank, is more than lost in its freshness and delicacy of flavor.

To sum up the cost of the machinery in making of the oil, we have as follows; Drier, $150; mill, $250; two presses, $500: two tanks, $200; filterers, $50; corker, tin foiler, $50; wooden building, $400. Total, $1600.

PICKLING.

There are different methods of preparing the fruit for pickles. The one adopted in this locality is as follows; "The berries are put in fresh water, which should be changed every day, for forty or fifty days, then put in salt brine, not very strong, and after remaining a few days, drawn off, a second brine substituted, made nearly strong enough to bear an egg. The water should be boiled. Keep the olives well covered with the brine. Great care should be taken in handling the berries not to bruise them. The easiest plan when picking from the tree is to drop them in water. They are usually picked when they begin to turn a purplish color."

Another method, copied from the *Pacific Rural Press*: "Pick the olives as soon as they begin to show a reddish cast and rinse them in clean water. Then take one ounce of concentrated lye and dissolve in water. One-third of this solution put in water enough to cover one gallon of olives. After a day or two pour off this water, and add another lye of the same strength. This may be repeated once more, as five or six days are consumed in taking out the bitterness with the lye. The lye should be used until the fruit suits the taste. The olives are put in pure fresh water until the alkali is well removed. This can be ascertained by the color of the water and by the taste. In salting, use the best Liverpool "coarse fine" salt, the amount being about ten pounds to the barrel of olives, water enough being used to cover the fruit. Barrel up tight and keep in a cool place. All the process should be conducted in the dark, as the light is apt to injure the color."

Still another method, which I have copied from the work of Prof. A. Coutance, and translate as follows: "Take green olives and after having bruised or broken them slightly, soak in water for nine days, changing the water each day. At the end of this time they will have lost their bitter taste and can then be put in brine. Hot water acts more rapidly."

"The celebrated olives pickled after the *manner of Picholini* are put under a treatment of lye made more alkaline by the addition of quick lime. After ...aying the olives a certain length of

from the seed, a condition which depends upon the strength of the lye and the size of the olives; they are then washed and put in strong brine." "In the south they flavor with fennel and coriander; sometimes they substitute in place of the seed a small piece of *anchovy* and a *caper*. In the latter case the olives should be in oil."

ELWOOD COOPER.

Santa Barbara Press, January 8.

Elwood Cooper contributes the following on the method of clarifying olive soil: "This is a simple process. The most common method is to have a series of five or six boxes, one above the other, each with cotton batting in the bottom; the oil passing the sixth will be beautifully clear and ready for market. I use cylindrical tin vessels, holding about three gallons each, one fitting in the other in tiers of three, with fine wire sieves in the bottom of each. On these sieves I place two or three layers of cotton batting. The oil is passed from one tier to the other until clear. The clarifying can be done by the sunlight also; it can be bleached and made much lighter in color, but not without injuring it. When it is adulterated, artificial heat is necessary in the process. When once heated it loses a part of the nutty flavor and is liable to become rancid when exposed to the air. It should be kept in an ordinarily cool place, not exposed to sunlight or heat, neither should it be handled any more than is absolutely necessary in the filtering and bottling, and should not be shaken after bottling. The mucilage contained in the oil will not separate for a long time after the oil is ready for use, and as it does not injure it, is not, therefore, objectionable. It will sometimes form in the bottles like globules of water, or in films settling to the bottom as sediment, and when shaken will give it a muddy appearance, which with the common prejudice against all table oils that are not perfectly clear, renders it unsalable, as consumers consult more the eye than the taste. The oil is better when new and fresh, and what is gained in the appearance by its remaining a longer time in the tank, is more than lost in its freshness and delicacy of flavor.

"To sum up the cost of the machinery in making of the oil we have as follows: Drier, $150; mill, $250; two presses, $500; two tanks, $200; filterers, $50; corker, tinfoiler, $50; wooden building, $400; tots' $1600.

"There are different methods of preparing the fruit for pickles. The one adopted in this locality is as follows: The berries are put in fresh water, which should be changed every day, for 40 or 50 days, then put in salt brine, not very strong, and after remaining a few days drawn off, a second brine substituted, made nearly strong enough to bear an egg. The water should be boiled. Keep the olives well covered with the brine. Great care should be taken in handling the berries not to bruise them. The easiest plan when picking from the tree is to drop them in water. They are usually picked when they begin to turn a purplish color."

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"The celebrated olives pickled after the manner of Picholini are put under a treatment of lye made more alkaline by the addition of quicklime. After leaving the olives a certain length of time, until the pulp separates easily from the seed, a condition which depends upon the strength of the lye and the size of the olives; they are then washed and put in strong brine. In the South they flavor with fennel and coriander; sometimes they substitute in place of the seed a small piece of anchovy and a caper. In the latter case the olives should be in oil."

Plant the Olive.

The Los Angeles *Herald* considers that the raising of olives is destined to be one of the great industries of the future in this State, and this belief is held by many who have studied the subject. Napa county is as well adapted, by reason of soil and climate, for the cultivation of this fruit, as Los Angeles or any other part of the State. We are informed by a gentleman who has visited the olive regions of Italy that the soil here presents the same characteristics as in those places were the olive is most successfully raised. In Italy it is a maxim that the best olives are raised in localities subject to sea breezes and fogs; but not directly exposed to coast winds, and those localities are such as are situated exactly similar to Napa Valley. In Sonoma county there are about 1,500 bearing trees and many parties are putting out large numbers this year. The Santa Rosa *Democrat* says: "Captain H. E. Grosse has purchased 400 olive trees from three to four years old in Santa Barbara, which will be set out in December. An experienced olive orchardist visited this place last Winter, and expressed the opinion that it was a splendid place for olive culture, his experience being that they thrived best in red soil on the hills, from twenty to thirty miles from the coast. This would imply that they will do well in almost any part of this valley, and in the foot-hills between here and Napa."

Isaac De Turk is another prominent man who is entering largely into the business. In Napa county, Chas. Krug has put out several hundred trees on his Howell Mountain ranch and others are experimenting with smaller numbers. From such persons we would be pleased to have the results of their experiments. Prof. F. Pohndorff, of St. Helena, an expert in viticulture, is also well informed on the culture of the olive. He has recently imported from Spain for Messrs. Krug, Livermore, West and others a number of rooted plants of the best pickling and oil varieties.

It is said Mr. Pohndorff, through the instrumentality of his relatives in that country, has two young nurseries in Spain, specially planted for him and at his expense, with the object of transporting the young trees to this State when ready for transplanting.

THE EXPERIENCE OF AN OLIVE GROWER

In a late number of the Los Angeles *Herald* was a letter from Frank A. Kimball, of National City, San Diego county, who has made a great success in cultivating the olive. The following points from his letter are of great value:

I have never seen the olive injured by frost in the slightest degree; nor have I seen the tenderest tree protected by cornstalks or any other material. I have not succeeded with cuttings two and a half feet long in any instance; nor have I had good results from planting cuttings twenty inches deep. I have tried all lengths for cuttings, from three feet down to ten inches, and would rather have them eight inches long than increased to twelve inches, but prefer ten inches. For starting in nursery I plant the cuttings with their tops an inch or two out of the ground, and about thirty inches between the rows. The earth thrown up in making the trenches for irrigation will cover the tops. I think there is danger in planting cuttings in nursery by simply making a hole with an iron bar, as there is likely to be a vacant space at the bottom of the cutting. I have seen many failures by this practice. I plant with a spade, pressing the earth against the last one in making the opening for the next; by this method the earth is closed closely around the cutting from top to bottom. Cuttings well planted and well taken care of should bear fruit enough the fourth year to pay for cultivation. Many trees will bear the third year and I have not seen a well-cared-for tree that did not bear some fruit the fourth year. Trees transplanted from the nursery at two years old will seldom bear the following year, but should bear well the second year. I have helped pick eleven gallons of fruit from a four year old tree, which had no extra pains taken with it. The most I have picked from a three year old tree, was three gallons. I think there is no other tree so tenacious of life as the olive, or which will respond to good cultivation with so valuable a[re]sult to a given area.

It has been generally stated and as generally believed that olives would not bear well in Southern California, back from the coast. A little investigation we think will partially if not entirely upset this idea. Mr. A. S. White who has a few olive trees some five or six years from the cuttings, says they are just loaded with fruit this year, and he had an olive branch in town with him a few days ago not as an emblem of peace, but as an evidence of fruitfulness. The same information comes from other sources. Mr. E. W. Holmes has a small orchard of olive trees that are bearing fruit abundantly. The olive does not need as much water as many other kinds of trees and it is probable that there are many localities where a little water only can be had that the olive will prove to be profitable. Mr. Frank A. Kimball has the following to say relative to the propagation of the olive which he has made a specialty at National City:

I have planted olive cuttings every year since 1870. I began with cuttings three feet long, and finding no signs of growth at the proper time, dug them up and sawed about one-third of the length from the top end, which had become dry, and about the same from the bottom, which had rotted, and planted the balance, all under ground, and got good trees. I have tried all lengths for cuttings, from three feet down to ten inches, and would rather have them eight inches long than increased to twelve inches, but prefer ten inches. For starting in nursery I plant the cuttings with their tops an inch or two out of the top of the ground, and about thirty inches between the rows. The earth thrown up in making the trenches for irrigation will cover the tops. For orchard planting make a basin about two feet in diameter, and say three inches deep, with the cutting in the center, and about level with the bottom of the basin, covering the top three or four inches with earth, and three or four irrigations during the summer, with the earth finely pulverized after each irrigation. There is no reason why at least 90 per cent. should not grow. Pack the earth very closely by tramping it with the feet while being filled in around the cuttings, beginning at the bottom and continue to the top. I think there is danger in planting cuttings in nursery by simply making a hole with a bar, as there is likely to be a vacant space pressing the earth against the last one in making the opening for the next; by this method the earth is closed closely around the cutting from top to bottom. Cuttings well planted and well taken care of should bear fruit enough the fourth year to pay for the cultivation. Many trees will bear the third year, and I never did see a well cared for tree that did not bear some fruit the fourth year. Trees transplanted from nursery at two years old will seldom bear the following year, but should bear well the second year. I have helped to pick eleven gallons of fruit from a four-year-old tree, which had no extra pains taken with it. The most I have picked from a three-year-old tree was three gallons. I think there is no other tree so tenacious of life as the olive, or which will respond to good cultivation

Olive Culture and Experiments in Southern California.

Experiments of Frank A. Kimball, National City, demonstrate cuttings "should be kept *moist*, not *wet*, too much molsture being far worse than too little." "Cut limbs in every month from December to July; find little difference in result"—a few cut in June last now a foot high—took 21 cuttings from a limb in full bloom—not one failed—good cuttings finely planted and well cared for should at least turn out 90 per cent.

Mr. F. Pohndorff, of Napa county, "comparing olives grown in five counties, although an earlier degree of maturity distingulshes those of the southern counties," says, "the fact seems patent that all belong to *Cornezule Cornicabra* family, and leaf-shape of fruit and seed show an [illegible]ianity to the *Olea Europea* [illegible], as it is called by Clemente, and *Olea Adorata* by Ros; while in France it is named *Luquise*, or *le Luques*, this latter appellation indicating its origin or propagation from the Italian olive region of Lucca. It is a good oil fruit and the oil is of the best grown in Central Spain. The tree is probably of all the genus, that which requires most degrees of heat to ripen its fruit. It resists cold; requires good cultivation and manure; loose soil ventilation. Pruning ought to be done with care and discernment."

In reviewing the many disadvantages and drawbacks to the above named varieties, he claims the introduction of later importations that are free from all objections mature, "works only from March to October or beginning of November, yields a larger, finer fruit for oil or pickling, treble the size of the *Cornicabra*, requires less time and heat for their propagation and many other advantages, but does not specify what variety it is. Time will demonstrate."

F. A. Kimball in a letter to the Los Angeles *Herald* says, have "planted olive cuttings every year since 1870. Began with cuttings three feet long; finding no signs of growth at the proper time, dug, threw up, and sawed about one-third the length from top end, which had become dry, and about the same from the bottom, which had rotted, and planted the balance all under ground and got good trees. Have tried all lengths for cuttings, but prefer them ten inches; plant them with tops an inch or two out of the ground and about thirty inches between rows; the earth thrown up in making trenches will cover tops. For orchard planting make baisin about two feet in diameter and say three inches deep, with cutting in the center and about level with bottom of the baisin, covering the top three or four inches with earth, and three or four irrigations during the summer with the earth finely pulverized after each irrigation."

The San Francisco *Grocer and Canner* in speaking of olive oils says: "Enough has been done by Cooper, of Santa Barbara, the Kimballs, of San Diego, and the Wolfskills, of Solano, in the culture of the olive to demonstrate that the tree thrives well in California, and hence to establish the fact that it is a profitable tree to cultivate. The trees begin to bear at three years, and when five years old will pay all expenses of tilling and harvesting, with a surplus, while the sixth year the crop will pay for the land, the trees and the tillage for the five years previous, and with good care the increase is large from year to year for a century longer. Indeed, there are trees in Asia Minor known to be 1200 years old and still in full bearing. There are larger areas of land in California well adapted to the growth of the olive, for this tree does not need irrigation. It demands warm land, and will not flourish in molst soil. In the pamphlet published by Ellwood Cooper, of Santa Barbara, the statement is made that some of his best trees, eight years old, produced two thousand gallons of berries to the acre, and the European standard is eight gallons of berries to one of oil, which gives a product of two hundred and fifty gallons of oil per acre. The oil finds a ready market at $5 per galton, which gives an income of $1,250 per acre for the best eight-year old trees in an exceptionally good year. The net income from such a crop would not be less than $1,000 per acre, and there can be no doubt that Mr. Cooper's statement is correct, for he has no motive for deception, and is of such probity of character that his word is never questioned."

Quoting from our remarks of December the 8th: "It has been very generally stated and universally believed that the olive would not flourish away from the coast; that the interior valleys did not furnish the climate conducive to a profitable fruitage of the olive, although the tree would grow well here, and hence but few trees have been planted in Riverside or other interior settlements. This proposition is now being contradicted with good evidence. Olive trees in Riverside are now getting of good age and bearing finely. E. W. Holmes has a good crop of olives on his trees; so has Mr. Lockwood and some others. Mr. Holmes has pickled a quantity of olives that are fine. He puts them up in bulk. Mr. Lockwood has as yet only a small crop, but he has commenced putting in bottles, and samples we have seen show a finely put up fruit that can only be produced by skillful treatment. The olives pickled by him are superior to the imported, in that they are not pickled so green and hence are more nutritious, and yet they are green enough to retain their green color, which improves the market value over the riper and darker colored fruit. The Kimball olives have always stood high in the market. The olive requires less water and less care than most of other fruits. There are many places, therefore, where the olive will do well where there is not enough water for some other kinds of fruit. It takes longer to bring an olive orchard into bearing than it does the apricot, peach, grape or budded orange; it is more like the seedling orange in this trees are always for sale in Los Angeles, but they are more easily propagated by cuttings about two and a half feet in length. These are set in the earth in a hole made with a sharp iron bar to the depth of about twenty inches. After the cutting is placed in the hole the latter should be filled with water, which fits the earth completely around the foot of the cutting. The hole is then to be [illegible] loosely and a mound of earth [illegible]sly around the cutting nearly [illegible], and kept there the first year. It sometimes happens that the cutting will not grow the first year at all, but will start out the second year quite vigorously. The tree needs but little moisture where there are copious winter rains. In dry climates about four times a year would be often enough to irrigate the olive plant. The trees do not bear transportation very well, and many of them die in consequence of removal; but the cutting is hardy, and is not troubled by gophers. If trees are planted they will need several irrigations during the first summer. They are planted like other trees. But their roots are extremely sensitive and need especial care while being transplanted from the nursery to the orchard. The tree bears usually in from five to seven years after planting from the cutting and in from four to six years from planted trees. In regard to the cost of trees, the latter will be referred to nurserymen to respond. If the cuttings are large the top should be protected by a coating of wax or clay to prevent being dried out by the sunshine. The tree will bear for two thousand years, or more, and the [illegible] is very profitable.

Olive Culture.

A correspondent of the Los Angeles Herald, writing from Fresno county about olive growing, asks the following questions:

"If olive trees will grow in a very sandy soil, and if a little frost in winter will kill them? Will the olive grow where the orange will not on account of the frost? Where can young trees be bought and what would be the cost? Are they planted the same as peach and other fruit trees, and how long before they will bear?"

The Herald replies as follows: Olive trees will grow in sandy soil or rocky land, or gravelly loam, or clayey loam of a stiff character, but do not thrive or bear well in damp soil. They bear more heavily on upland than low land that is often covered by fog. In the latter locality the black scale-bug is likely to infest the tree. The olive is more hardy than the orange, and grows where there are quite severe frosts. In such cases the trees should be protected by cornstalks, which permit a circulation of air and admit light, and at the same time they protect the leaves from frost. This for the first year only. The

A CHAPTER ON OLIVES.

A Hardy Plant—Delicious Oil—Historical Facts.

Napa Register—Feb 27/84

There existed formerly in these islands an army of which it was said that it could "go anywhere and do anything." The olive is the living vegetable counterpart of this extinct phenomenon. Within certain latitudes it will grow anywhere and serve for almost every purpose. On a dry and stony elevation that would starve out a thistle the plant luxuriates; and if the sea breezes may but fan the young shoots, so much more of promise is there for the olive harvest. Propagated chiefly by cuttings, the willowy looking twigs take root with a proud defiance of ordinary limitations, and there is a whimsically planted grove of olive trees of unusual size and beauty near the town of Messa, in Morocco, which illustrates this trait in a remarkable way. One of the kings of the dynasty, of Saddia, being on a military expedition, encamped here with his army. The pegs with which the cavalry picketed their horses were cut from the olives in their neighborhood, and some sudden cause of alarm leading to the abandonment of the position, the pegs were left in the ground, and making the best of the situation, developed into the handsomest group of olive trees in the district. Olives are mentioned in the earliest records of Egypt, and their introduction into Greece took place as early as 1,500 years before our era. Thence their cultivation naturally passed into Italy, the Romans especially prizing them, while Virgil mentions three distinct varieties, each of which had its own fastidious supporters in the ancient conflict of tastes. Pliny tells us that they also grew in the heart of Spain and France, though he awards the palm to the smaller olive of Syria, the oil of which was at least more delicate than that produced in the western countries. So far as regards the oil of Spain, and, to a certain extent, that of Italy, this judgment holds good to the present time, for the reason that the Spanish olive is a larger

coarser fruit, while the Italian growers are too apt to detract from the limpid delicacy of the virgin oil by the sacrifice of quality to quantity. The olive, like all generous givers, demands that you should "squeeze" it gently. The oil is expressed from the entire pulp and body of the fruit, and its quality inevitably stands in inverse proportion to the quantity produced. The first pressure yields a thin, pure liquid, almost colorless; and with this even the most fastidious of English palates rarely makes acquaintance. As the pressure is increased a less delicate product is the result, while if it is still further prolonged, a rank and unwholesome residuum is obtained, wholly unfit for edible purposes. It should be mentioned that the virgin oil does not retain its freshness for more than a few weeks without the addition of a little salt or sugar, and it is almost impossible for any one to realize the exquisite delicacy of this first expression of the freshly gathered olive, unless he has sojourned in such a district as that of which Avignon is the centre. The oil of Aramont, in Provence, was formerly supposed to have no equal in Europe. Napa Reg.

Both the olives and the manufactured oil of the southeast of France are, indeed, still unrivalled by those of any other country. The Italians pay more respect to the commercial aspects of their production, and among them the number of olive farmers and merchants is very large. They have a proverb: "If you wish to leave a competency to your grandchildren, plant an olive." Doubtless the advice is sound enough, for the trees often flourish for more than a century and bear heavy crops to the last. But to the peasant of southern France the olive is almost what the pig is to the English laborer. Prudent housewives there are as averse to the introduction of new fruit at table as their thrifty English sisters are of the "new" loaf. In fact, they habitually preserve the darker berries for every-day use; for these not being so agreeable to the taste "go" much further—a necessary consideration when they oftener form the staple than the accompaniment of the meal. Olives intended for eating are gathered while still green, usually in the month of October. They are soaked for some hours in the strongest possible lye to get rid of their bitterness, and are afterward allowed to stand for a fortnight in frequently-changed fresh water, in order to be perfectly purified of the lye. It only then remains to preserve them in common salt and water, when they are ready for export. Among the Romans the olive held the privileged position of being equally respected as a dainty accessory and an ordinary food. It was eaten at the tables of the temperate and the luxurious alike, and, while dividing the highly flavored dishes of their extravagant suppers, formed a constituent of Horace's pastoral meal

Of olive, endive, simple tastes,
And mallow.

At what precise date olives began to fill their present office in England is not quite clear, but they were plen-

THE OLIVE TREE.

St. Helena, Dec. 2, 1883.

Ed. Gazette:—Your county has for a century proved its adaptedness of many a region to the successful rearing of one of the most important trees which in climates like yours ought to be one of the foremost objects of farming, the olive tree. In your own district several years ago Mr. B. Dreyfus added a round number of olive plants to the stock of his property, and thereby set an example worthy to imitate. I have from several sources the statement that quite a quantity of olive plants are being reared in several districts of Los Angeles and San Bernardino counties. I also see that the press of your county capital is prominently putting the subject of olive culture before the public; discussions are going on about how to do the work, what kind to elect, and in short public attention is maturing into recognition of the significance of that fruit which is sure to be one of the chief sources of the wealth of Southern California. You will be aware that there is an awakening in the whole of the State to the fact that it would be unpardonable if the possibility of rendering California an olive-oil-growing country be not taken advantage of. Indifference to the privilege of growing olives has been too long ruling, and the foremost among California planters are now acting to make good a neglect which deserved reproach. Valuable experience of men, who like Mr. Cooper of Santa Barbara and the Messrs. Kimball of San Diego communicate it freely, is at the command of the planter. We have a valuable variety in the Mission olive. Very good oil from it is an absolute proof of success. The chances of attaining success, therefore, are abundant enough. In the San Francisco *Merchant* occasional information, gathered from the best and most experienced writer and practical grower of Spain, Don Jose de Hidalgo Tablada, has been given on olives and I shall continue to publish more of interest for the grower in that paper.

For the guidance of intending olive rearers let me say a few words here about our Mission olive: Comparing olives grown in five counties, although an earlier degree of maturity distinguishes those of southern counties, the fact seems patent that all belong to the Cornezuelo Cornicabra family, and leaf, shape of fruit and seed show an exact similarity to the Olea Europea Ceraticarpa variety, as it is called by Clemente, and Olea Adorata by Ros, while in France it is named Luquoise or la Luques, this latter appellation indicating its origin or propagation from the Italian olive region of Lucca. The observations on this variety are: "It is "a good oil fruit, and the oil is of the best "grown in Central Spain. The fruit matures "late; the tree is probably of all of the genus "olive that which requires most degrees of "heat to ripen its fruit. It resists cold. Re-"quires good cultivation and manure, loose "soil and ventilation. Young trees bear "better than old ones. Its bark contracts "warts and nodosities, is therefore not a "clean wood. It can resist drought. Deep "loosening of soil is convenient for this tree, "which cannot bear amputations of large "limbs. Pruning ought to be done with care "and discernment." Anaheim Gazette

With the great advantages our Mission olive possesses, therefore, the inconveniences of it are also apparent. It requires most degrees of heat of all; it bears a late-maturing fruit. These two disadvantages are serious, for why should we have only a late maturing fruit, while a dozen or more early maturing ones from Europe, many of them superior in *every* other respect, are at our command? A late maturer, having need of a continued active flow of sap from, say, the end of March to the end of December and even to the end of January, cannot be as durable a tree as one that, with perhaps 25 per cent. of degrees of heat less, works only from March to the end of October or the beginning of November, and yields a finer fruit for oil and pickling. There are varieties bringing forth olives of treble the size of the Cornicabra, that require less time and heat for their product. We shall be in possession of collections of the best *early* varieties in a few months and gentlemen from southern counties are among those for whose account they are coming. This reform is timely and we may hope for fine results, where the propagation of those varieties, some 30, will take place for the benefit of the whole State. The University of California and Professor Hilgard personally will receive collections among others. Anaheim Gazette

Do not ascribe again condemnatory discouraging intentions to my interest in trials with better varieties of olives. Quite the contrary. When superiority will be found *by the masses* practically, there will be the simple remedy of grafting with the Mission limb as there is with the acclimated and now originalized California Mission vine.

E. Pe[illegible]

New Varieties of Olives.

Dem Horticulturist 1/26/84

Editor Press and Horticulturist:—In your issue January 5, which I received through your kindness, I find some quotations from notes of mine on olive growing. There seems to be an omission, for you miss the indication of varieties that I believe will be an improvement upon our own Mission olive. I shall fill the gap with a few notes about varieties now on their way from Spain, which will be tried in many parts of the State, and, among others in Southern California, by Messrs. Kimball, Mr. J. De Barth Shorb and Mr. B. Dreyfus. Messrs. West and Chas. A. Wetmore will also receive cuttings and roots and these gentlemen will experiment on them in the Cajon lands.

The merits of our Mission olive tree, recognized as of the *Cornezuelo Cornicabra* variety, are most fortunate ones, inasmuch, with its long acclimatization, it has become a native already, and therefore, whenever it is desired to graft a new variety, a most acceptable stock is at hand.

What seemed to me an inconvenience in the Mission olive is the late maturing of the fruit. Your southern region has little cause of fearing the drawback of not having every olive attain full maturity, but the case may be different for other districts of the State, and early ripening kinds will be desirable. Apart from the exacting circumstance of keeping the life-power of the Mission olive tree busy till deep into the winter, when it ought to have repose, thus overworking the plant, there is, for the expediency of diversifying our varieties, the simple reason that there are many kinds in existence which have virtues our Mission olive does not possess. Mr. Frank A. Kimball writes me that he finds a great difference in time of ripening in different trees in the orchard of the old Mission, some trees perfecting their fruit in October, while other trees are two months later. This would indicate that according to the position and soil we should plant the variety adapted to it. Maturity seems to depend upon the power of heat that acts upon the tree. Each kind requires a different amount of heat. Unless there are distinct varieties at the Mission orchard Mr. Kimball speaks of, the locality and situation, soil, moisture and degree of heat received in the aggregate, by the trees maturing their fruit in October, should be observed, studied and made models of, for we should suppose that all the circumstances contributing to allow the tree a long rest, after its season's work, will be in favor of its longevity.

To mention a few of the early ripening varieties, which will reach our coast shortly, and, as to the share for the University of California and Professor Hilgard personally, will receive due care for future practical results, there will be among them the *Manzanillo* olive, requir-

ing only 3,400 degrees of heat (while the Mission olive needs some 4,000 centigrade degrees.) The *Manzanillo* fruit reaches 7 grammes of weight, is excellent for pickling and yields good oil.

The *Redonvillo* olive, a small fruit, but of excellent qualities and requiring likewise only 3,400 degrees of heat.

Carillo blanco, a copious bearer of large fruit, yielding abundant and excellent oil.

The *Empeltre*, the principal variety of the northern Spanish provinces, multiplied chiefly by grafting, an excellent bearer, yielding oil of prime quality, resists frost and, therefore, doubtless of great value in the cooler regions of California.

The *Gordal*, as hardy a tree as our Mission, yielding one of the best pickling olives, which holds equally good oil.

The *Verdejo*, a tree having the same merits of frost resistance and yielding fruit alike good for preserving as for oil.

Of late maturing trees the *Marvileno*, yielding enormous sized olives, and some relative to our *Corneruelo Cornicabra* varieties, and the *Picudo*, yielding olives 25 per cent larger than the latter, will be improvements. Press Hor

A number of different varieties will come and be tested, and it will be a welcome addition, procuring the olive planters the means of a healthy development of the industry, the importance of which seems to be understood at last. 1/26/84

F. POHNDORFF.

St. Helena, Jan. 20, 1884.

MAKING OLIVE OIL.

Weekly St Bar Press Thurs 6th 1884

The Modus Operandi as Employed at Ellwood Cooper's Plantation.

The berries are dried before crushing, as it is necessary to evaporate a portion of the water. If, however they are left out on the tree until shrivelled, which is proof that necessary evaporation has already taken place, no drying is needed after picking. This late picking is not best, as mentioned in a previous article. If dried by the sun, it requires about fourteen days. This plan cannot be depended upon, excepting years when fruit is early ripe, and we have continuous sunlight, with moderately warm weather. By artificial heat ranging from 110° to 130°, the drying can be done in less than forty-eight hours. The crushing and pressing should follow without delay—that is, the fruit taken from the drier in the morning should be crushed and pressed the same day. Long intervals or delays in the process from picking the fruit to expressing the oil tends to rancidity. To make perfect oil requires a perfect system in the whole management. The capacity of the press, the crusher, the drier, and the number of pickers should correspond or be about equal; all fruit picked during the day should be in at night, cleaned the following morning, and go into the drier immediately after the previous day's drying is taken out. The heat or temperature of the drier ought to be so graded as to complete the work in forty-eight hours, and it is better that it should be under 130° rather than above. Economy will necessitate in the business a system in the different branches of the process admitting of no delays from the beginning to the end.

My drier has a capacity of 500 square feet of surface, and will contain at one time 2000 pounds of olives, equal to five pickers of 400 pounds each per day and as much as the crusher and press I am now using can work.

The almost universal method of crushing the berries is by a heavy stone, similar to a mill stone, which is rolled round on the edge in a deep circular groove or trough, and by its weight does the crushing. A beam passing through the eye of the stone, and working on a journal in the center of the circle with a horse attached to the outer end of the beam, is the simplest way to do the work, and the plan that I have adopted. The circumference of the trough depends somewhat on the size of the stone. The one I am using is four feet high, six inches thick, and the diameter of the trough in which it works, six feet; the length of the beam fifteen feet, This crusher is amply sufficient for an orchard of one thousand trees, but too small for my purpose. It cost about 50 dollars. St Bar. Press

A stone five feet in diameter and two feet thick would crush in eight hours a sufficient quantity of berries to make 100 gallons of oil, and by working it night and day, the crop of ten thousand trees. It would be better, however, to have two stones half the thickness of the above, one following the other in the same groove. The horse should work on the outside of the building containing the crusher. 1/26/84

To make 100 gallons of oil each day would require two good presses. The one best adapted for the purpose as far as I have seen, is that used for making oleomargarine. Such presses could with very little expense be worked by the horse power used for crushing the berries, so that one man could do all the crushing and pressing.

The press I am using is an old fashioned wooden beam press, such as used in the New England and Middle States for making cider. The beam is 26 feet long, and with a heavy box filled with rock suspended at the extreme end, the power can be increased to 150 tons. The press with the differential pulleys cost about $150. Such a press cannot be improved upon for expressing the oil, but the additional labor, and the time lost in changing is so much greater than what would be required for the oleomargarine invention, that the latter would facilitate the work, and be cheaper in the end, besides taking up so much less room.

The crushed olives are put in the press in cheeses about three feet square, and three inches thick, with wooden slats between each cheese. Ten or more cheeses can be put in at each pressing. I use coarse linen cloth to contain the crushed olives.

The fluid that is expressed is put in large tanks, and left for sixty to ninety days, when the oil will separate, and being lighter will rise to the top, where it can be drawn off The pumace after the first pressing is re-crushed, and by pouring hot water over it, a second quality of oil is expressed. The refuse can then be used either for fuel, for feed for pigs, or for making still a third quality of oil; if for the latter, it is thrown in vats, boiling water poured over it, and left to ferment, when the oil still remaining will be liberated and rise to the top. St Bar Press 1/15/84

ELLWOOD COOPER.

11.

THE OLIVE.

Sure of Success in California-Thermal Conditions Necessary--The Olive in Napa County. Napa Register, 1/31/84

EDITOR REGISTER.—*Sir*:—Dr. M. B. Pond having expressed his and your desire to see a few lines on the subject of olive cultivation in your columns, and chiefly in connection with the sweeping conclusions of the Los Angeles *Herald*, reprinted in the Livermore *Herald*, that our efforts to acclimatize new foreign varieties in California will be sterile, I send you the following notes:

The *Herald* obtains from the calculation of his, of 3,500 centigrade degrees of heat necessary for maturing the Colchonudo olive, an average heat of 93° F., impossible to obtain in Los Angeles county, and adding some other similar objections, despairs of our being able to do here what is possible in Spain and Italy. Then, because in Spain there are many parts where the tree cannot mature its fruit because in the season there is not heat enough supplied by the sun, the *Herald* becomes alarmed again.

Now, in condensing the notes published by me in the S. F. *Merchant* last year, partly from those of a man eminently acquainted with the culture of the olive tree in Spain, the indications about the calculations of heat necessary for the life of the tree could not, of course, allow me to write or translate a whole book. But suggestive enough to any one who would give the subject a less hurried thought than the alarmist of Los Angeles may be able to dedicate to it, were those indications to reckon for himself and in the right way, beginning where the heat in his own district causes sprouting and continuing until the sun's faculty to act upon the tree is stopped by freezing degrees. In Valladolid, where the Summer is too short in that elevated district to yield ripe olives, because nearly 1,400° of heat more than can be got there is wanting, olive cultnre is out of the question. This fact seems to be of influence in the *Herald*'s ideas for Los Angeles. Let him be calm. There is more area in Spain where the olive tree will not grow, than the reverse, just as in California there is not every acre of ground fit for that tree; nay, nor for the vine either.

On the other hand I may here remark that in Aragon, in the Moncayo region of the Pyrenees, I found 2,000 feet high, or more, in villages snowed in in January, oil grown at that elevation. That oil was the best I have ever seen or eaten in Spain. The amount of sun heat in that district, then extremely cold, with the ground frozen, must have been sufficient in the warm period of the year to allow the olives to mature. The oil was of the Empeltre olive tree. The instances adduced in my article in May, 1883, published in the S. F. *Merchant*, of heat-degrees for maturing the fruit on the olive tree were prefaced by a remark on the propriety of using the scale of Celsius, which is in real per cents. I quoted the tables used by Don Jose de Hidalgo Tablada and put the instance of Seville, in which the heat generated in six months, averaging 27.3 degrees, or by Fahren-

heit 81°, yields 4,974 centigrade degrees, while 3,978 degrees only are required, equal to 21.84° Cent., or about 71° F. The latter amount being accumulated up to the first days of October, the early ripening of the olive is accounted for there.

This amount of heat will take more time in California in general, but the action of the sun in April will allow our calculations to begin a month earlier, and we may add a part of November where necessary, having probably nearly 8 months, instead of the mean temperature in Seville furnished in about 5 months and a fraction.

The comparisons of Seville mean heat would be:

31 days in	May	23.8°	Celsius	75°	Fah.
30 "	June	24.1	"	75½	"
31 "	July	29.2	"	84½	"
31 "	Aug.	30.1	"	86	"
30 "	Sep.	29.3	"	83½	"
31 "	Oct.	27.3	"	81	"

27.3° Celsius equals 81° Fahrenheit, mean temperature.

That of Barcelona would be:

30 days in	June	23.7°	Celsius	75°	Fah.
31 "	July	23.2	"	74	"
31 "	Aug.	24.3	"	76	"
30 "	Sept.	22.5	"	72½	"
31 "	Oct.	21.1	"	70	"
30 "	Nov.	13	"	55½	"
31 "	Dec.	9.2	"	49	"

Mean temperature 19.6° Cel. equals 67° Fah., the fruit ripening in December.

Napa Reg. 1/31/84

Six leagues distant from Madrid in an olive region, viz., Morata de Tajuna in

10 days of	May	19.2°	Celsius	67°	Fah.
30 "	June	25,2	"	77	"
31 "	July	26.3	"	79	"
31 "	Aug.	26.1	"	79	"
30 "	Sept.	20.2	"	68	"
31 "	Oct.	14.3	"	58	"
30 "	Nov.	10.1	"	50	"
31 "	Dec.	5.7	"	42	"

having thus mean temperature 18.4° Cel. equals 65° Fah., equals 4,195°, to ripen the olives in December.

Both the regions of Zaragoza and Salamanca are *not hot enough* to mature the Cornicabroe, our *California Mission olive*, the former generating from the middle of June to last of December, 3,264°, the latter, 3,260, for Salamanca has its temperature in December below freezing point, *but the Empeltre variety flourishes there*, ripening late, but perfectly.

These examples will illustrate sufficiently how the heat calculations should be applied, the period of the coming forth of blossoms varying in each district, being taken in account as the beginning of the period and the months of late Autumn and early Winter whose warmth degrees nature utilizes in the olive tree, is also to be included. That in regions of our State as in San [illegible] olives ripen as early as the end of October, others growing near ripening two months later, as Mr. Kimball informs me happens on his own estate, will have its explanation, besides the greater amount of food supplied by the soil to earlier fruit or other favorable circumstances, chiefly in the greater amount and more direct action of heat on the trees supplying that fruit—except it be a variety distinct from that yielding ripe fruit later of which I am not informed.

That the tables cited from Spanish localities are our infallible guides, I must not assert. Persons better versed in the matter and who have more time to spare than myself, may argue about it. Proper calculations applied to different sections in our State may easily be made, taking the Spanish instances for pattern; the latter are rough ones and averaging not scrupulously exact ones. True calculations, based on recorded observations in California, will show results that may easily dissipate the doubts raised by the *Herald*.

There is no reason to doubt Californian capability of growing every foreign variety of olives, be the amount of heat according to the examples of tables in the *Herald's* mind impossible to reach or not, for *if the California Mission olive is the Cornicabra Cornezuelo variety, then this variety being exactly that which requires more heat than any other*, what fear need we entertain not to succeed with any other new introduction? Is not the Mission olive of Spanish origin? Then why should not all other Spanish varieties, most of them less exigent than ours, equally prosper? Of course the right conditions of soil, position and atmospheric circumstances should be well weighed before going to determine varieties to experiment with. The people of the district of the *Herald* need not be discouraged by superficial remarks, for have not they the living testimony of a century of success in the most exacting of olive trees befor their eyes. And as to the region of the REGISTER those who in this and adjacent counties wish to better their property by planting olive trees, have no reason to be afraid of undertaking a hazardous thing, for better than the pen can tell them the success with trees yielding well, as I have been told by Mr. Estee and Henry Hagen on their properties, as well as on other ranches in the Napa Valley, will persuade and teach them. The circumstances of locality, soil, exposure and shelter in parts where the pioneer olive trees in the Napa district thrive may serve also best to illustrate how and where best to plant olives. No doubt that if somewhat tardier in growth than in the southern counties, the tree will be a very valuable one in this county and the neighboring ones. Mr. Charles Krug does not hesitate to plant this season many thousands of olive trees and he will give due attention to foreign varieties, knowing however, that a hardy and reliable stock is that of the Mission olive, that will allow of advancing at the proper season grafts from what the future will show as adapted or superior. I leave it to the contemplation of every intending planter to weigh the importance of possessing in our valley chiefly early maturing varieties, for our Mission olive belongs to the late ones.

F. PDFF.

St. Helena, Jan. 30th, 1884.

San Diego Olives.

Herald

Frank Kimball, the well-known olive grower of Natinal City, San Diego county, writes as follows: In your answer to the questions of your Fresno correspondent in the issue of October 20th I note several things which do not correspond with my experience, and as experience is an excellent schoolmaster, I may be able to correct some impressions which your article may leave on the minds of persons wishing to investigate the olive question.

I have never seen the olive injured by frost in the slightest degree, nor have I seen the tenderest tree protected by corn-stalks or any other material. I have not succeeded with cuttings two and a half feet long in any instance, nor have I had good results from planting cuttings twenty inches deep.

I have had nothing but failure where the earth was filled in loosely around the cutting. I have planted olive cuttings every year since 1870. I began with cuttings three feet long, and finding no signs of growth at the proper time, dug, threw up and sawed about one-third of the length from the top end, which had become dry, and about the same from the bottom, which had rotted, and planted the balance all underground and got good trees.

I have tried all lengths for cuttings, from three feet down to ten inches, and would rather have them eight inches long than increased to twelve inches, but prefer ten inches.

For starting in nursery I plant the cuttings with their tops an inch or two out of the ground and about thirty inches between the rows. The earth thrown up in making the trenches for irrigation will cover the tops.

For orchard planting make a basin about two feet in diameter and say three inches deep, with the cutting in the center and about level with the bottom of the basin, covering the top three or four inches with earth and give three or four irrigations during the summer, with the earth finely pulverized after each irrigation. There is no reason why at least 90 per cent should not grow.

Pack the earth very closely by tramping it with the feet while being filled in around the cutting, beginning at the bottom and continue to the top.

I think there is danger in planting cuttings in nursery by simply making a hole with an iron bar, as there is likely to be a vacant space at the bottom of the cutting. I have seen many failures by this practice.

I plant with a spade, pressing the earth against the last one in making the opening for the next. By this method the earth is closed closely around the cutting from top to bottom.

Cuttings well planted and well taken care of should bear fruit enough the fourth year to pay for cultivation. Many trees will bear the third year, and I have never seen a well cared for tree that did not bear some fruit the fourth year.

Trees transplanted from nursery at two years old will seldom bear the following year, but should bear well the second year.

I have helped pick eleven gallons of fruit from a four-year-old tree, which had no extra pains taken with it. The most I have picked from a three-year-old tree was three gallons.

I think there is no other tree so tenacious of life as the olive, or which will respond to good cultivation with so valuable a crop on given area.

Olives.

Cloverdale Sentinel.

That olive growing and grape culture are or ought to be sister industries has been urged upon us by disinterested, honest writers. That with one, two or three varieties of olive trees now in the course of a century Californianized, we have only a poor choice and ought therefore to experiment with higher grades, seems to be as evident as that the plausibility of choosing among the hundreds of grapes has now become a fact in California.

For the central counties of California, of course always selecting slopes, not the plains, the following-named varieties will be good for trials and definite planting: The principal reason for considering these valuable, is the early maturing of their fruit, most of these trees requiring only 3400 degrees of heat in the growing season, and some of them being very little susceptible to the influence of frost. F. Pohndorff of St Helena has taken upon himself the task of procuring these and other varieties, in the shape of rooted plants, from the most reliable nursery of Spain, and, as he informs us, will be able to include in his orders up to the end of October some more on the part of gentlemen who might desire to obtain some. It is not a matter of profit with Mr. Pohndorff, who will import the plants—as well as garrotes of about four feet long and about one inch in diameter, one of the pickling and three of the oil varieties—from Andalusia for account of friends, who, like Messrs. Krug, Livermore, West and others, desire some quantities of these.

Manzanillo—This is the safest of the several pickling olive trees of Seville and a constant bearer of the second largest olives known. Its fruit ripens early and is as useful for oil of good quality as for eating. It requires only 3400 degrees of heat. The picking of the fruit while green, for pickling, is of great advantage to the bearing power of the tree. It has to be trimmed annually.

Rendondilla—Its fruit, weighing about three grammes (that of the Manzanillo weighs seven), is very good for eating purposes and also yields good oil. It resists frosts, ripens its fruit early and, is good for northern positions, but requires good soil, and, eventually, fertilizers, the tree being a prolific bearer.

Nevadillo Blanco (*Doncel, Ojiblanca, Olivo lucio, Zonzalena, Olea Europea Argentata*, or *Olea Precox*).—The fruit of this tree weighs four and three-tenths grammes, is excellent early ripening and valuable for oil. In Provence, France, this tree is as highly esteemed as in Spain.

Empeltre—This is one of the number recognized in the northern provinces of Spain, the slope of the Pyrences, as the best-bearing varieties, resisting snow and ice, needing but 3400 degrees of heat and beginning to bear a few years after being taken from the nursery. It requires care, good soil and manuring. In Morata, Madrid, both in dry calcareous and irrigated soil, this tree has for fifteen years given fruit with regularity and in abundance.

Racimal (*Racemosa, Bouteillan, Bouthienne, Ribien* or *Rapugelle*)—This tree belongs to the earliest maturing varieties and its fruit weighs three and seven-tenths grammes. The tree is not damageable by frost, but its oil is not of prime quality.

Varal negro (*Cayon, Nasica* or *Alameno*)—This is a hard-wooded tree, but will not resist frost, wherefore it must be planted in sheltered locations. The fruit ripens early.

Gordal (*Oeal, Real, Regia*)—This is one of the tallest olive trees, grows quickly, is little attacked by insects and when wounded closes up in a readily formed wart. It is not identical with the Sevillano, also called Gordal, which latter yields a different fruit of three and seven-tenths grammes weight while the Gordal real olive weighs four and two-tenths grammes. It is mostly used for pickling, but also yields good oil. The fruit is early maturing and resists frosts. Good soil is a requisite to its successful culture.

Verdejo (*Verdal, Verdial, Viridula*)—This tree is one of the most esteemed varieties, requires fertile soil or manuring and resists frost. Its fruit, weighs three and seven-tenths grammes and is good for eating or oil.

The following-named late maturing varieties are recommendable:

Madrileno (*Morcal, Olea Europea Maxima*)—Its fruit is of large size, weighing up to twelve grammes. It is easy to grow, but does not yield oil according to the proportion of the pulp.

Piendo (*Tetudila*)—Its fruits weigh five and two-tenths grammes.

Nevadillo Negro—Its fruit weighs four and and three-tenths grammes and its yield is abundant.

These late varieties require about 4000 degrees of heat.

The small, picking olive, Picholin (*Lechin, Cuquillo, Oealla, Saurine*), is of general acceptance, weighs one and three-tenths grammes. The tree resists frosts and matures its fruit early, but requires great care.

Olive Growing.

Rec. Rural 3/31/84

The following extract from a letter on olive trees, by Frank A. Kimball, of National City San Diego Co., who has had several years of experience, and has been very successful, will be read with interest:

"The habit of the Mission olive whether natural or the result of climatic causes, since its introduction into California, is to branch low, and if these low limbs be removed by severe pruning, the higher limbs will droop and shade the trunk, and right here is where the 'Mission' olive has an advantage over many varieties which send out their branches at an acute angle to the main stock of the tree, thus exposing the trunk to the desiccating influence of our long dry seasons, the tendency being to evaporate the sap which nature intended should be deposited as wood.

"I have tried the experiment and am satisfied that a larger tree can be made in five years by low branches, than in seven years by pruning the low branches and exposing the trunk. All trees trimmed high will have coarse bark and rough, like the bark on old apple trees, but when protected by foliage, the bark remains smooth and green.

"Many people are of the opinion that the olive tree may be planted on land which is worthless for any other plant, and as a general conclusion say, the olive will grow anywhere and thrive without care. Experience in Southern California will prove the fallacy of such conclusions and I believe it may be written down as an axiom—that every plant, to secure the best results must be planted in soil adapted to its nature, in locations adapted to its habits, and receive such care and cultivation as would entitle the owner to expect satisfactory returns.

"Hundreds and perhaps thousands of cargoes of earth have been transported on vessels from the Island of Cyprus to the Island of Malta, carried up the mountain sides on the heads or shoulders of men and women, and added to the poor rocky sterile soil of the mountains and make it possible to produce the wonderful crops that have made that island, having an area of less than six or eight miles of arable land, the most productive of any similar area, probably, on the globe, there being an annual export of from $6,000 to $10,000 in the product of the olive tree, mulberry tree and the vine."

Sac Bee 11/14/84

THE CULTURE OF THE OLIVE.

The BEE would be glad to receive information in regard to any experiments that have been made in the cultivation of the olive in Northern California. All persons who own or know of any bearing olive trees in any portion of the State north of San Francisco are earnestly requested to communicate with this office. The BEE desires to collect data bearing upon the culture of this tree in the northern half of the State, and to present the facts to its readers. Olive culture is successful and profitable in Southern California, and we know of no reason why it should not become a leading industry in this half of the State. But we want facts. No northern county can show to the world a better proof of its salubrity and general adaptability to fruit growing than an olive tree in profitable bearing. We trust the press of Northern California will aid to bring the splendid possibilities of olive growing into prominence. There are millions in olives, if the trees are grown under suitable conditions.

Olive for Garden Trees.

S.F. Chron. Overland 12/16 84

At the residence of H. M. Albery, in Colusa, there are a couple of olive trees, planted by Hon. A. L. Hart when he owned the place, which are very prolific bearers. The suggestion that the olive be planted in yards and gardens is a good one. They are as long lived as the pine—perhaps longer. There are trees in Asia Minor known to be over 2000 years old and a single tree will support a family. The older the tree the greater its value for fruit. No man who plants an olive tree may expect to live to see it reach full maturity, but in eight or ten years the tree will become valuable and the value will keep increasing.

OLIVE GROWING IN FRESNO.

St. Merchant 4/3/84

In the last issue of the MERCHANT in Mr. Pohndorff's most valuable article on olive growing, a mistake in regard to the sprouting of my olive truncheons has crept in. Mr. Pohndorff says that so far none have sprouted. I am happy to say that already, six weeks or two months ago, *every one* had sent up a bunch of shoots, strong and healthy, many of which to-day measure two feet or more in height. If of these shoots only one had been suffered to remain, I have no doubt I would now have trees of five to six feet in height; but as I wanted all the shoots for propagation it was my policy to allow all to remain. I see no difference in growth in the two varieties, "Manzanillo" and "Nevadillo blanco," and I have every reason to believe they will prove as much at home here as in Seville. The spot selected for the olive orchard is a sandy hill sixteen feet high, the "sand" being rather stiff and containing an abundance of "lime," so necessary to the success of the olive. According to Professor Hilgard, the quantity of lime is as much as 1.769, which certainly is an abundance. Besides these varieties I raise the *Picholine*, which I will use as stock for grafting, and some plants of the Missions. The former seems to do well, is easily grown and transplanted, but the Mission I consider as less valuable. The first year when transplanted it generally looses all its leaves. It grows only very poorly from cuttings, something like the Aestivalis grapes, and bears only when six to seven years old. A good many olive trees are situated all over our county, but the majority are far too young. A few years ago quite an excitement was started here in regard to olives. Miss Austin lectured on the same and many olives were planted. But they were all of the Mission variety, lost as soon as transplanted their leaves and the first season did not grow much or any. This was taken as a sign of failure and the trees were mostly dug up. Those, however, which remained are now bearing fruit. Our vintners do not injure the trees and everything points towards the success of olives in Fresno county.

GUSTAV EISEN.

What We Import—Olive Oil Trade.

S.F. Bulletin 10/9/84

The Olive is one of the oldest trees of the world. The Bible makes frequent mention of it, both as a tree for fruit and shade. It was evidently one of the trees in the Garden of Eden. It is of record that the dove released from Noah's Ark brought an olive leaf on its return. The olive branch has ever been regarded as a symbol of peace. Olive oil formed an important feature in the religious services of the Jews. The prophet Zechariah calls attention to two olive tree in the sanctuary, and subsequently asks: "What, be there two olive branches which through the two golden pipes empty the golden oil out of themselves?" The Catholic Church to this day uses Olive oil in some portions of its services. This article receives conscientious attention from the members of that church. Great stress is laid on having a pure article for this purpose. To this end provision is made by the church for the cultivation of the trees and for the prepartion of pure oil from the fruit of the same. It is presumed that it was in this way that the tree was introduced into California. It is known that the Catholic Missions have cultivated the olive ever since their establishment in California. The missions that do not cultivate the trees are supplied with oil from those that do. The only olive trees now in California were raised from cuttings obtained from the Catholic Missions.

The Olive is a branchy evergreen tree, and sometimes attains a height of 30 feet. The cultivated Olive is supposed to have been introduced into Spain and Italy from Asia. The fruit is a smooth oval plum of a green or violet color, containing a hard nut. The trees thrive best near the sea. In the Holy Land and in some parts of Syria there are some very old trees. They begin to bear when 2 or 3 years old, but are not very productive until about 6 years. A tree at Nice reached a circumference of 38 feet at the bottom of the trunk, and as long ago as 1516 was said to be an old tree. A celebrated tree at Pescio is known to be over 700 years old. There are several kinds of trees. The long-leaved is chiefly cultivated in France and the broad-leaved in Spain. Mr. Ellwood Cooper, who has given the subject considerable attention, calls all his trees by one name, the Mission Olive, because they are the growth of cuttings secured from the Catholic Missions of this State. The Olive was introduced into the Southern part of the United States over 200 years ago from Portugal and the Bermudas. More or less success has attended the efforts of those engaged in the cultivation of the same in Georgia and Florida.

The principal consumers of Olive Oil are the Italians, French and Spanish. It is also used to a greater or less extent by all the civilized nations of the earth. The tree is cultivated quite extensively in Italy, and the numerous and large Olive orchards are a feature in the agricultural landscape of that country. There are two or more varieties of Olive Oil. The first pressing is generally used for salad and medicinal purposes. This is known as virgin Oil. The second pressing is used for illuminating and lubricating purposes. The imports of Olive Oil into the United States for the ten fiscal years ending June 30, 1883, were as follows:

	Salad Oil.		Other Oil—	
	Gallons.	Value.	Gallons.	Value.
1873-4.....	139,241	$261,224	118,453	$84,551
1874-5.....	176,119	335,918	173,688	127,240
1875-6.....	178,232	328,357	93,675	60,687
1876-7.....	194,069	376,731	154,639	114,650
1877-8.....	217,017	414,435	49,531	44,345
1878-9.....	192,326	354,582	143,242	97,620
1879-80.....	264,762	442,935	118,369	83,543
1880-1.....	234,362	378,280	160,051	102,403
1881-2.....	264,838	478,747	243,190	151,067
1882-3.....	257,375	459,759	279,374	165,395

These figures will give an idea of the extent and value of the trade. It will be noticed that the Oil for salad purposes is appraised at a value of $1 75 to $2 per gallon, while the residue from the second and third pressings is much cheaper, being used for more common purposes.

The imports of Olive Oil at San Francisco for the past twenty years have been as follows:

1864, cs.....	12,384	1874, cs.....	18,023
1865.....	29,340	1875.....	11,485
1866.....	16,228	1876.....	23,854
1867.....	25,025	1877.....	15,251
1868.....	18,418	1878.....	21,214
1869.....	20,278	1879.....	15,615
1870.....	21,670	1880.....	14,123
1871.....	22,399	1881.....	10,961
1872.....	7,377	1882.....	23,905
1873.....	23,666	1883.....	10,619

In reply to the conditions of consumption in this State, a French importer told us he thought there had been but little if any increase in the past decade, beyond that naturally expected from a larger population now than we had ten years ago. So far as the above figures can be relied upon, they indicate a slight decrease in the consumptive wants of the coast as supplied from San Francisco, the imports for the whole period being divided between the first and second decades as follows:

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1864-73, cs.....	196,885
1874-83.....	165,050
Total.....	361,935

Direct imports at Oregon in the last few years, together with the California product, may more than make good the difference.

Most of the Olive Oil received at San Francisco is imported direct from France, Italy or Spain. There are those still in business in this city who have been importing this oil regularly for twenty to twenty-five years. The proportion of really choice salad oils is not large. It is claimed that the best quality received here comes chiefly from Lombardy. Formerly it used to be imported exclusively in bottles, requiring great care in packing and transportation. This is still the favorite method of importation for salad descriptions. There has been, however, more or less imported in tins in the last ten years. The Italians and French use it quite commonly in cooking in place of butter or lard. Under the old law, there was a specific duty of $1 per gallon regardless of quality. Of course that tariff operated in favor of the best grades. The law of 1882 changed the duty from a specific tax of $1 per gallon to a 25 per cent advalorem tax, which of course is the heaviest on the high priced descriptions.

California has been doing something in the cultivation of the Olive during the past few years. Ellwood Cooper was the first to take up the business on a large and intelligent basis. He commenced in 1872 in Santa Barbara county, where he has now an orchard of 60 acres, containing 6,000 trees, many of them in bearing for several years. The cuttings were set out 20 feet apart each way. The crop is the largest every alternate year. The trees that bore abundantly in 1882 did not do so well in 1883, but this year again did well. Mr. Cooper made 14,000 bottles of Oil from the crop of 1883, and will get 20,000 bottles from the crop of 1884. His operations have revived considerable interest in the cultivation of the trees. Though this is the light year for cuttings, he has partly promised 10,000 to different parties, and could probably sell 100,000 if he had them. Most of the pruning and clearing up is done in the years when the yield of fruit is the smallest, as the cuttings are then the healthiest and strongest.

13.

The manufacture of Olive Oil is a simple process and yet one that requires intelligenec, care and great cleanliness. The fruit is picked by hand. To allow it to drop would result in a bruise, thus exposing the juice to take on the odor of whatever the fruit come in contact with. The Olives are first partially dried by artificial heat for 24 hours. In Europe this drying is done by the sun, and takes about two weeks. The Olives are then crushed in a trough by heavy stones which pass over them edgewise. The pulp resulting from this process resembles blackberry jam. The pulverized material is placed in cloth and put in the presses. The fluid which results from this operation is mixed with a substance which the French call lye. It is then run into tanks, where it is allowed to remain for 90 to 120 days. The lye being the heaviest liquid, settles to the bottom of the tanks, and the Oil is drawn off from the top, filtered and classified, and is then ready for bottling. The refuse from the presses is subject to a second pressing, but the product is not as good as the first.

Mr. Cooper puts up his Oil in quart and pint bottles of the same size as those used by the French. The quarts are sold at $12 per dozen at the ranch, which is about 30 to 40 per cent. less than the foreign product. There is a demand for all that has been made. This demand comes from New York and the Northwestern States, and also from California and the Pacific States. About one-half of the California product from the first pressing is supposed to be used for medicinal purposes and the other half for salads. For upwards of 2,000 years the intelligent races of the world have been in the habit of using Olive Oil for medicinal purposes, but for the past 20 or 30 years, owing to the great adulterations practiced in foreign kinds, this use has fallen off materially. The medical profession has always endorsed pure Olive Oil in its practice. The Oil made by Mr. Cooper is not only pure, but its manufacture is attended throughout with the most scrupulous regard for cleanliness, as an important factor in attaining the highest degree of purity.

The Italian Government has adopted stringent laws against the sale of any adulterated Olive Oil for home consumption. Olive Oil is said to be the best lubricant in existence, as it is not of a drying [illegible] other delicate machinery. Mr. Cooper says, and cheaper at $2 50 per gallon than other lubricants are at 75c, because of its clean and staying qualities. It is also used for the washing of Wools intended for the finest grades of underwear, as it gives such flannels a soft and spongy character, which character is as pronounced after washing as before. Good housewives have noticed that some flannels have a stiff and sticking feeling after washing, which shows that the Wool was washed in some other than Olive Oil. There is also a considerable consumption of pickled Olives. Mr. Cooper has not done much in that line at present, beyond preparing a few for his own use. The French pickle their Olives while green. The process, when rightly performed, is slow, and requires great care to avoid bruises and impurities. They are only perfect Olives that make good pickles.

A VALUABLE PRODUCT.

S.F. Call 10/28/84

Elwood Cooper on the Olive Oil of California.

The Reward of Intelligent Perseverance—A Generous Hint to the Farmers of this State—How to Get Rich.

The name of Elwood Cooper is held in high esteem by all *bon vivcurs*, for to his intelligent perseverance they owe one of the rarest of table delicacies. Pure olive oil had almost ceased to exist as a marketable article when he established his noted ranch in Santa Barbara County, but at the present day it can always be had—if one can afford to pay for it. To this gentleman the State of California owes a debt of gratitude, in that he has started and brought to assured success an industry that promises to be one of the most valuable on this coast. So superior is the California olive oil manufactured by Elwood Cooper that it commands a price far in excess of the best foreign importation, while its sale is limited only by the amount of production. The choicest olive oils of France and Italy, after they have passed from the manufacturer through the hands of numerous middlemen, and after they have paid the cost of transportation and customs duties, sell for from 30 to 40 cents per bottle less than the oil that is produced at our doors—because the latter is the acknowledged standard of purity and palatableness. This statement is no "advertising puff," for it is impossible to puff an article for which the demand is infinitely greater than the supply, and the object of this writing is simply to call the attention of California farmers to a valuable and too much neglected product of the soil. Last evening a reporter of THE CALL met Mr. Cooper in the Lick House, and asked him for an account of his experience as an olive-grower and a manufacturer of olive oil. A lengthy conversation ensued, and the gist of it is here given for the benefit of those who may profit by it. Avoiding the form of a dialogue, the substance of Mr. Cooper's remarks was as follows, portions of them here and there being scraps that he read from his brochure on olive culture;

THE FIRST PRACTICAL OLIVE-GROWING.

"I first came to California in 1868," said Mr. Cooper, "and was at that time merely travelling for pleasure. Much that I saw here delighted me, and I was especially charmed with the climate of Santa Barbara. There the idea struck me that I would like to live there if I could only strike upon some interesting and remunerative occupation. At each of the missions visited I found a few thrifty olive trees, and the possibility of becoming an olive-grower struck me favorably. I knew nothing of the plant or its culture, nor of the manufacture of oil, but I did know that it was a valuable product of Southern Europe, and felt that with equally good soil and climate an American ought to do as well as an European. At that time the only experiments made here in olive-growing had been at the Catholic missions, trees having been planted at each of these missions for the sole purpose of supplying the absolutely pure oil necessary for the church service. In this connection I may remark that all the oil now used in the Catholic churches out here is grown and manufactured at the Mission San Jose. On returning East the new project survived the journey, and I at once got together all the literature I could that bore on the subject. After long and careful reading I reached the decision, which subsequent experience has proved to be true, that no part of the world was better suited to olive-growing than a large belt in California. The olive belt of the world is very limited, as the tree will stand neither excessive heat nor cold, nor any great amount of moisture where there is a high degree of temperature. In other words, it is only to be found in those parts of the almost semi-tropics, where severe frosts are unknown, and where the atmosphere is comparatively dry, although tempered by a certain amount of moisture from the sea. It may be said that the olive belt of California extends from the lower part of Shasta County on the north, to the Mexican line on the south, and runs east to the base of the foothills. The hot season in the foothills of the Sierras is too long and dry. It is generally best to have your olive grove somewhat removed from the sea, but the tree will thrive directly on the coast, where it is not exposed to the severe northwest trade winds. I may say here that a rich olive belt is also to be found all along the southeastern coast of Australia; as good a one as anywhere in the world, probably. Call 10/28/84

OLIVES, ALMONDS AND WALNUTS.

In 1869-70 some other parties conceived the idea of planting olive orchards in this State, but did not study the subject sufficiently, and the result was that all their trees were either destroyed or practically ruined by insects. By 1870 my plans were all laid, and in that year I purchased in Santa Barbara County the 2,000-acre tract that is now known as "Elwood." The first year and most of the second was devoted to getting the ground in order, my first planting being made in the winter of '71-2. The land was perfectly wild, having never been used for anything but grazing, so the first work was to fence it, and then it was thoroughly ploughed and a crop of wheat, corn and beans was planted. By the time this crop had been harvested and the land reploughed, the soil had become clean. Then I planted about 400 acres in olives, English walnuts and almonds. At the present moment I have some 11,000 olive trees, 10,500 almonds and 3,500 English walnuts. The two latter are profitable, but not nearly so much as the olives, and my attention for the future will be entirely devoted to the last, as many new ones being planted each year as I can find cuttings and time for. Every other year the cuttings are much more numerous than during the intermediate year, and there is a similar variance in the size and value of the crop. The common and preferred method is to plant the cuttings, taken from the growing trees of sound wood, from three-quarters of an inch in diameter to one and a half inches, and from fourteen to sixteen inches long. These cuttings should be taken from the trees during the months of December and January, neatly trimmed, without bruising, and carefully trenched in loose sandy soil. A shady place preferred. They should be planted in permanent sites from February 20th to March 20th, depending upon the season. The ground should be well prepared and sufficiently dry, so that there is no mud, while the weather must be warm. In Santa Barbara near the coast no irrigation is necessary; but very frequent stirring of the top soil with a hoe or iron rake for a considerable distance around the cuttings is necessary during the spring and summer. About three-fourths of all that are well planted will grow. My plan is to set them twenty feet apart each way, and place them in the ground butt end down, and at an angle of about forty-five degrees, the top to the north, barely covered. Mark the place with a stake. By planting them obliquely, the bottom end will be from ten inches to one foot below the surface. In Europe the trees are planted from twenty-seven to thirty-three feet apart, but experience has proved that such distances are not required here.

PLANTING IN EUROPE.

Some orchards in Europe are planted in "threes," that is, three trees in each place planted in the form of a triangle, and three or four feet apart. This method would require the rows to be thirty-three to thirty-five feet distant, and would give the same number of trees to the acre as by planting at twenty feet, one tree in each place. It is claimed that by planting in this way no staking is required, the trees protect one another from the most violent wind storms, the trimming is simplified, and less care and labor is required in the cultivation.

In 1875 I had my first return; only a few gallons of oil, to be sure, and prepared in the crudest way, but the result convinced me that my experiment [illegible] fifty of oil during the winter of '76-7, and had a large crop in the following year, in many instances gathering as many as fifty gallons of berries from a single tree. In my early experiments, with old-fashioned machinery copied from Europe, it required sixteen pounds of berries to make one pound of first-class oil, while now, with new machinery of my own invention, it requires only ten pounds of berries to one of oil, by far the most favorable result ever reached. French cultivators give the quantity of oil contained in a given quantity of fruit as one-eighth, and in weight one-tenth; that is, eight gallons of berries to one gallon of oil, and about fifty pounds of berries to one gallon of oil. Taking the average quantity of the production in Europe from a mature orchard, we have in oil, per tree, two to two-and-a-half gallons every second year. This result is obtained by thorough fertilizing, without which the berries would yield but little oil. The newness and richness of the soil will probably give, the first fifty years, double the best results given in those countries where oil-making has been the business for so many generations. Our climate is congenial to the habit of the tree; it blooms from the 1st to the 10th of May, and the fruit forms from the 1st to the 10th of June. At this season we have our best weather, free from extremes of either cold or heat. Nowhere in the world are all the conditions so favorable to the perfect fruit-bearing.

THE EXTRACTION OF THE OIL.

The olive usually ripens here in the latter part of November, though at times it is earlier, and in very wet seasons, such as 1880, was not ready for picking until the middle of January. The fruit should be gathered as soon as it turns purple, and before it is fully ripe, as the oil will be lighter in color and more fragrant, although somewhat less in quantity. The berries are dried before crushing, as it is necessary to evaporate a portion of the water. If dried by the sun it requires about fourteen days. This plan cannot be depended upon, excepting in years when the fruit is early ripe and we have continuous sunlight, with moderately warm weather. By artificial heat, ranging from 110° to 130°, the drying can be done in less than forty-eight hours. The crushing and pressing should follow without delay—that is, the fruit taken from the dryer in the morning should be crushed and pressed the same day. Long intervals or delays in the process from picking the fruit to expressing the oil tends to rancidity. To make perfect oil requires a perfect system in the whole management. The capacity of the press, the crusher, the dryer, and the whole number of pickers should correspond or be about equal; all fruit picked during the day should be in at night, cleaned the following morning, and go into the dryer immediately after the previous day's drying is taken out. The fluid pressed from the fruit is kept in tanks for from ninety to one hundred and twenty days, at the end of which time the oil separates from the other fluids and rises to the top. It is drawn off, and after careful filtering is ready for bottling.

HOW THE OIL IS TREATED.

The clarifying can be done by the sunlight, also. It can be bleached and made much lighter in color, but not without injuring it. When it is adulterated artificial heat is necessary in the process. When once heated it loses a part of the nutty flavor, and is liable to become rancid when exposed to the air. It should be kept in an ordinarily cool place, not exposed to sunlight or heat, neither should it be handled any more than is absolutely necessary in the filtering and bottling, and should not be shaken after bottling. The mucilage contained in the oil will not separate for a long time after the oil is ready for use, and as it does not injure it, is not, therefore, objectionable. It will sometimes form in the bottles like globules of water, or in films settling to the bottom as sediment, and when shaken will give it a muddy appearance, which, with the common prejudice against all table oils that are not perfectly clear, renders it unsalable, as consumers consult more the eye than the taste. The oil is better when new and fresh, and what is gained in the appearance by its remaining a longer time in the tank, is more than lost in its freshness and delicacy of flavor.

I make only one grade of oil, and after the first pressing use the pomace for feeding pigs, but in France three grades are made. After the first pressing there, the pomace is dumped out into a heap and lies there until the end of the season. Then this pomace, which in the meantime has moulded and fermented, is reground and repressed, the result being the second grade of table oil. Then the pomace is placed in vats and water poured over it. Fermentation again occurs and the oil that escapes is used for burning and lubricating. My investment has proved so profitable that I cannot afford to impair it by making a common grade of table oil, and it wouldn't pay me to make lubricating oil. Call 10/28/84

THE MARKET.

At first it was necessary to ship the majority of the oil East, but it gained so rapidly in reputation that the demand for it on this coast soon outstripped my possibilities of manufacture, and I do not send any to the East now, except when it is ordered for medical purposes. A considerable amount is bought for medicinal use, as all the foreign olive oils in the market, as can be proved by simple tests, are adulterated with either cotton-seed oil, mustard-seed oil or sugar of lard. My present production is about 20,000 bottles per annum, and I wish to gradually increase this to 100,000 bottles, which will be as large an amount as I shall care to handle. The demand for such oil is so enormously in excess of the supply that I have no possible competition to fear, so long as I produce nothing but a pure article, and therefore I do not hesitate to urge upon other land-owners in this State the advisability of their experimenting in the same lucrative direction. A good market will always be found for whatever first-class oil we produce here, while the olive crop is more certain and more remunerative than other classes of orchard product. The people in the southern counties are just beginning to plant the trees largely, but up to the present time I am the only person on the coast who manufactures oil for the commercial market. As the fruit should not be handled roughly, as it must be used within

twenty-four hours from picking, and as it will only stand short transportation without danger of heat and fermentation, it is of course necessary that an oil mill should be established in the centre of each locality where olive orchards are planted.

THE INSECT PEST.

Insects? Yes, that is a point that should be touched upon in any article on olive culture, for no orchard will amount to anything unless those pests are thoroughly cleansed from the trees. After a long series of experiments I have at last practically confined myself to the one cheap article that seems to be absolutely effective. Of course nothing is better than concentrated lye, but it is too expensive, while tobacco seems to answer the purpose quite as well, while whale oil soap can be used effectually on small trees at a very cheap cost. A decoction of tobacco is simple, inexpensive, and, if properly applied, an effectual remedy for every class of insect pests that I have come in contact with. Forty pounds of good, strong leaf tobacco, thoroughly boiled in water, will make about eighty gallons. This can be thrown upon the trees with a powerful garden syringe, but it is necessary that the decoction should be kept, while using it, at the uniform temperature of 130 to 140 degrees Fahrenheit. Hotter than this will destroy the embryo fruit; less hot, less effectual. I would recommend four applications each year, until the orchards were entirely free from insects. Then, if the neighborhood was free, and the proper precautions taken, with pruning alone it could be kept free for generations to come. Every orchardist must grow his own tobacco, which he can do in a small way. If he attends to it properly, at a cost of two cents the pound—(one acre will produce 4,000 pounds.) We have, therefore, allowing two gallons of the decoction to a tree for each application, the following cost: One pound of tobacco, two cents. Two men can boil the tobacco and syringe 100 trees daily—$1 25 for each man, and board, would be $2 50—or two and a half cents the tree, which, with the cost of tobacco (two cents), equals per tree four and a half cents—four times each year, eighteen cents. On olive trees producing fifty gallons of berries (valued at four cents the pound), the whole cost of thorough cleansing would be less than two and a half per cent of each yearly crop. On orange, lemon and lime trees, about the same.

ADULTERATION OF OIL.

I find this decoction of tobacco equally serviceable on domestic fruits and other deciduous trees, but in such cases it must be only applied once in the winter, when the leaves are gone and the sap has ceased to run. After such an application I have always found my trees entirely free from insects in the spring. The fact that I use 25,000 pounds of tobacco a year is the best proof that I believe in its efficacy. It is time for me to go, now, but in conclusion let me say that the adulteration of olive oil probably surpasses your worst misgivings. While I was engaged in the shipping business in New York, one firm received one telegraph order for a thousand tierces of hog's lard to go the Mediterranean to adulterate olive oil, and a single year's exports of cotton seed oil from New Orleans, sent to the Mediterranean for a like purpose, was sufficient in quantity to fill fifteen million ordinary oil bottles, the cost of the oil in each bottle being less than ten cents."

The Olive Culture.

EDS. GAZETTE: There is one industry in our State that is bound to be of paramount importance, which has not yet attracted the attention it deserves, and that is the olive culture. To-day southern Europe supplies the world with olives. The importance of this culture we people of the United States do not appreciate. In Italy at present the olive crop is worth $40,000,000 annually. California to-day produces not more than 35,000,000 bushels of wheat, which is worth less than $30,000,000. So we see the olive culture of Italy brings in far more money to that country than the wheat industry in our State. That the olive will flourish in our State has already been proven. R. B. Redding demonstrated this years ago. In the old Mission near the Rawson farm in Los Angeles county there is a splendid grove of olive trees. On the State University grounds at Berkeley there is an olive tree which bore this year over 100 pounds of fruit, which sold for $4 upon the grounds. The olive begins to bear in the sixth year and continues to increase its yield till it reaches its thirtieth year. It flourishes best where the soil is a little rocky. In Italy every hill side and rugged ridge is covered with olive trees.

Senator Stanford is about to plant a large olive grove near his large vineyard at Vina, Tehama county. In some places the soil is so rocky that small charges of dynamite will be required to blast the surface of the rock so that the trees may be planted. On such land as this it requires a longer period and more care before the trees begin to bear, but then the quality of the fruit is superior. The olive culture cannot well be overdone. In Italy when the olive crop is bountiful, the people are contented. It is asserted on good authority that with bread and olives the inhabitants are contented to do six months without meat of any kind. Then the olive oil is an article of commerce, the importance of which cannot well be over estimated. If Stanford's grove is a success, and the indications are that it will be, we may expect to see the sunny slopes of Contra Costa producing not only the vine and fruit trees but also the olive. Then more happy homes will dot our vales and the lot of the farmer will be one of less toil and tribulation. B.

Northern California. Aug. 1st. 1885.

A Rival of the Olive.

Sacramento Bee. 8/13/85

The plant known as sesame bids fair to become a formidable rival of the olive. It is largely grown in India and China. It is an annual, maturing in three months from the time of planting, and two crops are grown each year. The seeds are very small, ten of them weighing only a grain. They contain 50 per cent of oil, by weight, while the fruit of the olive has but 30 per cent. The imports of sesame seed into France amount to 70,000 or 80,000 tons per annum. The oil is much used to adulterate olive oil, which it closely resembles. The "British Enclyclopedia" says that cold-pressed sesame oil is equal in every respect to the finest olive oil for table purposes, and is by many preferred to olive oil on account of its piquant taste. Some attempts should be made to cultivate this valuable plant in California. It might prove more profitable than the olive. The man who plants the olive must wait half a dozen years for fruit, while the sesame yields two crops in a single season. Just as kerosene has driven whale oil out of the market, so the sesame may supplant the olive. The olive, however, has such an established hold on the markets of the world that to displace it by any other natural product must be slow work. Still it is notorious that a large proportion of the so-called olive oil of commerce is composed of other substances. Cotton-seed oil, sesame oil, peanut oil, and even lard oil, are largely used as adulterants for olive oil. To what extent these adulterants are employed is a mater for conjecture, but the percentage of adulteration must be large. Our Consuls in Italy and France say that no pure olive oil is exported from these countries. So well is this fact recognized in California that in spite of the popular prejudice in favor of imported goods, a certain California brand of olive oil, whose purity is above suspicion, brings a higher price than any imported brand. While sesame oil, so far as we know, has not been squarely put on the market as a food oil in competition with olive oil, it may yet stand upon its merits instead of masquerading under the name of the olive. The great advantage of the sesame in such a competition is its comparative cheapness. As it has no tendency to rancidity, the oil of the olive has no preference in that respect. Sesame seed is used as food in China and India, as the olive is wherever it is grown. Even the cake from sesame-seed mills is said to be eaten by the poorer classes of India.

The Olive Industry.

Merchant Aug 28/85

Don Ramon Manjarrés is the director of the School of Industrial Engineers of Barcelona, Spain. He has always taken a lively interest in the important Spanish industry of growing and manufacturing olive oil. Having progress in that branch at heart and recognizing the many defective antiquated methods prevailing in that industry which are kept up in his country, he has simultaneously, with the Oeconomical Society of Friends of the country of the province of Seville, conceived, and the society has taken steps to execute, the idea of an international conference on all matters appertaining to the olive oil industry. An exhibition of olive oils from all parts will be connected with that conference, to be held in Seville. It is to be hoped that the interest taken in that concourse, which is held to be of vast consequence for improvement in the olive oil industry in Spain, will be a vivid one, and the project become a fact.

The programme is an extensive one, and we think it of interest to our readers, many of whom may wish to learn as much as possible of a branch, which for Californian agriculture is momentous, to give it in its entirety:

FIRST GROUP—CULTIVATION OF THE OLIVE.

1. Rocks and geological collections of oliviferous soils.

2. Samples of olive grafts. Green and dry branches. Fresh and preserved olive fruit.

3. Tools and appliances for the special cultivation of the olive tree.

4. Diseases of the olive tree. Means employed to subdue them. Apparatus for applying these remedies.

5. Special manure for the olive grove.

SECOND GROUP—OLIVE HARVESTING.

6. Apparatus and utensils for gathering the olive crop.

7. Carts, baskets, etc., and transporting utensils.

8. Models and systems of housing the crop until pressing.

THIRD GROUP—EXTRACTION OF THE OIL.

9. Apparatus for washing and lifting olives.

10. Olive mills.

11. Apparatus for freeing the pulp from the stone.

12. Presses.

13. Desmuñecadoras.

14. Matting for holding the pulp under the press and means to substitute matting.

15. Pumps and appurtenances.

16. Samples of olive oils freshly extracted and without having undergone any other preparation.

FOURTH GROUP—CLARIFCATION AND REFINING.

17. Systems of filters.

18. Stoves, reservoirs and other utensils and apparatus for refining and clarifying oil.

19. Clarified and refined olive oils and methods employed.

FIFTH GROUP—COMMERCIAL PART.

20. Depots, jars and casks of iron, tin, zinc, earthenware, wood, glass, skin, etc, for storage.

21. Corks, capsules, wax, labels and other accessories.

22. Machines for washing, corking and capsuling bottles.

23. Collections of commercial olive oils

24. Reagenses, apparatus and method to ascertain adulteration of olive oil. Oleometers, Elacciometers, etc.

SIXTH GROUP—RESIDUES OF OIL AND THEIR APPLICATION.

25. Turbids, aceitones and lees (borras) deposited.

26. Alpechin, bitter and acid elements.

27. Pomace or husks of olives.

38. Products extracted or fabricated from residues.

SEVENTH GROUP—MOTORS.

29. Steam engines.

30. Gas engines, compressed air machinery.

31. Apparatus for moving by horse-power (malacates).

EIGHTH GROUP — OILS FROM GRAIN AND SEEDS.

32. Oleaginous grains and seeds.

33. Oils therefrom both crudo and refined.

33. Pomace and other residuo from oleaginous grains and seeds.

34. Apparatus for fabricating oil from them.

NINTH GROUP—LITERATURE.

36. Books written and printed, treating of cultivation, synonyms, manufacture of olive oil, clarification, commerce and statistics of oil.

37. Memoirs and monographies.

38. Designs of plants and oleaginous fruit.

39. Plans and projects of installations, storage, etc.

Oakland Tribune 3/23/85

DR. AGARD'S OLIVE GROVE.

The Placer *Argus* has the following about the large fruit farm in that county owned by Dr. Agard, of Oakland: We paid a brief visit to Dr. Agard's olive ranch the other day, and we found much to interest us, and also the general public, in the work that is there being pushed forward. He has several men employed plowing, planting, building fences, etc. His place, bought about eighteen months ago, comprises some forty-six acres, part of which, including a very eligible building spot, shaded and protected by pines, is on a very sightly knoll overlooking on one side the railroad, the town, and the Sacramento Valley, while on the other it commands a beautiful view of the eternal snow-capped Sierras in the distance. During the past year the Doctor has planted about 1,000 olive trees, some 300 peach trees, and from 500 to 600 French and Hungarian prunes—mostly the former. He has also planted a number of nut trees, pecans, filberts, and several varieties of the *præparturiens* English walnuts. He intends as soon as possible to put in an assortment of plums—Coe's Golden Drop, Columbia, Washington, and a new, rare and excellent variety known as Kelsey's Japanese plum. He is also planting a cherry orchard, about 150 trees of which are already set out. Around his house, which, though snug and commodious enough for any bachelor, is destined soon to give way to a larger and more elegant structure on the knoll above mentioned, he has a nice orchard of pears, apples, etc. The ranch is irrigated by means of a huge cistern which holds 12,000 or 13,000 gallons of water placed high enough up to command every rod of the ground. The water is obtained from a pool, distant a few hundred yards. From there it is pumped up into the tank by the aid of a steam engine and pump which occupy covered quarters between the pool and the tank.

But one thing of paramount interest to fruit growers and the general public is the experiment of olive culture in the locality and altitude. The doctor regards success as assured and with very excellent reasons for his belief. Mr. L. A. Gould, whose place is about two miles north of Auburn, has demonstrated the fact practically this winter by manufacturing oil from trees grown on his place. The oil is pronounced by connoisseurs to be strictly first-class in all respects. The doctor's trees are yet too young to bear, having been planted, as we said already, only a year ago. But they are looking extremely thrifty. They were chiefly from root-cuttings and were for the most part three years old. Only about six per cent. have been lost by transplanting, the usual average of loss being something like ten per cent.

OLIVE CULTURE.

San Diego Union 1/22/85

The Question of Profit in Olive Growing

Sacramento Bee.

The Italians have a proverb that an olive grove is a "gold mine on the surface of the earth." Throughout Italy and many portions of Europe olive oil is to the people what butter is to Americans. Pure olive oil, which not one American in ten thousand has tasted, is a most delicious and healthful food, superior to butter for most purposes of cookery. The prejudice against olive oil is destined to die away, and in time the consumption of it in this country must enormously increase. There need scarcely be any fear that the American market will ever get overstocked. In Italy alone two and a quarter million acres are devoted to the olive, and the annual yield of oil is about ninety million gallons. One Italian Consul writes that no unadulterated olive oil is exported from Italy, and statistics show that not enough genuine olive oil, fit for table use, is produced to supply the wants of the world. Much that is sold as olive oil is the oil from the cotton seed or sesame seed. Hog's lard is shipped to Italy from America and comes back in bottles labeled "Olive Oil." These facts have an important bearing upon the question of future profits from olive groves in California.

The profit in olive culture for oil depends greatly upon the quality of the product. In California the best known and most successful olive grower is Elwood Cooper, of Santa Barbara. He began twelve years ago by planting a thousand trees. Now he has 6,000 trees, covering sixty acres, and they are nearly all in bearing. He turns out 50,000 bottles of oil annually, which brings a higher price than any imported oil. It is quoted in San Francisco prices current at $13 50 per dozen quarts. A simple calculation will show that the present yield of his trees, at the quoted rate, would be over $56,000 or nearly $1,000 per acre, although many of his trees have just come into bearing. Mr. Cooper fears no competition, and warmly advocates olive culture in California. W. A. Hayne of Santa Barbara county, has this year planted 50,000 cuttings, which would be enough for 500 acres.

It has been found that in California the olive tree yields a much larger quantity of berries, and that here they furnish a much better quality of oil, than in Europe. Some of Mr. Cooper's trees produced as much as two gallons of berries at the age of four years. A few trees came into bearing the third year. When eight years old a number yielded forty gallons of berries each. The olive tree matures slowly, and may be expected to steadily increase its product until at least twenty years of age. It bears for centuries. Its habits is to give a large crop every second year.

According to the consular reports, a gallon of berries weighs about eight pounds, and yields from a pint to a quart of oil. The reports vary greatly in their estimates of the profit of olive culture abroad. It is very meager compared to the returns in California. In Tuscany the value of the average annual yield of mature trees is given at .62 per acre. In Sardinia the yield of berries is reckoned at only 76 gallons per acre. In Spain the best net annual income from the finest olive groves is placed at $58 per acre.

In conclusion, this quotation from the report of Felix A. Matthews, United States Consul at Tangier, Morroco, in Africa where the olive is extensively grown, may be presented as expressing not too sanguine a view of the possibilities of olive culture in California. He says. "The great value and importance of the olive tree is that it will thrive and prosper in soils where nothing else of value would grow. Those dry soils of arid aspect in many parts of California are the genuine lands for raising the most productive forests of olives. worth in due time and at no distant period, millions of money. In Africa, in Greece, and in some parts of Spain, lands once abandoned for their sterility are now the source of wealth and revenue to communities and to the Government."

THE OLIVE.

Varieties, Culture, Manufacture and Diseases.

National City, Rec. 1/22/85

Anglo-American Times.

Olives attain to their highest culture in Spain and Italy in sheltered and suitable spots along the Mediterranean. The tree is semi-tropical, and can only reach perfection in favored spots in Europe, though a hardy plant. It does not thrive with extremes of temperature; a climate too hot and dry or too cold and moist is not favorable to its growth. It thrives on the sea coast or on the hillsides; in a favorable climate and soil the tree grows quickly, and is developed, strong and leafy. In Tuscany the diameter of the tree measures from 10 to 16 inches, and it ranges in height from 16 to 22½, while there are trees which grow much higher, indeed up to 38 feet. The tree remains fruitful from two to three hundred years, and if after this term of life they do not bear, young shoots are produced which become fruitful, so that actually they may be said never to die.

As a rule, soil adapted to the vine is suited to the olive. The characteristics of such a soil are looseness and fair permeability. The soil and active subsoil should have a depth of at least one metre. A soil which contains much carbonate of lime is good, especially in the south, though too cold in northern countries, as their white coloring prevents absorption of heat. Magnesia and sulphate of lime are efficient substitutes for carbonates of lime, and some sulphate may be applied with advantage in the manure. Oil produced in soils poor in these ingredients has usually a greenish tinge and is not as limpid as oils from soils containing them. A tendency to exuberant flowering and aborting of the fruit shows a deficiency of phosphate in the soil which must be remedied for good yields. In Spain it is held that a good soil to be well adapted to the olive tree should retain its looseness after a rain of 48 hours duration, and that during the hot season it should contain ten per cent of its weight in water. The yield of oil from a given weight of fresh fruit varies from sixteen to twenty-five per cent. The latter figure is not often reached even with the best oil-yielding varieties and the most approved processes. Consul Oppenheim has obtained data showing a higher percentage, but the figures express the proportion of oil to a given weight of olives which, as is usual in Andalusia, had been lying up on the mill floors for several weeks. Olive oil is a staple of which any quantity can be disposed of in Europe readily for cash. The pickled fruit is looked upon more in the light of a fancy article, the sale of which, though brisk for the moment, may

change on any vagary of taste or fashion. Cordova and Seville are the localities in Spain most favorable to the growth of the olive. Malaga, Sevilla, Valentia and Barcelona are the cities whence the oil is exported; but nine-tenths of the product is consumed in Spain. Germany takes most of the Spanish export; then England; then France; but Italy is the country of the finest oils, and Tuscany, the Province, the very best coming from Lucca. The following interesting information is from the report of Consul Welsh of Florence.

Among the olives trees the following are the better known in Tuscany:

Infrantoio—fit for the press—one of the most delicate and very susceptible to cold.

Olivastro—dark brown olive—found on the hills; hardy, but not very productive.

Moraiolo—resembling the mulberry—hardy, ripening early, and fairly productive.

Razzo or *Grossaio*—large and lucent—much appreciated for the size and abundance of its olives and the good quality of its oil.

Correogiolo—resembling the crucible from its lowering branches—susceptible to cold weather, and consequently not adapted to high localities, but still growing with northern exposure.

Gremignolo—a coarse description of olive—ripening in March or April, and found in the Pisan Mountains.

Leccino—holm-oak—coarser, but very hardy, and not susceptible to cold.

Quercetano—resembling the oak—deriving its name from Querceta, a small place in the Lucchese, where it is largely cultivated, owing to its strong constitution and resistance to sea winds.

Inlolcitoio—tender and sweet—whose fruit, larger than other varieties, but with little oil, is eaten fresh after having been for some time well soaked.

The varieties mostly used in Tuscany are:

The *Infrantoio*, with favorable exposure, and the *Moraiolo* elsewhere. The *Infrantoio* grows well in sheltered places and on hillocks. This plant is very susceptible to exposure or to changes of weather. The *Moraiolo*, cultivated in a meager and arid soil is very hardy and bears well.

Olive trees are generally reproduced from ligneous excrescences of the stock of roots, in the form of half an egg, from which they are called *uovoli*, cut in the Spring, placed in holes made in a plowed soil, covered with fine earth and watered according to the exigencies of the season.

Olive trees commence to bear one year after being planted, and farmers anticipate the amount and increase of the crop from the date thereof, relying upon the Tuscan sayings, viz:

Se mignola d'Aprile, vacci col barile—bearing in April; look for a barrelful;—abundant crop.

Se mignola di Maggio, vacci col saggio—bearing in May, hope for the best; scarce crop.

Se mignoli di Giugno, vacci col pugno—bearing in June, expect a handful; poor crop—which are confirmed by the following:

La prima oliva e oro—the first olive is gold.

La seconda argento—the second is silver.

La terza val niente—the third is of no value.

That is to say that the tree precocious in its bearing produces best; less sure are those flourisning later, and the produce of those bearing last is of little or no value.

In well-disposed orchards olive trees are planted at a distance of from 4 to 6 metres (13 to 19 feet 4 inches) one from the other. The number of trees in generally from 400 to 600 per hectare (2½ acres.)

Pruning in the best conducted orchards consists in well clearing out the center of the tree in order that all the branches bearing may have plenty of light, sun and air. The trees are pruned every two or three years. Any dying or dead branches are taken off as soon as noticed. Every year the soil is turned with the spade and every other year manured. It is thought by scientists that pruning is carried to too great an extent. Columella, the ancient agriculturist, who greatly advanced oil culture, says of this plant that "the plowing of ground is a request, the manuring is a prayer, and the pruning is an order to produce fruit."

The best orchards in Lucchesso may produce each two years 180 hectoliters (510 bushels) of olives per hectare (2½ acres), from which quantity there can be had 2'160 kilograms of oil (4,761.33 pounds) or about 24½ hectoliters (646 gallons.)

It is calculated that one hectoliter (2.83 bushels) of olives gives 12 kilograms of oil (26½ pounds), and Domenico Capponi, in his treatise on olive oils, considers fairly remunerative the production of from 10 to 12 kilograms (22 to 33 pounds) per hectoliter of olives (2.83 bushels).

The average biennial product is estimated at 120 hectoliters per hectare (340½ bushels 2½ acres), equal to 1440 kilograms of oil (3,174.62 pounds), or about 16½ hectoliters (430 gallons). The olive tree in Tuscany produces an average of 1188 kilograms of oil (2 pounds) per year. Such results, however, are given, but in good years and considering the fluctuation of the product, the biennial average is reduced to 11 hectoliters (290 gallons) of oil per hectare (2½ acres), at the price of 136 lire ($27.20) per hectoliter (26.417 gallons, as being the average price for the last six years, giving the gross amount of 748 lire per annum. To that is added the value of olive husks, from 1 lire to 2 50 lire per quintal, and of fagots derived from the pruning, which amount to 64 lire every two years, making a gross amount of 780 lire per hectare and per year ($156 from 2½acres.

The following statement will show about the expenses of working a hectare of olive trees and the approximate net receipts:

	LIRE.
Working the ground	20 00
Pruning	36 00
Manuring	300 00
Plucking olives	40 00
Pressing olives	7 20
Interest at 5 per cent per annum	20 20
	423 40

Which, deducted from the gross amount of 780 lire, leave 356.10 lire net.

It is generally calculated that the expenses of an orchard represent one-third of the actual value of the produce, and that estimate is made as an average. The expenses, however, exceed by far said figure, as the above estimate shows. The olive culture is sometimes managed by what is called *mezzeria*, or a system when half the *net* profits are paid to laborers, all the expense but that of pressing the olives being borne by the owner.

Tuscan oils from Lucca, Calci and Buti are esteemed as the first oils of the world. Not all Tuscan oils, however, reach that degree of perfection, but even judging in mass, they are considered the best. For twenty years past Tuscany has not produced oil for burning or fabrication, all attention being given to the production of salad and cooking oil

In some places hot water is used to facilitate the pressing. The best rules for extracting the oil are the following, viz:

1. To expedite the careful gathering of olives already fallen from the tree.

2. To harvest the olives as soon as ripe, plucking the fruit by hand or whipping the trees gently.

3. To press olives before fermentation and to dispose them in small strata in the baskets.

4. To press slowly, and at a cold temperature.

5 To have all machinery and reciplent very clean, as well as to insist on the cleanliness of the laborer. Crushing presses of old system are used, and the quantity of olives submitted to each pressure varies from 150 to 250 liters (4 to 7 bushels), but not over.

Olives must be well pressed and ground for about one hour, after which they are reduced to a paste and placed in frails submitted to presses, and then mixed with cold water for a second pressure and even a third pressure, but with hot water in that case. The oil produced by a first gentle pressure is the *virgin oil*; the other is mixed, and constitutes a second quality,usually called *otio mangiable* (table oil); a third quality is derived from the deposit of oil, and used by colonists for burning.

Olive oil is preserved in jars varnished inside, containing from 50 to 300 liters and over (13,200 to 79,251 gallons). Olive husks crushed and pressed again give an inferior oil for lubricating purposes. The clarification of oil must not be too cold or too hot. The temperature is not to vary from 10 degrees to 12 degrees centrigrade (54 degrees Fahrenheit), in order that the oil fluid be such as to facilitate the deposit of heterogeneons substances.

Olives for oil are to be picked when thoroughly ripe, which is clearly shown by the bright black color, and also by the fact that at such time their pulp is easily severed from the nut and has a violet color. Its compounds are:

Pulp	56 02
Water	14 38
Skin	9 38
Nut	20 16
Oil from the nut	06
Total	100 00

From experiments made it results that one hectoliter (2.83 bushels) contains from 48,000 to 50,000 olives, the difference being ascribed to the variety, according to soil, climate and season. Olives accumulated for some weeks might number 54,000 or 56,000 per hectoliter (2.83 bushels.)

The "queen olives of commerce" are considered in Tuscany as the selected fruit of the common olive.

There is no system of artificial irrigation in use for culture in Tuscany.

The annual rainfall in this district is about 1.067 minimum equal to about 42 inches.

Official statistics show that the following countries import olive oil from Italy, ranking in importance as to quantity of oil as named: France, England, Austria, Russia, South America, United States, Netherlands, Turkey, Sweden, and Norway, Denmark, Portugal Belgium, Switzerland, Greece, Egypt, Brazil, Algiers, etc. Barrels, bottles or tin cans are used to hold the oil.

In Tuscany there are three prevailing diseases which seriously affect the olive tree, viz:

Lupa, meaning literally, wolf, but actually being a description of dead rot, produced very often by excessive pruning. To cure this the affected parts are gouged out and a hardening liquid preparation

applied that the circulation of sap may continue.

Mosca del olivo—the olive fly. This insect lays the eggs on the olive itself, and when the deposit is discovered the eggs are gathered immediately. Should the eggs be allowed to remain the fruit is much deteriorated if not ruined. The eggs are red, and therefore easily discovered.

Bruco dell oliva—the olive grub. This insect is the most dangerous enemy to the olive tree here, consuming the sap and thereby drying up branches and buds. When discovered the tree must be thoroughly pruned, the foliage removed, and every portion containing the insect burned or buried away from the plantation.

CULTURE OF THE OLIVE.

Chron 10/8/85

We commence in this day's issue the publication of a series of letters from our correspondent, Albert Sutliffe, on fruit growing in southern Europe. The fruit which forms the subject of the first letters is the olive, which Mr. Sutliffe has been patiently studying for the past three or four months in Spain, France, Italy and Algeria. As the olive is destined to be one of the most important products of California, land owners will consult their interest by reading with care Mr. Sutliffe's remarks on the rules which govern its cultivation in countries where it has flourished for centuries, on the soils which are adapted for its growth, and on the methods which experience has taught are best calculated to insure a copious harvest of choice fruit.

In a large section of the littoral of the Mediterranean the olive takes the place of meat. The peasant supports himself and his family on bread and olives. Give an Italian or a Spaniard a handful of olives and a lump of dark bread, or a cup of olive oil in which to steep his bread, and he will work all day under a fierce sun, performing labor which a northern man could not do without a hearty meal of meat. It may indeed be questioned whether the man from the sunny south has not the more wholesome diet of the two. Of course so general a consumption of the olive involves its cultivation over a wide area. Italy now produces something like forty million gallons of olive oil in a good year; it is one of its staple and most valuable products. It has stood all through time as the special type of peace and prosperity. We say that a peacemaker bears an olive branch, and Cæsar, when he saw victory at hand, could not better express his joyous hope than in the word:

> The three-nooked world
> Shall bear the olive freely.

We have never done justice to the olive in this State. The first plantations were in unsuitable soil—ground too moist and rich for a tree which thrives in dry barren places. But we are learning. Something was taught to olive growers at the recent meeting at Berkeley, and we believe since then a good many young olives have been planted in spots where they are likely to thrive, and better care has been taken to select varieties suited to this climate. Growers should now preserve Mr. Sutliffe's letters on the subject. They contain information which cannot be found in books, and which cannot fail to be of service.

THE OLIVE.

Its History from Biblical Times.

Chronicle

EXPERIMENTS IN CALIFORNIA

10/5/85

Where It Grows in Southern Europe—A Long-Lived Tree.

[Correspondence of the CHRONICLE.]

LUCCA (Italy), September 1, 1885.

In writing a series of articles on the culture of the olive in Southern Europe and the possibility of its general introduction into California, it may be well to say a few words about what has already been done with it and the success already attained in the few localities where it has been tried on the Pacific coast. This information I had in a report made to his Government by M. Vauvert de Mean, late French Consul at San Francisco. It is taken from the *Avenir Commercial de Vie*, and has not, as I am aware, been reproduced in America. Before his transfer to another post M. De Mean spent some months in Southern California studying its growing industries. A compend of what he says is here given rather than a translation. He says that although the olive was introduced into California by the Spaniards more than a century ago it is still in the period of its infancy. The first slips were brought by Jose de Galves in 1779, soon after which its culture became general about the missions, each having its plantations and its nurseries. The culture flourished, that is, in proportion to the limited population of California, until 1820, when it began to be neglected, owing to the incapacity or want of industry of the successors of the Franciscans, and almost entirely disappeared during the excitement that followed the discovery of gold in 1849. In 1860 the olive began to recover its importance, through the efforts of some landed proprietors in Santa Barbara county, among whom was M. Goux, a Frenchman. They used the slips taken from some hundred-year-old stumps, which they found about the missions and which had remained alive. Between 1860 and 1873 more than 10,000 olive trees were planted in Santa Barbara county, all coming from the same source. The variety almost universally used is the *Picholine*, called according to the most recent classification, or that which late writers find most convenient, *olea oblonga*. The fruit of this species passes from green to red and from red to black, and is characterized by its bitter taste. Most of the proprietors pickle it and sell it in the State or in the surrounding counties at 50 cents a gallon. Some efforts are being already made with the Spanish olive. A San Leandro horticulturist has just imported (the report was written in 1883-84) a large number of slips by rapid transit. One planter in California has attempted the making of olive oil. This is Ellwood Cooper, whose success will not fail to provoke many imitators. He made in 1883 18,000 bottles of oil, which he sold for $1 per bottle, bringing him in 100,000 francs for 3000 trees in full bearing. M. Goux estimates the mean product of an acre of ground planted in olives fifteen years old at 1000 gallons of olives, which will give 100 gallons of oil. There are six bottles to the gallon, of the size and shape commonly used for olive oil, which makes an acre worth $600, a most profitable industry.

M. De Mean says, in closing his report, that though the product of oil in California is now small, the orchards are constantly extending, and that the prospect is that ere long it will be more than sufficient to supply the local demand and will be exported. This is meant as a word of advice and warning to the cultivators in the south of France.

THE PAST OF THE OLIVE.

No tree in the history of the world has been so highly esteemed and honored as the olive. It is one of the first and one of the oftenest mentioned in the Bible as an emblem of peace and fruitfulness. Where there was no peace, and war was the normal condition of the ancient world, there could be no olive, and when the olive was wanting the source of prosperity, of nourishment even, was dried up. The dove sent forth by Noah to learn if the flood was abating brought back an olive branch, a subject often illustrated in old paintings and old frescoes in Roman churches. The Promised Land abounded in the olive. There is a very charming legend in the "Book of Judges," which illustrates the high degree of esteem, of veneration even, in which the tree was held among the ancient Israelites:

> The trees went forth on a time to anoint a king over them. And they said unto the olive tree, Be thou our king.
>
> But the olive tree said unto them, Should I leave my fatness wherewith by me they honor God and man and go to be promoted over the trees?

When the children of Israel came back into Palestine from Egypt they found the olive, which had been cultivated there from an unknown antiquity. They continued and extended its culture, which was in time one of the chief sources of wealth and was duly protected by the laws. The olives in the valleys and on the rocky slopes about Jerusalem were rendered famous by their association with the history of Christ, and the fact that they are still alive is often adduced by enthusiastic writers to prove the longevity, if not the absolute immortality of their favorite tree. The Christians of the Middle Ages, taking their cue from sacred history and legend, continued to hold the olive in high esteem, not the less that with their belief was always mingled a savor of pagan tradition. There exists a Portuguese legend to account for the foundation of the ancient and celebrated church in that country called "Our Lady of the Olive." In the time of the Goths, Wamba was working in the field and even had his hand on the plow when the envoys of the nobility came to him with the announcement that he had succeeded to the throne. Surprised and incredulous, because he had not dreamed of the crown, he replied that he should be king when the goad which he held in his hand should bear leaves. At the same time he thrust the goad into the soil, where by the direct interposition of Heaven, says the legend, it instantly took root, and covered itself with branches and leaves and fruit. A church was erected on the spot early in the fourteenth century, and in proof of the truth of the tradition an olive, said to be the veritable olive sprung from the goad of Wamba, is still shown near the spot, inclosed by a balustrade of iron, its branches still green and vigorous, and still honored and venerated as it has been by every generation since the date of the veracious legend. The olive appears often on the escutcheons of the Middle Ages, especially on those of families bearing the name "Oliver," taken from the tree, an ancient and honorable name still common in England and America.

IN PROFANE HISTORY.

The olive was equally known and no less honored among pagan nations from an equally remote antiquity. According to the fable, when Cecrops founded Athens Neptune and Minerva contended for the honor of being its protector. It is the first recorded case of woman suffrage. Cecrops assembled the men and women of Athens and demanded their votes. The men declared unanimously for Neptune and the women very naturally voted for Minerva, and as there was one more female than male, the goddess won the prize. Neptune appealed to the twelve Olympian gods, but the verdict of the majority was sustained. So Athens became theoretically the city of peace, and temples, statues and altars were erected in commemoration of the incident, on which the olive was either sculptured or had its virtues engraved. This respect for the olive extended throughout Greece, for it was everywhere cultivated and appreciated and appeared on coins and monuments. It was associated with religious rites and had its uses in magical operations and funeral ceremonies. From Greece it was transferred to Italy, with the worship of Minerva, and became everywhere an object of veneration, the safety of envoys and the language of peace. When a conquered people presented it to the conqueror it was considered to be equivalent to a formula thus freely translated: "Grant us permission to again plant and tend the olive." Hence came chiefly its poetical associations and its imaginative use by the poets from Homer down through the long line of Grecian and Roman bards and prose writers, and the poetasters of the Middle Ages to our own times. Many of the Roman writers, among them Cato, Varro, Virgil, Strabo, Pliny the Elder and Athenæus devoted passages of their works to the culture of the olive which still contain practical suggestions of value. Horace, who had an extraordinary weakness for olives, laments the destruction throughout the country in Italy of beautiful and useful olive orchards to give place to luxurious villas and artificial lakes. The following is from Virgil's "Georgics":

> The olives, on the contrary, require no care; neither the bent bill-hook nor the tenacious tooth of the harrow. When they have taken root in the soil and are fully exposed to the air, the ground spread about them with the mattock gives them all the moisture they require. It suffices that the plow pass near them to load the trees with fruit. Do no more than this to nourish the fruitful olive—the olive dear to peace.

DURING THE DARK AGES.

The olive almost disappears from history and literature not to become prominent again till the fourteenth century. It is true that it was cultivated during all this time, so far as the disturbed state of all the countries about the Mediterranean would permit of peaceful industry, but without system or general concurrence on the part of cultivators. The first Crusaders found olive trees and oil in abundance in Palestine, but there came with the discovery no idea of peace nor thought of making any practical use of it beyond its immediate consumption as a necessary article of food. After the Mohammedan conquest the Arabs carried on the culture in Spain, where they had been able to establish themselves. In the fifteenth century—that is, sometime after the renaissence—a degree of peace and enlightment having been restored to the world, agricultural writers began again to note the useful and practical qualities of the olive, and in Italy, throughout nearly the whole extent of which the culture was possible, treatises appeared during rare in-

terrais for several hundred years. Later similiar works began to appear in France, where the industry, though supposed to be as ancient as the advent of the Phœnicians, was of less importance. These treated in ways more or less scientific and intelligent of the proper modes of planting and culture and the methods of preserving the fruit and manufacturing the oil. In time agricultural societies came into being, and by discussions and reports spread a certain amount of enlightment among the common people, who were careless in the propagation and training of the tree and proportionately unclean and negligent in the fabrication of the oil. The machinery of the agricultural society still works so imperfectly in France and Italy that there scarcely exists one association of the kind for every hundred found in the United States. For this there are two reasons: First, the peasantry or small agriculturists are most of them unable to read, and in all branches of land culture, and especially a branch of it so ancient as that of the olive, they have inherited a large amount of practical knowledge which answers for all their ordinary needs.

WHERE THE OLIVE GROWS.

This brief sketch of the olive has been given that the respect with which it has been treated from the most ancient times may be understood. This regard, sublimed into veneration, it could never have had except it had been of the greatest practical use to mankind, for the ancients venerated objects, as, for instance, the sun, in proportion to the benefit which they derived from them. The olive was then, as it is now, the benefactor of the world, and was so recognized. Its natural history is a matter of less importance to the cultivator in California. It will suffice on this branch of the subject to say that all the known species of useful olives came from some wild variety, probably from more than one, whose identity, although it has been extensively discussed, has not yet been decided. Briefly in regard to its localities, a subject to be more fully treated hereafter. It grows in twelve departments of France, including Corsica, these extending along the Mediterranean, from Italy to Spain, the northern point of successful culture being in Ardeche, some sixty or seventy miles from the sea coast. It is found in nearly every part of Spain, except in the colder provinces and elsewhere at the highest altitudes. It grows in all the northern States of Africa, where its culture is prehistoric. The olives in Algiers are remarkably fine, and there are some writers who, observing this fact, the favorable nature of the climate, the antiquity of the culture and the prevalence of several species of wild olive, think it to be the locality of its origin and the point where it was disseminated about the Mediterranean. This honor is, however, disputed in behalf of Egypt, Palestine and some locality in the neighborhood of the Tigris and Euphrates. As the wild olive still abounds in some parts of India and China, as well as in several other countries, where it is is still cultivated, it is obvious that the task of the naturalist is difficult. The olive flourishes in all Asia Minor, except in the most elevated regions, in Southern Russia, in nearly all European Turkey, with the countries adjoining which were formerly dependencies, in all Italy, including Sicily and Sardinia, and in some parts of Asia and Africa not mentioned.

WILL IT GROW IN CALIFORNIA?

The citizen of California who travels in Italy and the south of France cannot fail to remark the similarity of soil, climate, conformation of ground and general atmospheric conditions to those to which he has been accustomed on the Pacific coast. In the vicinity of Marseilles the summer is almost absolutely rainless, while the winter rains are copious. The heat of midsummer is warm, but generally tempered by sea winds. At Cannes, Grasse and Nice, further eastward and not far from the line of Italy, the atmospheric conditions are similar. The summers are warm after the same manner. Frosts in the valleys are rarely known, but occur occasionally on the hillsides, with snow far below the line to which the olive attains. The valleys are generally occupied for the sake of economy merely by vineyards, fruit orchards, and gardens, while the slopes of the hills and mountains are covered with olive trees. Their number is bewildering. Nice is situated in a sort of basin whence the slopes are visible on all sides. So general is the culture that in all this broad area scarcely anything else can be seen but the pale green of the olive. Even the rocks and earth are concealed, and no other trees are in sight, except possibly a ragged row of small pines that crowns the far off forest of some higher elevation. A person who had the patience and a glass sufficiently powerful could, without doubt, count 60,000 olive trees from his hotel window within a slightly irregular arc whose longest radius would be fifteen miles. Everything that grows at Nice would grow in California, not excepting the bamboo, which appears to flourish, and the date-palm, which grows well and makes a handsome ornament without coming to fruit. The fruits of California, while having a trifle less character, are much larger, finer and cheaper than those offered in the markets of Nice. The melons seen in the San Francisco market are incomparably superior. A blight that has come in probably with age and a failure to renew the stock sufficiently often rests on everything. A deficiency of rain covering a period of ten or fifteen years, a thing impossible in California, has aggravated the disorders in weakening the vines and olive trees, and rendering them more vulnerable to the attacks of insects. Irrigation is everywhere practiced. The soil is not good, except in certain very limited localities, and requires constant manuring. It is not the fertility of the region, but the softness and uniformity of the climate, that has rendered it so favorable for several hundred years for the culture of fruits and plants that are a little more than semi-tropical. What the original trees were before they gave place to the olive some hundreds of years ago cannot now be determined with exactness, but from specimens that remain in odd nooks and corners on the hillsides near Nice, and in larger numbers along the littoral towards Cannes on one side and Monaco on the other, they could have comprised little more than scrub oaks and pines that were never either large or healthy. The presence of pine always indicates a soil either almost barren or only moderately productive, a character borne out in this locality by the oaks and other kinds of arboreal vegetation associated with it.

CLIMATIC CONDITIONS.

The climate along the western coast of Italy is like that of much of California in general respects. It is equable, and the summers along the coast are rainless, or nearly so. At Naples it never rains during the summer, though there are occasional storms about Vesuvius. Almost nothing grows in Italy from Ventimiglia, on the French border, to the straits that separate Sicily from the mainland, that will not grow in California. It follows that as the olive is successfully cultivated in all this region, in portions of which there are occasional frosts and snows, that it be cultivated equally well on many parts of the Pacific coast; in how many localities time can only determine. The question of soil, as will be shown hereafter, is of secondary importance. Given the requisite amount of heat and moisture and there are few soils so barren that the olive will not flourish in them when rooted. There are great areas of country in California, notably some of the hills about San Francisco bay, about Monterey bay, along the foothills of the Sierra, and at different points along nearly the entire length of the Coast Range, which are grazed by sheep or left simply to the wild flowers and scanty grasses that come with the winter rains. In all these, judging by the many unpropitious localities in which I have seen the olive growing, all useful species of it, or as many as were desired, could be reared with profit. Nor are the peculiarities of soil and climate in Algiers, Syria or Turkey in Europe so very different from those of California that they need suggest difficulties. In all of them there is no rain, or scarcely any, in the summer. The summer is, if anything, a little too warm, and in the Atlas mountains and other portions of the countries mentioned there are occasional frosts and snows.

LONGEVITY.

No limit to the life of the olive is known. Some olives of Ephesus and Smyrna are older than the Turkish invasions of Europe. In 1867 Algiers sent to the Paris Expositions specimens of a tree more than a thousand years old. There are many olive trees in the south of France which, without doubt, antedate the Saracen invasion. Among many that may be named is the celebrated tree of Beaulieu, which was famous for its antiquity in 1515. Its trunk is forty-seven feet in circumference at the base. It is the only one in the region which resisted the fearful hurricane of 1516, since which time its product of oil, which had in favorable years reached 300 pounds avoirdupois, has fallen below 200 pounds. The hollow in the trunk is able to contain twenty persons. Every summer it was used by its proprietor as a family dining and living room. The whole family slept there, and even the horse had a corner to himself. The age of this tree is differently estimated, but cannot be less than a thousand years, or as some think 2000, which is not impossible when we remember the great age of the olives in Palestine mentioned in the New Testament, which were already old at the birth of Christ. Most of those about Nice exceed 150 years, while hundreds, probably thousands, exceed 300. One was pointed out to me at the nursery of the Proprietors' Union, at the villa Josephine, near Nice, on which the commissary of the Spanish army, more than a thousand years ago, hung the beef that was to be issued as rations to the troops. The special branch to which tradition assigned the honor had to be removed thirty years ago, but the place where it joined the main tree is still indicated. The other trees in the same orchard, which covers an extent of several hundred acres, have an age of from 150 to 300 years. A tree of such endurance, which will allow itself to be mutilated past recognition, whose stems will live and send forth new shoots and a new trunk where the old trunk has been broken off by a storm just above the soil, which will send up from the same roots six or eight shoots, each of which becomes in a few years a separate tree, which will allow itself to be propagated by slips, twigs, shoots, or segments of branches, and planted or thrust into the ground in any fashion, which will live and flourish in the most ungrateful soil, must needs have a marvelous vitality to acquire such a great age, and should have its vitality reckoned as one of the most important elements of its worth and value. It does not follow that because the tree has these qualities it should be abused and neglected, but it should all the more be treated with respect and tender care, that its product may be increased and that it may be transmitted as a precious heritage to future generations.

THE TREE IN POOR SOILS.

This will be better understood by some description of the olive as I have seen it growing about Nice, in the vicinity of Grasse, along the littoral between Marseilles and Nice, and along the Riviera between Monaco and Genoa. All this region may be considered as the home of the olive. Nearly all of the distance after passing Cannes is a mountain slope, coming close to the seashore, and so steep that it seems to the traveler as if there was constant danger that it would slide down and carry the railroad with it into the Mediterranean. Occasionally there is a tract of level ground a few miles in extent, but for most of the distance there is a constant succession of short valleys and sharp spurs running steeply up till they merge in the summit of the mountain. The road runs across the narrow valleys and through the mountain spurs. The reader will understand the nature of the country better when told that in passing the 120 or 130 miles between Nice and Genoa the train traverses more than 100 tunnels, and nearly as many more between Genoa and Pisa, where the distance is less. The small valleys are surrendered to vineyards and orchards, and the olive is everywhere driven to the hills, where it thrives according to elevation and richess of soil. The olive trees north and west of Marseilles, and east of it as far as Cannes, or to nearly that point, are small, rarely exceeding fifteen or twenty feet in height. Then they change entirely, often reaching forty or more feet in height, and attaining at the base a circumference of four or five. The soil also changes, but not apparently for the better, the improvement in the character of the olive being due to the absence of the mistral or other wind of deleterious influence, and a climate generally far more propituous.

GROWING UNDER ADVERSE CIRCUMSTANCES.

Grasse is at the head of a valley about twenty miles north of Cannes. Its chief industries for the last hundred years have been the cultivation of flowers for their oils and essences, and the manufacture of olive oil. The last has been almost paralyzed for some years by the devastation of the fly and worm. The trees are old, and the shape in which they are seen and the positions in which they are placed show under what extreme privations the olive is able to maintain its existence. Sometimes it is seen standing at the top of a stony ridge so narrow that it seems about to topple over on either side. Sometimes it is dead, except a strip of bark up one of the sides, which nourishes a large and healthy top filled with fruit. Sometimes it is twisted and gnarled so that it has almost lost the appearance of a tree. Again there will be a large rift in the trunk, through which one could pass with ease. Now and then there is a stump, from which a new and healthy trunk has grown, and occasionally half a dozen trunks form the same roots, unlike the banyan, yet strongly suggesting it. In all places the soil is thin, but in some so full of bowlders, or so thinly spread over the rocks, that the land in the most barren parts of New England seems fertile in comparison. It is land on which the most persevering sheep would find it hard to obtain a scanty subsistence. Generally the hillsides are terraced simply by

having the earth banked and leveled, but when too steep each terrace has its wall of stone. The stones are always at hand in sufficient quantity, for the soil is full of them. As these walls represent the labor of several generations, the expense of time and money is not great. This system of terracing the hillsides prevails all the way from Nice to Genoa, the Italian hillsides being steeper, the soil poorer and the trees generally smaller, though still considerably larger than those in the vicinity of Marseilles. Some of the stone walls are very pretty specimens of masonry and quite solid enough to hold their own against the wash of the hillsides for a century. I speak only of the slopes along the Riviera, immediately facing the sea. Further inland there is less exposure to the wind, and the conditions are in some other respects more favorable. Between Pisa and Lucca there are some mountain sides that seem even to exceed in roughness and barrenness the rocky slopes about Grasse. Here it is hardly possible to see the grass on the hillsides on account of the frequent cropping out of the rock, and quite impossible to make long, uniform terrsces. Here, every hollow that has originally contained a sufficient amount of soil to nourish the roots of the tree or is capable of containing enough brought from another spot, is occupied by a tree, which is healthy, though not so large as those growing in more genial localities. It is impossible to irrigate under such circumstances, and yet the general appearance of the trees as they are seen far up the mountain is that of a scattering grove rather than of an orchard. Around the fertile valley in the midst of which Lucca stands, soil and climate are much more in favor of the olive. The soil of the hills, though not rich, admits of comparatively easy cultivation, and the slopes are more accessible.

REMARKABLE VITALITY OF THE TREE.

The vitality of the olive is shown by the rapidity with which it recovers and re-establishes itself after reverses that would be the utter annihilation of trees of less resources. There have been within a century several hard winters that have killed nearly all the olive trees in the south of France. That of 1819-20, which some old citizens of Nice still remember, was one of the most remarkable. Nearly every tree in the olive-producing department was killed to the ground. Many farmers were hopeless, and abandoned the culture. Others bought the old stumps and made further trials. The roots of the trees retained all their ancient vitality, and the shoots and suckers grew so rapidly that they began to bear in five years. In nine years afterwards the orchards were so productive that the ordinary vessels would not hold the oil. There was absolutely no place to put it, and kitchen utensils and all other available vessels were used for storage.

In this preliminary and discursive treatment of the topic it has been shown that the olive has great vitality, and is able to live in almost any soil and to endure a limited degree of cold. That it is possible to cultivate it successfully in many parts of California seems most probable, and further that it will grow in many localities whose soil is now deemed barren and useless. The minute discussion of the economical uses of the oil, of the value of the wood, the methods of planting and culture and the proper mode of fabricating the oil will serve as topics for future articles.

COMPARISON WITH OTHER OILS.

But the question will be asked at the very commencement, "Will the demand for olive oil or the edible olive continue and increase in a ratio that will make its more extended culture profitable?" or "Will the oil not be supplanted by such substitutes as cotton-seed oil, or peanut oil, or either of these, or other oils compounded with olive oil?" There is not space here to examine a subject of such breadth, but the answer may be given in a general way that such a result is impossible. Cotton-seed oil is used because it is tasteless, a most decided objection, and peanut oil never loses its characteristic taste and will not keep its quality more than a month or two. The adulterations can never supplant the genuine oil, while the very fact that they can be occasionally employed for the vitiated taste of certain localities shows the high esteem in which the genuine product is held and its increasing use. The adulterations make the genuine more valuable. Few new olive orchards are being planted in the south of France for two reasons: About Marseilles and to the north of it the coldness of the winters, coupled with the prevalence of insects hostile to the olive, is feared; and about Cannes, Grasse and Nice bad crops have been the rule of late years, owing to the fly and worm. The decreasing area of olive culture in France should certainly be favorable to the growing industry in California. On the contrary, the increased product of Italy shows a constantly increasing demand. The product, as shown by the Government reports, was 38,990,600 gallons of oil in 1884, being an increase of 8,800,000 gallons, or considerably more than one-fourth over that of 1883. The increasing demand for the best oils is proved by the fact that about Lucca, whose oils have a reputation second to none for flavor and purity, the area of culture is being constantly extended. Few of the orchards have the ancient look observed in the south of France. They have a fresh color and there is about them a certain cleanness of culture. Many of them are quite young. New ground is being constantly cleared, and they are every year seen higher and higher up the hillsides. Following the precedent of Europe, the diseases incident to olive culture ought not to attack the trees of California for at least a hundred years, while the energy of our soil and the stimulating character of the climate should render the trees sooner productive and quickly repair the damage resulting from natural causes.

THE OLIVE.

Chron — 10/2 2/85.

Various Methods for Its Propagation.

PREPARATION OF THE SOIL.

Treatment in the Nursery--Setting Out an Orchard--Time for Pruning.

[Correspondence of the CHRONICLE.]

FLORENCE (Italy), September 12, 1885.

The most simple method of multiplying the olive is that usually employed by nature, the sowing or planting of the seed. It is favored by many writers because the tree which results from it is longer lived and better able to resist extremes of temperature and the attacks of insects, and can live in unfavorable soils. The objections are that the growth is slow, and as I was informed by the manager of the Proprietors' Union of Nice, uncertain as to the resulting species. Those who cultivate the apple, the peach, or other fruits of the orchard in America, have usually experienced the same difficulty. Still it is a method which will always have its advocates, some of the objections being removed by the grafting of the seedling at an early age. It is also said that the tree coming from the seed is more regular in form, that is, is more naturally developed. In countries where the wild olive exists, young trees are sought and placed in nurseries, where they are afterwards grafted with better species. The rules for the care of nurseries of the olive do not greatly differ from those which regulate the management of seedlings of other species, but as they may become a separate business there are added some rules gleaned from various authorities. The ground should be of the best quality. The seeds should be thinly covered, that is, with not more than two and a half inches of earth. The young plants appear the same year. They should be constantly weeded and sheltered with straw or dry leaves during extreme cold weather. The side branches should be cut off and the young tree supported by a prop, and when later the young tree is transplanted, care should be taken to suppress the tap-root. By taking this last precaution the necessity will be avoided of removing afterwards both the tap-root and the top.

PREPARING THE SOIL.

According to the more specific directions of another writer, the ground selected should be neither too sandy nor too clayey; neither too wet nor too dry. It should be moderately manured and gently inclined towards the south. It should be plowed to the depth of two and a half feet in November or December and left to the winter rains. A shallow plowing should be given in the spring, after which it will be ready to receive the slips or plants of whatever kind that have been got ready for it. The plants are supposed to remain in the nursery seven years before being taken to their permanent resting-place. They are placed a little over three feet apart, or less, if the transplantation takes place sooner than the time specified. The remaining rules for the planting do not differ materially from those which regulate other nurseries, and so need not be stated. With the seedlings in the nursery may be placed what are sometimes called the "eyes of the root" of mature trees, and also the shoots which spring up about the trunk, those which grow farthest from it being preferred, and which have adhering to their base a piece of the root with fibers, which the French call "hair." Still other additions to the stock may be made by using the branches taken off in the ordinary process of lopping. The ancients employed the method of detaching the protuberances from the roots, and were so harsh in their methods of treatment and so sure of the vitality of the olive that they used to drive them into the ground with a mallet. More gentle treatment is now awarded the olive by intelligent cultivators. The "eyes" are formed by the accumulation of several germs and are about the size of a goose egg. Every good-sized olive tree can furnish a large number, but in order not to injure it not more than three or four are usually taken. Each can be divided into several buds, each capable of producing a tree. If a large number are needed it is better to take a healthy olive, which can often be done where they grow too thickly, and use all the prolific parts it is able to furnish. These *novoli*, as some Italian writers call them, must be cut off neatly with a sharp instrument and pared before planting.

SPANISH METHOD OF PROPAGATION.

There are other eye-like protuberances on the olive. They appear at the intersection of each leaf and also on the roots. Great precaution must be taken in removing them. They are young branches with smooth bark, and they must be cut off without wounding the tree and without crushing the bark. They are marked red to avoid the danger of inverting them in planting, and the two ends are covered with manure mixed with ashes, after which they are thrust into the ground. Small sticks placed in the ground either side and tied at the top will serve to indicate their locality. Branches having slips are cut in segments at a short distance on either side of the buds. The segments are then planted in trenches, the slip, of course, uppermost, as is sometimes done in reproducing the weeping willow or other trees of similar habits in America. The slip quickly becomes a young tree, the roots extending on the other side of the planted segment. The value of this mode of propagation is doubted by some authors, who declare that it tends to decadence and sterility, brings on all sorts of diseases and weaknesses of the plant, and gives a bad form to the tree. Still, it has been the method the most employed in Spain, where it was the habit in former times to take a branch of olive the size of one's arm, split the lower part in four, put a stone in each of the four apertures, and plant it deep. As a natural result, trees rotten in the center became exceedingly common in Seville, and the rough treatment had to be discontinued. The Spaniards treated the trees as carelessly as they were in the habit of treating the oil till commercial competition compelled more humane and reasonable practices. They have still the habit of taking slips or suckers as large as the arm and ten or eleven feet long, which they obtain by training them straight while still on the parent tree. These, when once planted, will produce fruit in three or four years, but the permanent injury is such that some Spanish writers think that the method should be abandoned. Slips can always be found in the sorts of trees that are becoming decrepit, or if desired a tree that seems superfluous can be taken while in its prime from an overcrowded orchard.

USING SMALL OFFSHOOTS.

As already shown, the olive abounds in shoots, which spring up from the roots which lie near the surface, often at a considerable distance from the trunk. These shoots, which differ from the shoots described, can be detached and placed in nurseries for any mode of treatment that may afterwards be desired. Writers advise that they should be detached with certain roots when about an inch in diameter. The method is constantly employed in France, Italy and Spain, and I presume has been employed in Santa Barbara county in obtaining new stock from the ancient orchards. Though so commonly practiced, it is opposed by some authorities as tending to the decay of the parent tree, probably because of carelessness in the removal of the shoots. In certain orchards that I have seen in France and Italy none of these shoots were visible. In others there were sometimes six or seven of them, while a cluster of trunks of different sizes, some of them as large as the parent stem, is a sight by no means rare. Whether that method of propagation shall be employed which preserves the tree and its fruit for future generations is one of those questions which will always agitate those who are cultivat-

ing the olive and desire to reap from it the greatest advantage. As to propagation by using the seed, it is more in favor for the reasons given than any other process, and the objections to it of its extreme tardiness, though important in exhausted soils like those of the olive-growing regions or localities of France and Italy, may not apply to the virgin soil of California with the same force.

TREATMENT IN NURSERY.

Minute rules are given by writers for the treatment of the young trees in the nursery. As the roots extend an effort should be made to give the stem shape by cutting off the lateral branches. Though this is a kind of restraint on the natural development of the tree it is necessary to permit as many as possible to grow within a given space. If this gentle pruning is postponed the tree will probably become twisted as it gets older, a danger to which it is sufficiently subjected from natural atmospheric causes. The pruning, also, if performed when the tree is quite young, is less likely to leave wounds on the stems. The value of this method has been proved by experiments made by practical cultivators. During five years—that is the time advised for the nurseries of France and Italy—the young trees are pruned, kept straight by means of a support, weeded and kept secure from injury by animals. At the end of the fifth year it will be time to determine the height at which it is desired to keep the olive, the trees of moderate stature being generally the best bearers. Still it is a question of soil and locality, of exposure to the sun and danger from winds. If the soils are deep and rich the young trees when transplanted should have from three feet four inches to five feet in height; if for soils thin and places exposed to the wind, three feet four inches to four feet will be sufficient. These figures may be varied by local causes. When the soil is cultivated the trees should be higher than when it is occupied with other crops. The height having been decided on, it becomes necessary to form the head by leaving six or eight branches so placed as to offer the greatest surface to the sun. They have by turns been given the form of a pyramid, a fan, a sphere, a vase formed on the surface of the trunk by a truncated cone hollow in the interior. This last mode of training the branches is that which permits the trees to present the greatest surface to the sun. All this cannot be done in a year, but must be continued till the tree is twelve years old, at which age it will be ready to be permanently placed in the orchard. All this may seem fatiguing to an American farmer, and especially one who is accustomed to the quickly responsive soil and precocious climate of California. He may and doubtless will be able to anticipate these times and processes, but the rules given are those deduced from many hundred years of experience, and they refer, as the reader must never forget, to the welfare of a tree whose life has no known limit, and which can, like the soil, be transmitted to generations yet unborn. The stalk is cut off at the desired height in the spring. During the following summer the lateral branches develop other lateral branches, and are themselves suppressed like the main stem. This process is continued each year, care being always taken to give the vigorous young branches that come out below the point of suppression a general tendency upwards. As to whether the time of transplanting shall be a few years more or less there seems to be a difference of opinion among the authorities, which is not of any great practical importance. The California cultivator will have to be guided by his own experience and these general intimations. It is generally thought that the head of the tree should be cut at the time of transplanting, but if it has undergone the training specified it will be necessary to recommence the process. If the transplanting is slightly hastened the more elaborate part of it will take place afterwards.

THE FRENCH METHOD.

The French call an olive orchard an *olivette*. When a new one is to be formed of plants without any mixture of old or worn-out trees, the question arises whether the olive is to occupy the ground exclusively or whether other plants are to divide the soil with it. The most common culture which has been in times past mixed with that of the olive has been the vine, but in personally visiting and having a general view of the olive orchards between Marseilles and Florence, a distance of 500 or 600 hundred miles, I must say that I saw little on the ground but the olives themselves. There were occasionally vineyards, small fruits or other crops, but they were exceptional. One reason doubtless was that the vineyards in the region included have generally succumbed to the phylloxera, and another was that the trees were usually on the hillside in soils not suited to anything else. While the olive trees are young the careful cultivation of the soil for other purposes will not only do no harm, but may even be most beneficial to the olive itself. The olive when old is generally a spare-looking tree, from having been pruned in the ways shown. The branches are few and do not incline many degrees from the perpendicular, which circumstance, with the smallness of the leaf, permits of a comparatively unobstructed passage of the sun's rays. A person may therefore cultivate an olive orchard, and while it is gradually maturing, or while it is in full bearing, may have a vineyard in good bearing or such other crop as he finds it convenient to put upon the soil, annual or otherwise.

DISTANCE BETWEEN TREES.

A regularity in the olive orchard is pleasing to the eye, though difficult to maintain when the trees become aged. On level ground a symmetry is possible that cannot easily be had on hillsides or where the conformation of the ground is otherwise constrained or peculiar. The height at which the olives of a region are to be maintained will decide their distance apart. The tree bears according to its exposure to the sun and is most fruitful on the sides most exposed. It is therefore desirable that after the spring equinox has passed the trees should not shade one another. Some French agriculturist who has made a very nice calculation has said that the trees should be so far apart that no one of them should be shaded by its neighbor next south on the 22d of March. Without following this rule into all the latitudes, in which it finds a somewhat varied application, it may be said in a general way that the mean distance between the trees should be about their height. In the south of France, where the trees are small, a little less than twenty feet is deemed sufficient. Where the trees grow taller the distance should be greater. Cato prescribed for ancient Italy twenty-five to thirty feet. Where the trees are planted in terraces on a hillside with a fair southern exposure it may be less. A very little thought on the part of any one who plants olive trees will enable him to judge of the character of his own ground, the side from which the trees will have the most sun and the danger of their shading one another. If he desires he can plant closer, with a view to cutting out a part if they promise to be too near together.

HOW TO SET THEM OUT.

The distance apart having been decided, square or circular holes are dug about four feet in diameter and three feet in depth to receive the roots of the tree. Some writers have recommended the excavation of these holes a year in advance, but the burning of a little straw in them compensates in a great measure for the lack of this anticipatory labor. If the earth is dry the transplanting is done in the winter; if wet, in the spring. Pebbles and gravel lighten and help to relieve a too moist soil by being mixed with the earth in the hole, at the bottom of which can also be placed with profit leaves, dead wood or shavings. The ancients had a habit of making at the bottom a bed of grains of barley. The young tree should be brought to its new home with great care and the precaution should always be taken to so place it that the sun will strike it from precisely the same direction. This can easily be done, as did the ancients, by marking the side that had the southern exposure in the nursery. When planted on level ground the young tree should be placed three or four inches deeper than when in the nursery, and this depth should be increased on hillsides. The earth that covers the roots should be mixed with fertilizing material, the kind not being reckoned important. After having watered the ground thoroughly, placed over it a bed of straw, dug a trench about it to contain the water in winter—a work that must depend somewhat on circumstances—and given the young tree a good prop, the immediate attention due it may be considered as finished. The kind of prop recommended is a sort of tripod, with a ring at the top encircling the stem. A coating of whitewash is thought by some to be even better than an envelope of straw, which favors the development of the upper buds to the prejudice of the lower.

PRUNING AND TRAINING.

A portion of the foregoing description may not seem clear, but it is difficult to explain all that French and Italian writers attempt to say about "shoots," "suckers," "buds" and "slips," their modes of separation and their planting without the use of cuts. The little obscurities, it is hoped, however, will not stand practically in the way of any rational mode of removing the young plants to the nursery, treating them well while there, lopping and pruning them, transplanting them at such time as the careful and intelligent propagator may deem advisable, and doing the main part of the pruning before or after the final transfer, as he thinks best. The general training of the tree while in bearing is not really a thing of long continuance. The cutting of the tree to restrain its exuberance has so many modes and modifications and so many names that they do not admit of practical explanation in these articles, nor is minute elucidation of the processes here essential. It is doubtful if the general cultivator of the olive in France and Italy, who has inherited his trees and his knowledge, himself understands them. Of the hundreds of thousands of trees that I have thus far seen, comparatively few bore recent marks of cutting of any kind. The general tendency in the younger orchards was to let them grow with the branches sloping well upward, to which end the lower branches of the stem had long before been removed. In Corsica and in Algiers the trees are cut little or not at all. In Aix they are kept so low that the fruit can be gathered with the hand. The trees between Nimes and Toulon are higher, while those about Cannes, Grasse and Nice are from thirty to forty or fifty feet in height, as described in previous articles. At Beziers an effort is made to render the gathering easy and to ventilate the tree. At Perpignan, in Rousillon and the Aude, places and localities in the south of France, the mother branch is suppressed each year. In other localities the middle of the tree is removed every year. In the south of France and in the Riviera the lack of sufficient moisture, which has continued many years, with the incidental diseases, has rendered the orchards in great measure sterile, which accounts for the neglect.

VARIOUS METHODS.

Cutting requires great discernment, and should be regulated by the exposure, the coolness or lateness of the variety and the condition of the tree as regards health or illness. Therefore, each region—California among the rest—must adopt its own methods. The main point is to remove excess of wood, and especially the parts that are diseased or dead. It is an old French maxim of olive culture: "Make me poor in wood and I will make thee rich in oil." An ancient Latin proverb says: "In plowing about an olive tree it is prayed to be productive; in manuring it is supplicated, but in cutting or pruning it is constrained." There is another reason for special periods and modes of cutting—that is, the times when the harvest is desired. The olive is not in itself either annual, biennial, or triennial, but can be made each by a particular mode of pruning. In the Department of the Maritime Alps the harvest, such as it is, is gathered every two years, that of one year being foregone that that of the following season may be more abundant. The cultivators argue that it will be useless to work to produce only enough for the insects which attack it, while if the year is prolific there will be fruit enough for the friends of the olive as well as its enemies. If the crown of the tree is cut off it will only yield fruit the third season. If, on the contrary, the young branches attached to the old are left, these branches will be filled with other branches the year of the pruning, and the following year will be loaded with fruit. A practical illustration of the effect of cutting off the top and all the principal branches was shown me in the nursery of the Proprietors' Union of Nice. Here, on a tree kept so low that its highest branches were scarcely beyond the reach of the hand, and so thoroughly lopped and pruned that the treatment seemed a cruel mutilation, I saw branches so full of fruit that it scarcely seemed possible that they would hold more. It was only the experiment of the manager, one among innumerable others, and when I asked him if the tree so treated was ever likely to attain the age of several hundred years, like hundreds of others in the adjacent orchards, he only shrugged his shoulders and intimated that he should never live to determine so far-reaching a question. It is nevertheless certain that any method of forcing the tree beyond a certain point is at the expense of its vitality. Whether, considering this fact, it would not be as well, where land is abundant, to force the olive with a view to large crops, and be replacing it from time to time with other trees that were constantly coming into bearing, is one of the questions of the future, so far as California is concerned.

WHEN TO PRUNE.

The art consists entirely, according to M. Peragallo of Nice, in disembarrassing the tree of the parts which produce only feeble branches or shoots, and compelling it to produce new wood. An authority who gives rules for the olive-producing departments about Marseilles prescribes a biennial pruning, and says that those cultivators who have departed from the practice have had reason to regret it. As these cultivators, however, have acted in this manner because they have desired to have a harvest each year, he suggests the division of the orchards into two parts, pruned each succeed-

ing year. For most situations and localities the biennial pruning is preferable, but for some the triennial or even the quadrennial may prove to be the most profitable. The general principle being accepted, the time of the cutting remains to be considered. In regard to young trees just transplanted from the nursery, little remains to be said. If they have been transferred when from 5 to 7 years old, the training is continued some years longer; if at the age of 12 or 14, the tree has already assumed its natural shape, and it must receive thereafter the treatment of the older trees in the neighborhood. It is considered in the south of France, where, owing to the multiplication of industries, the cities have taken many laborers from the country and raised wages, that the harvest time is most suitable for pruning for economical reasons. When the harvest in certain places only consists in picking up the fallen fruit, how are time and labor to be found for pruning trees that are thirty or forty feet high? It is this difficulty united with other reasons that has caused some authorities to recommend that gradual efforts be made to bring the large trees about Nice, Mentou, Grasse and Cannes to the more reasonable height of those of the rest of the south of France or near it.

POINTS TO REMEMBER.

Ancient writers fixed the time for cutting the olive at fifteen days before or forty-five days after the spring equinox. At the present time in the olive regions some favor spring, some autumn, and some for economical reasons, as stated, prefer the end of the harvest. The "end of the harvest" is a very indefinite term, and may mean December or any time afterward till the following May, for in Italy and France the harvest may continue during this period. It must be remembered that the fruit is never produced except on wood one or two years old. If new shoots develop each year without accident, the olive will produce annually, but in very fertile years the sap goes rather to the fruit than to the shoots, and their number is lessened. The cutting should favor the lateral shoots, either in arresting their terminal development or in suppressing each year a number of the fruit-bearing twigs for a yearly harvest. The suppression of a branch is made, as already intimated, above the exterior bud, in order that the development may be centrifugal in an oblique and ascending direction. The opposite bud is at the same time suppressed. In spite of these shortenings made every year, there comes at length a time when the principal branches attain a length which it is not desirable they should pass. They are then cut each year at the same distance from the base. Careful cultivators take care also to repress the shoots which tend constantly to show themselves about the foot of the tree and on the trunk. It should always be borne in mind that the best lighted sprigs are the most fertile and that the horizontal or hanging branches are the most productive.

BENEFIT OF CULTIVATION.

The result of the methods described has been most favorable at Bari, in the southern part of Italy. Here a few years ago the trees were numerous, but left to themselves like trees of the forest. Some French agriculturists came to the rescue. They were badly received at first, but finally succeeded in having the processes of the south of France accepted, especially the rules that prevail for the treatment of the tree in the province about Marseilles. The trees were reduced in size, more or less fruit was gathered each year, and the gathering was done by hand. Mills of the new system were put up, and Bari is to-day the center of a rich and prosperous country, to which the merchants of Bordeaux and Nantes look for their supplies for canning purposes and those of Nice for oils for blending and to eke out the scanty supplies of the country about them.

The olive responds quickly to cultivation, the gentle disturbance of the soil about its roots and the judicious application of fertilizing material of all kinds. The old orchards in the south of France, on account of the failure of the fruit, have grown up in grass and weeds and are generally used for pasture. In Corsica there is little cultivation, because the ground is needed for sheep pasture. In the Riviera, where the diseases prevail that have afflicted the French orchards, the hillsides where the olive grows are generally in grass. So also are those near Pisa, but as you approach Lucca, though the trees show no signs of any very elaborate methods of pruning, the orchards are generally clean, free from grass and weeds at least about the roots of the trees, the earth about which is nearly always found turned up and well manured. So on into Tuscany, on the hills about Florence and on the southern route to Pisa, which does not pass by way of Lucca. The orchards near Florence have not for two or three years been productive, but they are not for that reason allowed to go to decay as in the department of the Maritime Alps.

MANURING THE ORCHARD.

In manuring the olive it is recommended that the fertilizing material, whatever it may be, be placed near the trunk, the radius of the earth with which it is mixed not generally exceeding three feet, in order that it may be distant from the mouths at the extremities which take in the food of the plant. These *radicelles* extend often ten feet or more from the base of the trunk. If it is spread over more surface it is washed away by the rains or dried up by the sun. It is hardly necessary to discuss the kinds of fertilizing material to be used, especially in California, where very little will be employed probably for many years. None the less, however, will the olive render back all that is given to it. In France and Italy are used for the purpose all excrementitious substances, the waste of the olive, bits of leather or horn, feathers, guano, bones, shells, the waste of oil mills, the waste of wood, and where the orchard is near the coast, the waste products of the sea, and the refuse of the olive itself. Certain materials not easily decomposed by the soil are applied in the autumn, those in an advanced state of decomposition in the spring, and as the season of fructification approaches, powerful fertilizers that will act at once. It is recommended by some to apply in small doses, and often, to favor the even and regular development of the fruit and the tree.

In connection with the culture of the olive much curious information has been collected respecting the coldness of winters during the last 650 years. The first of which a particular record has been kept occurred in 1216, and was very destructive in Tuscany. Some of these have astounded with snow, and in some the Rhone has been frozen over to its mouth. In 1782 the olives suffered severely even as far south as Bari. In all regions visited there are a few favored localities which escape the scourge. In the long extent of country between Nice and Genoa many of these limited districts are still known by the age of the trees. Twice every century the olive trees in France and a part of Italy have been nearly all killed to the ground, and every nine years a winter is looked for that is expected to do great damage. In the greater part of California, or in the regions where the olive would be most likely to be cultivated, no such catastrophes are possible, and elaborate calculations need not therefore be made for their recurrence.

ALBERT SUTLIFFE.

THE CULTURE OF THE OLIVE.

Chron 10/24/85

The series of articles on the culture of the olive which the CHRONICLE is giving to the public are designed first to show that the soil and climate of California, since they resemble in many respects those of the countries where its cultivation has for many hundred years been an important industry, favor its general introduction into the State. It is shown that the olive, while it likes a fertile soil, will grow and bear fruit in ground that is almost sterile; and that while it flourishes most luxuriantly in an equable climate, where there are no excesses of heat or cold, it will endure moderate frosts and a light amount of snow. The botanists have been unable to tell what soil is really best adapted, though they indicate it in a general way, and, after having discussed the question in all its bearings, they end by saying that none is absolutely excluded. The conditions under which the olive flourishes must then be satisfied in California, for we have every variety of climate and soil. It is evident, indeed, that as far as even temperature is concerned, the olive would thrive in nearly every part of the State—in the hills and valleys of the Coast Range, from San Diego to Mendocino, and in the foothills of the Sierra, to a certain altitude, in all the counties south of Marysville; while there are millions of acres of gravelly hills and valleys, that now produce only a scanty annual crop of grass and wild flowers, that might become orchards and gardens if planted with olive trees. In this way the question of afforestation, one of the great problems of the future in California, might find a partial solution.

It is shown how the olive may be extended to California by plants brought from other countries by slips from trees already in bearing in the southern countries, or more slowly from the seed. It need not entirely occupy the ground either while coming into bearing or after it is mature, for the intervals can be used either for vineyards or crops of various kinds, or for pasture. So its gradual introduction into different localities may be made in an experimental way and without any serious interruption of existing occupations or industries. The manner in which a nursery is made, and the care with which the trees should be cultivated and trained, are minutely explained, with the proper manner of their transplanting and their management after they come into bearing, after which the reader is shown how in the olive-growing regions the fruit is gathered, crushed in the mills and made into oil, not such as is always placed on American tables, but a delicately colored and fragrant liquid, pleasant equally to the eye and to the taste. Details descriptions are given of mills and machinery, and the processes of refining by filtration, as gathered from the personal observation of the writer of the articles at the great centers of the oil trade—Nice, Lucca and Rome. Details regarding the cost of cultivation and the profits per acre will be treated of hereafter, but from what has been already said it will be seen that the making of olive oil, though it requires great care and delicacy of treatment and manipulation, is a comparatively simple and inexpensive operation. The mill is not costly, neither are the vases that contain the oil while it is waiting to be conveyed to the city merchant. Neither is the process of refining expensive, the tanks when once constructed being of long duration, and the filters, with their appliances, cheap as compared with the machinery of ordinary workshops. Oil is a much more certain product than wine, which is easily injured or ruined by unavoidable accidents. It may change its quality, but a little care prevents any serious deterioration. The final steps of its preparation for market are simple and cost little. There is scarcely any expenditure for labor in a small mill, while the employes of an establishment where oil is sold at wholesale are few in number.

Those who may contemplate planting the olive in California will ask whether it will pay, whether the market is not already overstocked, or whether more cultivators are not going into the business than will find it profitable. In the first of the articles published some details were given in regard to what has been done in Santa Barbara county which should be encouraging. The American producer has now and will probably continue to have a protective duty in his favor. The deterioration of the olive in the south of France, where the trees are several hundred years old, should encourage rather than discourage him, for it means to that extent a diminished competition. But even were all the olive trees in France and in the north of Italy in a healthy condition and in full bearing, there would still be a profitable field for a trade that is rapidly extending. The very adulterations of oil which are constantly being made in Marseilles and other places of export show the constant demand, and prove that there is more good oil wanted by the consumers of the world than can readily be supplied. The American producer will have his market near home, which will be in advantage. By his superior processes he will be able to furnish a better article than that which is being palmed off now on the American public for olive oil, but which is really only a mixture of cotton-seed oil, which is white, tasteless and colorless, with a certain per cent of the genuine article. It is not even always a cotton-seed oil, which is the least objectionable that is used for the purpose, but oil of colza or peanuts, or some one of the many commercial oils whose fabrication has become one of the chief industries at Marseilles.

There is always a good market for the non-edible oils. They are extensively used in the mechanic arts, for washing soaps and for illuminating purposes. There are no oils so good for the making of fine soaps, and the consumption in this respect is illimitable. Whale oil is rapidly ceasing to be an article of commerce, and before many years mineral oils must become scarce and costly, rendering it necessary to seek other illuminating materials, thus furnishing an additional demand for oil from the olive. The wood of the olive tree is of remarkable beauty and durability, and must eventually come into extensive use in America for ornamental or even for the more substantial work of the cabinet-maker, as the ornamental woods of America, which long ago ceased to be disabundant, gradually disappear or attain prices which will almost preclude their use.

The articles on the culture of the olive and the manufacture of the oil will make, when finished, a complete memorandum for the intending producer, which will supply the want of any other work on the subject for many years to come. As it is not probable that many manuals will appear in America giving the same information for the next quarter of a century, or that the knowledge can be obtained so completely from any other source, all those interested in the subject will do well to cut the articles from the CHRONICLE and preserve them in a scrap-book for future use.

OLIVE CULTURE.

Rural Californian 1885

WE give place to the following article from the San Jacinto *Register* because it contains some good points, but must protest against the profits it seems to figure out. An olive grove will not support a family at four years of age, as the tree only begins to bear a safe crop in its sixth year, and no such profit as $1,000 an acre can be realized. We doubt if even Elwood Cooper, of Santa Barbara, famous for olive growing and olive oil, can boast of such a profit, or half of it:

"The San Jacinto valley is admirably adapted to the culture of the olive, and we urge upon our fruit-growers to give the matter proper consideration. The olive is fast coming into prominence throughout Southern California as an article of universal consumption as well as a source of rich income. It grows luxuriantly, and, with proper care, yields a crop from year to year for a century or more. Cuttings taken from trees which are old enough to bear and planted where they are destined to remain, will pay the expenses of cultivating them the third year, and it has been proven that ten acres set out to olives will support a family the fourth year. The enormous profits of olive culture are almost incredible and invite the general cultivation of this beautiful tree and profitable fruit in our valley. Olive trees in San Diego county have produced at a crop from $100 to $150 per tree. Many hundreds of the olive tree are being set out annually in Southern California. Its oil has become an indispensable in medicine and surgery, and is also used in the manufacture of woolen goods. The demand for it is unlimited. It flourishes best on warm land. Trees are now growing in Southern California that produce 2,000 gallons of olives to the acre. From eight to ten gallons of olives will make one gallon of oil, which yields a product of 250 gallons of oil per acre. The oil sells readily at $5 per gallon, which would be an income of $1,200 per acre. The estimated net income would be not less than $1,000 per acre. The commercial importance of the olive can hardly be overestimated."

THE SOUTHERN OLIVE.

Citizen 4/12/85

A Large Source of Profit for the Honest Cotton Planter.

New Orleans Times-Democrat.

Among all the leading industries of the South not one better demonstrates the practical growth of the section during the past semi-decade than that which has cotton seed for its basis. The importance of this material for purposes other than the production of cotton have been tersely and instructively stated in an address by Professor Myers of the Mississippi Agricultural and Mechanical College, in which that learned educator said: "There is no agricultural project known to your speaker that has a value equal to this in almost any place you can put it. You may take its hulls and use them for cattle feed, for fertilizers and for fuel. The kernel you may use as a feedstuff, a fertilizer, or a substance from which oil may be obtained. The oil is one of the best culinary articles, is of extensive use in pharmacy, and of almost unlimited application to the arts. It makes little difference whether you buy it as butter, as lard, as illuminating oil, or olive oil; whether you apply it as a salve, a pomade or a soap, it is good and good everywhere."

The Baltimore *Manufacturers' Record* this week publishes a statistical review of the foundation, progress and status of the cotton-seed oil industry, presenting much interesting and encouraging matter in the connection. Southern readers are already aware that few, if any, industries were ever, in this country, marked with as rapid or successful introduction and growth. The ready market found for the product, and the old view of cotton-seed, which placed it among the waste products of the soil, both tended to secure large returns to the earlier adventurers in the field, and many of them grew rich. This and the other knowledge that American cotton-seed oil was beginning to find its way across the ocean in quantities, to fill the empty and gorgeously labeled olive-oil bottles of France and Spain, and to shed its mellow moonlight radiance through the delicate wickered flasks of Italy, induced many people and much capital to seek the business; and this has gone on increasingly, until now there are so many mills in some districts that competition for cotton-seed has put the commodity up to a price at which there is little profit to the manufacturer. Although there were a few cotton-seed oil-mills in the South as early as 1868 the number had only grown to forty in 1880, employing an aggregate capital stated at $3,501,600. In the States of Florida, Georgia, North and South Carolina, the industry did not exist up to the end of the census year. The figures illustrating the progress of the interest are given as follows:

	1880.		1885.	
	No. of mills.	Capital.	No. of mills.	Capital.
Alabama	2	$ 2,900	18	$ 814,000
Arkansas	4	275,000	12	1,501,250
Florida	...	.....	8	75,000
Georgia	...	.....	16	925,800
Louisiana	13	1,557,500	16	1,840,000
Mississippi	8	470,000	21	1,217,000
N. Carolina	...	.....	9	225,000
S. Carolina	...	.....	7	289,700
Tennessee	9	235,000	17	1,781,500
Texas	4	212,500	27	2,124,000
Virginia	1	3,000	...	.....
Total	40	$3,504,500	146	$10,792,450

Thus it will be seen that in the last five years, at least three of which have been not generally conducive to industrial activity, the cotton-seed milling interest has scored a net increase of 106 establishments and $7,287,950 of capital. We have mentioned above that in some localities there are rather more mills than present production of seed seems to justify, but, on the other hand, there are yet a large number of localities where the industry has not been planted. Not a few millers complain, in common with producers of everything else, of overproduction, but the remedy for any present overproduction in this instance is even now in sight, in the marvelous adaptation of cotton-seed oil to a vast array of new uses. Properly clarified, it is the peer of the best of olive oils, and is being consumed enormously under the name of olive oil. For some years it has been gradually but steadily and remorselessly driving hogs' lard from the kitchens of both American and foreign epicures. There is nothing in the culinary line for which lard is used that refined cotton-seed oil will not accomplish better. Eastern and Northern bakers are adopting it rapidly and with remarkably good results, and indeed it may be safely predicted that cotton-seed oil will displace its porcine rival in the cooking of the nation before another ten years shall go by. Considering its purity, portability, the possibility of keeping it sound and sweet for long periods, and the important fact that it contains about 95 per cent of nutriment, there is every reason why the pork packer should begin to tremble. It is, perhaps, well known to our readers that cotton-seed oil enters largely into the composition of the more expensive soaps, various substitutes for butter, ointments, ready-made salad dressing and so on. In fact, its employment are legion, and there can be little question that its usefulness to the economies of life will be so well appreciated during the approaching years that the growth of the industry in the past will appear as nothing when compared with that of the future. It will be noticed that in relation to the important interest under consideration Louisiana was the "banner" State in 1880, both as to the number of mills (twelve) and in amount of capital employed ($1,557,500.) In the present year we find that two of our neighbors list a larger number of mills, but only one of them (Texas) leads the Pelican State in the item of capital invested. Aside from its general importance, cotton-seed milling has a special interest as being an entirely and distinctively Southern manufacturing industry.

OLIVE CULTURE.

Methods of Harvesting the Fruit.

ANCIENT MODE OF CRUSHING.

Extracting the Oil and Its Treatment—Value of the Wood.

10/2/85

[Correspondence of the CHRONICLE.]

ROME, September 16, 1885.

The olive harvest in prosperous years is a busy season, calling to its aid additional help from the rustics of the neighboring region. It begins in October and sometimes continues till the following spring. It is made in three ways—with the hand, by poling the branches and causing the fruit to fall, or by waiting till it falls in the process of nature and picking it off the ground. The first method, which is best for the trees and fruit, takes longer and costs more, and becomes more difficult as the trees increase in size. Trees kept within reasonable dimensions have many advantages for the cultivator. Two kinds of ladders are used, simple and double, but their use is sometimes difficult, on account of the nature of the ground and the form of the tree. It is therefore evident that a tree that is of moderate height and bushy is more convenient for the harvester. Olives should be gathered when the weather is dry, and especially when there is no moisture on the ground. The quality of the oil depends on the careful sorting of the fruit. Those that have dried on the tree, are spoiled or dead, will be separated, and leaves, twigs and messes should be carefully eliminated. If oil could always be made from olives of the same ripeness the results would be excellent, but this is impossible, and it only remains for the maker of oil to approach as nearly as possible to these conditions. To the American, accustomed to habits of scrupulous neatness, the many accidents to which the olive, before being gathered or during the harvest, may be subjected, must seem unpleasantly numerous. They have been falling constantly during many weeks from the tree, and are ruined by time, weather and the trend of animals. They are often in such a state in the olive-growing regions that it would seem impossible to have even a fair product. There is this fact, however, that is a certain kind of consolation—that if the oil is not edible, there are other uses to which it may be put, though they are not so remunerative. Sometimes, as formerly in Italy, not more than half the crop is saved. The general rule as to time is to gather the fruit before maturity, when it begins to turn brown. The best oil is obtained from green olives, that pressed when it is perfectly ripe being in a measure tasteless. The olives begin to brown in October in Sicily, a little later in Italy and the south of France. Those who favor the late gathering prefer a white, colorless oil, choosing to sacrifice taste to appearance. The late oils do not, besides, keep so well, and most consumers prefer the amber tint of those of Aix, the Riviera and Genoa. Many merchants mix their tasteless oils with those of Bari to give them a stronger flavor. It is a common practice with the merchants and refiners of Nice. It is a mistake to suppose that the late olives give more oil. The product from the same numerical quantity of fruit is about the same, but during months of waiting the number, and consequently the product, is perceptibly reduced. With most cultivators it will be said, in spite of all rules given, that the time will always be regulated to a certain extent by their convenience, they knowing that, though the quality may deteriorate, the crop is not lost, although the next be prejudiced by too long delay.

VENTILATION.

Great care is recommended after the olives are gathered to keep them well ventilated and to prevent their fermenting. It is possible, but does not appear desirable, to keep them a month, if the places where they are stored are clean and well aired. If mills are few it is sometimes necessary to keep them longer, if the mills are numerous the general result is sooner attained. But wholesale processes are no more to be desired in making oil than in the making of wine. When mills are few and the crop heavy the quality is usually inferior. In the olive regions much is lost by the small farmers in good years by having to wait on the mills till their crop is badly damaged.

A word may be said here in regard to the average product in past years in the south of France. Large trees occupying about thirty-three feet square of ground were expected to give from 130 to 150 liters of oil, the liter being something less than a quart. This amount has in certain cases been raised to 500 or 600 liters. Olives of low trunk occupying one-fourth the space were in the habit of giving from thirty to forty liters, or in exceptional years 100 liters. This was supposed to aggregate a mean product of 140 hectoliters, or about 3080 gallons to the hectare, or two and a half acres. This product is varied in various localities, and according to the treatment of the tree. Further details in regard to cost of culture and product of oil to the acre in different regions will be given in future articles. A description of the methods of cultivating the tree and gathering the fruit having been given, it remains to describe the usual mode followed in crushing the olive, in refining the oil, and getting it ready for market.

THE ANCIENT MILLS.

It is not necessary to suppose that the mills used for crushing the olive in Italy and the south of France are the best that have ever been devised, or that they cannot be supplanted by those of American invention. The present cultivators of the olive in these countries have inherited them, as they have their speech, their customs and their agricultural practices. But the kind of mill used is of less importance than the cleanness of the olives when they are brought to it, the cleanness of the mill itself and the neatness of its surroundings and appurtenances. In this respect the average mill in France and Italy—for there are exceptions—leaves much to be desired in respect to these prime qualities of treatment of the fruit and the product. It is on the principle of the old-fashioned cider-mills used not so very long ago in America—an upright wheel running round in a circular trough and crushing the fruit by its weight. The wheel of the cider-mill was made of wood, while those used for the olive are of stone, and they revolve in a sort of basin around a central upright pivot. Usually there is but one millstone, but sometimes there are two, one on either side the upright, and attached by a shaft, which has as its motive power the upright shaft or pivot. In ancient times these mills were turned by slaves or by peasants, as is still the case in Algiers and elsewhere among half-civilized peoples. Later, horses were used, and they are still used where no other motive power better is obtainable. But as the olive is generally cultivated on the slopes of hills or mountains, which furnish abundant water power, a more economical agent is usually available. So the mills are usually situated near the course of a stream or where the water can be easily diverted and brought to them. Sometimes several are placed one below the other, using in succession the water of the same brook or flume. The water-wheels are of the large, overshot kind, now rarely seen in America except in very rural districts, and need very little water. The water so used is not always of the cleanest, and though it does mingle with the olives, it is in danger of affecting the quality of the oil by its odor. The mill itself is also often a building never intended for the use—dark, close, damp, moldy, and having also a tendency to vitiate the quality of the oil. The basin in which the wheels, rollers or millstones circulate is usually of stone, but may be made of iron, which is more easily cleaned. Some prefer water power because the motion is slow and steady and the pulp is taken off without breaking the stone or seed, a most undesirable result, as it gives the oil an unpleasant flavor. Others favor the use of steam as a motive power and a more rapid movement, that the crushing may be sooner finished and that there may be less danger of fermentation. As large a quantity as is desired is put into the basin, the millstones are set in motion, and when the pulp is sufficiently ground the stone is stopped and the paste is removed with a shovel into a receptacle, where it is placed in small sacks (which more resemble baskets) made of cotton, of wool or of Spanish grass. These are called by the French "scourtins." They are but a few inches deep, and the hole by which the paste is placed in them is considerably smaller than the diameter. Their shape is much like that of a lady's work-bag partly drawn together at the top. The paste is equally distributed about in them, a metal plate is placed over each to prevent its receiving the oil of that above it, they are placed one above the other in the press, and when the power is applied they flatten out like so many pancakes. The oil passes out at the sides and the paste remains in the sacks. The old-fashioned press, still generally used, consists of two blocks, the upper of wood, the lower sometimes of iron, and the power is applied by a lever and screw upon the pile of scourtins, which form a column between them.

The liquid from the first pressure bears little resemblance to olive oil. There runs out with it [illegible] remains with it at certain times a percentage of water, which is dark and bitter, and is called by the French *amurque*. The oil gradually rises to the surface, is skimmed off and placed usually in great earthen jars, to await transportation to the city, where it is to be refined. The oil which runs first from the press is the best, and the quality deteriorates in proportion to the pressure applied. This does not, however, prevent the application of the greatest possible power, for all qualities of oil have their use, if not for the table, for the making of soaps and for the arts. If the pression is made with care, the first is kept apart and commands a much higher price when taken to market. The residue after the first pressure is again treated. It is passed again through the mill, with the addition of warm water, and again pressed. There now comes from it a thick oil known as "ressence," which is used in the industrial arts. A third pressure might be applied, but the result would scarcely pay for the trouble.

THE IDEAL MILL.

This describes the olive mill as it now exists and has existed and done its work for many generations with slight amelioration, except in certain localities. The cultivator of the orchards is generally left to his own ways by the merchant and refiner in the city, who takes the product when it is brought in pigskins or goatskins, as it is still in Nice, or in casks as in Italy, to his own door for sale. An enthusiastic writer has, however, described a model mill which should have four millstones, eight presses, all necessary clean accessories, and should have steam as a motive power. It should be on a hillside of sufficient slope to receive the olives in the second story for convenience of handling. Such a mill should have three compartments, and should be nearly 100 feet in length. The central apartment should have the necessary machinery; the one at the right should receive the olives and the one at the left the oils. Olives that are to be kept a while on hand before using should be placed on trays made of tinned iron wire, with sides that will permit of layers three inches deep and ranged in order one above the other. The rooms should be well ventilated, and the openings, if possible, toward the south. By observing these precautions the fruit may be kept some days without losing its quality. If the olives are to be used at once they are simply emptied into a trough connecting with the mill, whence the aqueous product is conveyed into the room on the other side where the oils are kept. When the olives have been for some days on the trays the workmen simply take up the trays, which are made of a size that suits the operator, and empties them into the trough connecting with the mill. If there are four mills there may be a compartment opposite each. The upper opening in the store-room is made large enough to receive the olives easily from the trays. The lower is placed conveniently near the mill which is to crush the fruit. The pressure on the olives after being placed in the mill should be constantly the same, and if two stones are used they should be carefully adjusted to this end. If the lower end of the trough is so arranged as to drop the olives at once in the mill it should have a gate admitting but a few at a time, so that the quantity to be triturated at each time may be carefully adjusted to the pressure of the millstones. The olives are kept under the stones by means of metallic plates. No time is lost. When one quantity is sufficiently crushed the pulp is placed in the scourtins and on the presses, and the mill is at once set again in motion. So speed and economy in the operation are simultaneously attained. If there are mechanical details in this press that prove defective an ingenious American will easily find means to remedy them. For this ideal mill a metallic basin resting on solid masonry is recommended, and the time of trituration a quarter of an hour. If the pulp were finer it would pass through the meshes of the sacs or sometimes with the liquid as it exudes from the press.

THE PRESSES.

If the mill is perfectly constructed the pulp can be removed by an opening without stopping, and received into tin buckets and emptied into the scourtins which are fitted on the platform of the press. The oil begins to exude at once from the weight of the pulp itself. It is the virgin oil. During this operation the mill goes on as usual, for though a possible one, it is, I believe, an ideal one in France and Italy. At least, I saw none either at Nice or Lucca like it. It is, however, admirable in design, and all the rules given for the mechanical treatment of the oil excellent. The oil from the first pressure is received in the same vessel, and care should be taken to keep it remote from all bad odors like those of fermenting pulp, since oil absorbs smells of all kinds easily. A good rule is supposed to be this: Up to a pressure of 10,000 pounds the oil is received in a single vessel; up to 200,000 pounds the oil is automatically directed to another vessel. The oils from these different degrees of pressure should not be mixed. It will be observed that the sacks used to keep the pulp in place in the press must be of great strength to resist the extreme force of hydraulic presses. But it has been found thus far that nothing else will answer the purpose, metallic appliances having been tried and failed. From the ideal mill the old-fashioned wooden presses with lever and screw, still so generally used, are absolutely excluded, from loss of time and lack of power. It is not to be supposed that they will ever be used in America, and need not therefore be taken into consideration. The hydraulic presses used at Nice have four columns, with guides, whose distance apart permits the use of scourtins two and a half feet in diameter. For convenience the number of tanks or vessels can be limited, one receiving the virgin oil of two presses and another that of the second pressure.

THE RECEIVING TANKS.

The tanks are of capacity sufficient for all purposes. They receive the unpleasant-looking liquid that flows from the presses; it remains in them till the oil rises to the surface, sweet to the smell and agreeable to the taste, and is drawn off by cocks or flexible tubes. The methods are not always the same. An efficient system recommended is to have three tanks each at a somewhat lower level. The tin pipe which takes the oil from the press runs to the bottom of the first, and the oil gradually disengaging itself rises to the top of the water. At the point of meeting there is maintained by its own gravity the mouth of another flexible tube, which conveys the oil back through the impure medium into the lower tank, whose side rises a part of the way against the side of the higher. It enters at the bottom, rises to the top and flows out at a depression into the third tank containing a filter. In the second tank is a sort of revolving cylinder placed horizontally which aids in the separation of the impure material. From the third tank it is pumped out from the bottom into the casks used for its exportation. There are other appliances for manipulating the oil and emptying the tanks, but the arrangements cannot be easily understood without a cut, and are not therefore more minutely described. An establishment like this, perfect in all its details, is in a measure ideal, and this approximately complete description is given for the valuable hints and really available suggestions it affords to the American cultivator. Sometimes in the south of France, at Nice and Grasse, a few small proprietors unite and use a mill. Often the mill is entirely independent of the proprietors, and collects its products from them, rendering such return as is mutually agreed on, and its construction, though it may have some modern appliances, is generally after the old style. The olives are crushed by a single millstone running round in a small stone basin; the oil is extracted by an old-fashioned press, placed in large jars standing round against the wall, and taken in due time to the city merchants, who refine it and place it on the market. The filtering is never done in the small mills, but always in the city.

THE FILTERING PROCESS.

The oils of Nice have always had an excellent reputation, though since the partial failure of the crops of the region the merchants have been obliged to extend their area of purchase even as far as Bari, in Southern Italy, and to Sicily. Their establishments are of brick or stone, large, clean and well ventilated. When the oil is brought them in sacks, it is tasted by the

most experienced person in the establishment to determine its quality and future treatment. That his organs of taste may be in perfect condition, he is presumed not to eat to excess, to drink nor to smoke for some hours preceding the tasting process. He is also expected to use a silver spoon, that no foreign savor may mislead him. The oil, its quality and grade having been decided, is emptied into tanks of different sizes excavated below the level of the floor. They are made of brick, lined with fine cement and varnished. These may contain from 2000 to 25,000 pounds, more or less, oil being often mentioned in denominations of weight. The reasons for difference in quality have already been indicated. They are injuries from the fly and worm, carelessness in separating the olives before going to the mill, and a general want of neatness in gathering and expressing the oil. The oil remains in the tanks some weeks, till the impurities which are still numerous have settled. Then it is pumped through long tin pipes into an upper story, where it undergoes the process of filtration. It is only taken out of the tanks as fast as wanted for the market, either to fill special orders or, as is usually the case, to supply a want which is usually understood from long years of development. The residue in the bottom of the tanks is taken out and placed in receptacles to await the demand of the soap-makers. The temperature supposed to be necessary for the preservation of the oil in a perfect state is about 24 degrees centigrade. If the temperature is too high, the windows are opened and an effort made to reduce it. If an unfavorable condition of the oil is noticed, it is changed from one vessel to another, the mere change being beneficial.

THE FILTERS.

The size of the vessels used for filtering is arbitrary, as is also their shape. Those at Nice are generally three or four feet long by two or three wide, and a foot to eighteen inches deep. They are made solidly of wood and lined with tin. In the bottom of each, and carefully distributed over it, is placed a layer of cotton, the form being generally that of batting, and the quantity about twenty pounds, or less, according to the size of the filter or the dimensions of the bottom. It is kept down by a heavy plate of tin, pierced with round holes. The filters are placed in rows, and usually in two tiers, the lower receiving the oil after it has passed through the upper. Having been filtered once, it is passed down again into the large tanks, whence, in due time, it is pumped up to be once more filtered. The packages in which the oil is sent to distant markets depend on the character of the trade. It may be sent off in large or small casks, in strong tin cans, made like ordinary oil cans, but large and without a handle. They are corked, and may hold from one to three or four or more gallons, and when dispatched may have each its separate case of wood, or several small ones may be put in the same case. The long, slender bottles in which oil is imported into America are familiar to every reader. For the trade of Denmark, where oil is consumed in infinitesimal quantities, it is put up at Nice in small bottles, holding only a few ounces. Great care is observed in bottling. The bottles are first thoroughly washed with hot water and dried; they are then washed with oil of the best quality and dried, after which they are ready for use. If these precautions are not taken the oil soon becomes unfit for use.

At Lucca, where the trade is less, though very select, the processes and appliances for making oil are simple. The mills are old-fashioned and the presses also usually of the old styles. At some of them the oil may be refined ready for market before leaving the mill, but at most it is placed when it comes from the presses in earthen jars till it can be conveniently taken to the merchants in the city, whose commercial relations are with all Europe and with New York. The arrangements for refining and filtering are less complicated than at Nice. The tanks below the floor are much the same, though smaller. The filters are shaped like the hopper of a mill, so that the bed of cotton at the bottom is more contracted. The elaborate system of pumps is generally wanting, and when oil is desired to fill an order one filter is placed over another and the oil is ladled by a workman from one of the tanks into the upper one, whence it finds its way through the lower one into the proper receptacle. It will be seen from the example of Lucca, whose oils are perhaps the most famous in the world, that excellent results can be obtained by simple appliances united always with patience, care and neatness and intelligent manipulation.

OLIVES AND OILS OF CENTRAL ITALY.

Of Italian methods at large, which differ in many ways from those of the French, it is not possible to say much in this place. Cultivators of the olive are usually poor, and the manuals published for their instruction yield somewhat to their prejudices and necessities, and try to direct them by showing them how they can most efficiently operate with the means now at their disposal. The cultivation of the olive tree in the vicinity of Rome is an extensive and prosperous industry. The orchards seen by the writer at Albano and at Genzano, about twenty miles from the city, were remarkably handsome, and an imposing feature of a landscape that can hardly be surpassed anywhere in the world. The trees are generally kept of medium size and the branches are numerous, the top being usually cut off at a certain uniform level, giving free admission to the sunlight. So carefully has this cutting off of the top of the upper branches been practiced by some proprietors that in looking off across certain orchards all the trees had been kept at such a uniform altitude that their tops seen together seemed like a floor. The trees are planted in orchards among the vineyards, in rows about the vineyards, or are scattered here and there in rows separate, as the exigencies of time and cultivation have left them. They are nearly all thrifty and the foliage of a rich color. The harvest is usually expected every two years, and this is not the season for it. The age of the trees does not generally exceed fifty years, though there are probably exceptions. In exposed positions the vitality of the tree is shown by the injuries it has suffered, some specimens being noticed that had decayed till only a semicircle of the trunk remained, while others seemed to support a flourishing top on a sort of tripod composed of three narrow strips of the outer shell. The height of the trees does not generally exceed from twenty to thirty feet, and their circumference from one and a half to three or four feet at a height of three or four feet above the ground. At the level of the ground the circumference might sometimes be eight or ten feet. The wood of the tree would evidently have considerable value if one saw fit to use it.

MILLS AND CITY WAREHOUSES.

The mills are simple and the process of filtration among the merchants at Rome practiced only by a few. The motive power used is steam, water or horses. The oil merchants at Rome keep their oil in large jars holding fifty or sixty hectoliters. These jars are made of fine earth, hard baked, and are two or three inches in thickness. The inside is thickly varnished to prevent contact with the sides, which might give a bad taste to the oil. They are made in Tuscany and at Genoa, the former being deemed the best by the merchants at Rome. The great majority of the oils at Rome are not filtered at all, but lose their impure matter by gradual deposit and the various changes at the mill and at the storehouse. The jars are kept carefully covered to exclude foreign matter, especially those that contain the edible oils, which are wrapped about at the top with cloths or sacking. It must be said in favor of the unfiltered edible oils at Rome that they have an excellent taste and a most decided character, and they are so much in favor at the localities of production that they are used altogether on the tables of the Romans themselves. But to supply the demand for clearer, lighter-colored oils a few firms are filtering on a small scale. One or two filters seen by the writer were admirably designed. There was the box-like shape and the tin lining as at Nice, with the tin plate perforated with holes resting on the bed of cotton. But below the cotton were two rows of cylindrical tubes for escape about two or three inches in diameter and the same depth, the bottom of each perforated thickly with small holes. The oil fell into a large box or trough below, whence it was taken to be again passed through the filter if it was thought necessary. The oil refined here was mostly consumed in Tuscany or a few other localities in Italy. It follows that if the oils from the neighborhood of Roma can be made so good without the elaborate mechanical treatment they receive at Nice and Lucca, the fruit that produces them must be of excellent quality. But beyond the careful pruning mentioned as the characteristic of some orchards the trees bear no signs of careful culture. In some cases the ground is slightly disturbed about the roots, but in most cases the orchards are grown in grass which has no appearance of having been lately disturbed. It is evident that only the best oils will admit of the simple methods of Rome, while it is equally true that oils of only fair quality and carelessly manipulated at the mill can be made marketable and even excellent by filtering and judicious blending.

In enumerating the uses of the olive I have not hitherto mentioned the uses to which the wood might be put. It is close grained and very handsome, and is used at Nice, at Sorrento, near Naples, and in other places in Italy for ornamental purposes. Small boxes, canes, mirror frames, brushes, and an innumerable variety of toilet articles are made of it. It can also, when it grows large in the trunk, as it does in central and Southern Italy, and will not fail to do in California, be used for veneering or for entire sets of furniture. There seems to be no limit to the durability of the wood any more than there is limit to the life of the tree. The wood is of light color, and though dark woods are at the moment preferred, light woods have their periods of favor, or indeed for certain tastes are never displeasing or out of fashion. The wood is also excellent for fuel, a use to which it is to be hoped it would not often have to be put in California, though it is a consideration not to be despised.

ALBERT SUTLIFFE.

Early Bearing Olives.

It was unfortunate that the Mission olive was the first kind to be introduced into California. Its slow-growing qualities and its tardiness in bearing make it very undesirable, except in orchards where the owners can afford to wait. On this account there is a popular prejudice against all olives, the general idea being that it takes olives too long to bear. This is an error. We have seen olive trees that bore over 1,000 olives the third year after they were set out, and even as early as the second season had several hundred. When this variety is five or six years old it will have paid for itself many times over, and will then yield a handsome profit to the orchardist. Those who wish to set out an olive orchard should select some stock that will easily take the graft, and wait their time. In a few years they produce scions of fine varieties for grafting. Though we have many fine varieties of olives in this state, none are to be had in great quantity at present. It takes years for the newly imported trees to supply all the cuttings necessary.

OLIVES.

We are pleased to see olive culture receiving increased attention at the hands of our ranchers and fruit growers. While with this as with all other kinds of fruit, much care is requisite to keep the trees in a thrifty condition, free from scale or other pests, from careful observation and inquiry for several years we are satisfied that the olive is not only one of our most profitable, but one of the most stable and reliable fruits thrown upon the market, whether cured for table use or converted into olive oil. The Mission olive is hardy and long lived, and well adapted to Southern California. With care it will become remunerative in five years, and with the continual growth of the tree the amount of fruit is increased, and ten to twenty gallons to a tree is but a moderate product. The increase of olive growth in this portion of San Diego county will soon necessitate a mill for making oil, and while longer in maturing so as to give returns than deciduous fruits, we think that in a consecutive number of years the profit will be greater. An olive orchard of ten acres with 100 trees to the acre and five gallons to the tree will produce 5,000 gallons, and these at 50 cents a gallon for pickled olives, after paying all expenses of cultivation, irrigation and other labor would leave a

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good and remunerative margin. All might not do so well, but this is possible, and with effort attainable, by others as well as by Ellwood Cooper the Santa Barbara olive king of California. Due regard should be had to certain conditions and requirements, to soil, expense, altitude, temperature, method of propagation, irrigation, and adaptability, but with the facts and possibilities in view, we think that this growing enterprise can be made a success, and that olive culture might be increased to great advantage.

A Good Olive Section.

Correspondent San Bernardino Times. 1886

In a recent visit to Lugonia I found one of the finest exhibitions of the growth of the olive tree that I ever saw in Southern California, in point of cleanliness of bark and foliage, in size of fruit and healthy appearance of the trees (now about five years old). I doubt their being equaled in the State. The proprietors, I. N. Hewitt & Son, have been utilizing the fruit by picking and manufacturing into oil. Both modes prove successful; the samples of oil being equal in point of flavor and clearness to any manufactured in the State, and in point of quality far superior to that generally offered to "the trade." Messrs. Hewitt & Son are making large additions to their olive orchard by planting cuttings from the prunings, taking care to use no wood less than one inch in diameter, as by this precaution they insure the growth of a large percentage of the cuttings, as, also, fruiting of the tree in a proportionate less length of time according to age of wood used for a cutting (a point not generally understood except by the experienced in olive culture).

Lugonia has her young orchards of orange, lemon, fig, apricot, peach, apple, pear, quince and pomegranate side by side, and its extensive vineyards of wine and raisin grape, all looking thrifty and fresh this almost Christmas day, Jack Frost not having put in his appearance this year of 1885, and yet I prophesy that the grand success of that already thriving settlement, financially, will be in the cultivation of the olive. Its home is there and no scale insect has ever visited its precinct to sap the life or mar the beauty of fruit or foliage.

Olive Oil.

Santa Barbara Press. *N. C. Record* 1886

Ellwood Cooper contributes the following on the method of clarifying olive oil: "This is a simple process. The most common method is to have a series of five or six boxes, one above the other, each with cotton batting in the bottom; the oil passing the sixth will be beautifully clear and ready for market. I use cylindrical tin vessels, holding about three gallons each, one fitting in the other in tiers of three, with fine wire sieves in the bottom of each. On these sieves I place two or three layers of cotton batting. The oil is passed from one tier to the other until clear. The clarifying can be done by the sunlight also; it can be blenched and made much lighter in color, but not without injuring it. When it is adulterated, artificial heat is necessary in the process. When once heated it loses a part of the nutty flavor and is liable to become rancid when exposed to the air. It should be kept in an ordinarily cool place, not exposed to sunlight or heat, neither should it be handled any more than is absolutely necessary in the filtering and bottling, and should not be shaken after bottling. The mucilage contained in the oil will not separate for a long time after the oil is ready for use, and as it does not injure it, is not, therefore, objectionable. It will sometimes form in the bottles like globules of water, or in films settling to the bottom as sediment, and when shaken will give it a muddy appearance, which with the common prejudice against all table oils that are not perfectly clear, renders it unsalable, as consumers consult more the eye than the taste. The oil is better when new and fresh, and what is gained in the appearance by its remaining a longer time in the tank, is more than lost in its freshness and delicacy of flavor.

"To sum up the cost of the machinery in making of the oil we have as follows: Drier $150; mill, $250; two presses, $500; two tanks, $200; two filters, $50; corker, tin foiler; $50; wooden building, $400; total, $1,600.

"There are different methods of preparing the fruit for pickles. The one adopted in this locality is as follows: The berries are put in fresh water, which should be changed every day, for forty or fifty days, then put in salt brine, not very strong, and after remaining a few days draw off, a second brine substituted, made nearly strong enough to bear an egg. The water should be boiled. Keep the olives well covered with the brine. Great care should be taken in handling the berries not to bruise them. The easiest plan when picking from the trees is to drop them in water. They are usually picked when they begin to turn a purplish color."

"Another method, copied from the *Pacific Rural Press:* Pick the olives as soon as they begin to show a reddish cast and rinse them in clean water. Then take one ounce of concentrated lye and dissolve it in water; one-third of this solution put in water enough to cover one gallon of olives. After a day or two pour off this water and add another lye of the same strength. This may be repeated once more, as five or six days are consumed in taking out the bitterness with the lye. The lye should be used until the fruit suits the taste. The olives are put in pure, fresh water until the alkali is well removed. This can be ascertained by the color of the water and by the taste. In salting use the best Liverpool 'coarse fine' salt, the amount being about ten pounds to the barrel of olives, water enough being used to cover the fruit. Barrel up tight and keep in a cool place. All the process should be conducted in the dark, as the light is apt to injure the color.

"Still another method is copied from the work of Professor A. Coutance and translated as follows: Take the green olives and after having bruised or broken them slightly, soak in water for nine days, changing the water each day. At the end of this time they will have lost their bitter taste and then can be put in brine. Hot water acts more rapidly.

"The celebrated olives pickled after the manner of Picholini are put under a treatment of lye made more alkaline by the addition of quicklime. After leaving the olives a certain length of time, until the pulp separates easily from the seed, a condition which depends upon the strength of the lye and the size of the olives; they are then washed and put in strong brine. In the South they flavor with fennel and coriander; sometimes they substitute in place of the seed a small piece of anchovy and a caper. In the latter case the olives should be in oil."

Facts About Olives.

Virginia Enterprise. 1886

Italy has 2,225,000 acres planted in olives, and her annual production of olive oil is estimated at 90,000,000 gallons. Crete alone produces 13,000,000 gallons of olive oil annually, and the little island of Mitylene 2,500,000 gallons.

Over half a million gallons of olive oil is annually imported into the United States. The following is an official statement:

Year ending June 30.	Gallons.	Value.
1883	536,749	$625,154
1884	610,429	672,552
1885	493,028	547,017

The value of the annual exports of olive oil from Turkey is $15,000,000, and of soap made of olive oil $9,000,000.

In the three months ending September 30th, 1884, the imports of olive oil by the United States amounted to 106,454 gallons, valued at $132,285. For the corresponding period of 1885 the imports reached 148,721 gallons, valued at $156,653. Most, if not all, of this oil is adulterated with cotton seed or lard oil. These figures are taken direct from the last report of the Washington Bureau of Statistics. The duty on olive oil is a dollar a gallon.

Dr. Agard, who has a young forty-acre orchard of olives at Auburn, Placer county, recently visited the famous olive orchard and oil works of Ellwood Cooper, at Santa Barbara. This establishment makes olive oil of wide celebrity, for which the demand far exceeds the supply. The market is at present bare of Cooper's brand, and none can be had until the new stock comes in next March. Dr. Agard asked a dealer in Santa Barbara, who has the handling of Cooper's oil, to book an order for a case to be delivered next March, but the dealer said it was doubtful if the order could be filled, owing to the large number of advance orders. Just as good oil can be made anywhere in the Sacramento Valley and its foothills. Cooper's brings $13.50 a dozen bottles—about five of which make a gallon. —*Bee.*

The Picholine Olive.

San Francisco Merchant. 1886

Being recently on a visit at the Flamant Vineyards near Napa, we interviewed Adolphe Flamant, the proprietor, relative to his experience with the olive tree in California, eliciting the following valuable information: Mr. Flamant selected the Picholine variety alone for his plantation of 6000 trees, because, as he comes from the home of the Picholine, he knows that, while it gives a very good oil, the fruit is the very best for pickling. In support of his opinion we quote the following extracts from recognized authorities:

M. A. Du Breuil—Oil very good; the fruit is the best among those for pickling; the tree is very productive, it grows best in the neighborhood of the sea or where it can feel the effects of the sea breeze. It accommodates itself to any situation, whether facing north, south, east or west, and resists the greatest cold weather.

Dr. John I. Bleasdale—It yields the most celebrated pickled olives. This variety is not delicate in its choice of soil and climate. The best olive for pickling is the Picholine (*Olea oblonga*). In the south of France it is gathered in October, just before the fruit has commenced to turn brown. The finest are selected and placed in a weak solution of soda, to which lime has been added. After remaining in this solution about ten hours, or until the pulp can be readily detached from the kernel, they are removed and placed in cold water, which is daily changed for a week. This process removes the tannin from the unripe fruit. When they cease to be bitter, they are bottled in brine, which is usually made aromatic with coriander or fennel.

F. Pohndorff—The Picholine, known as the fine sweet-pickling-fruit-bearing tree. This tree is little damaged by insects. In France the Picholine is chiefly used for pickling, while in Spain it is utilized for oil purposes. This tree resists in cold regions up to 14 degrees centigrade below zero.

Mr. Flamant's trees are planted out on the hillsides chiefly facing the southwest. A few are now running in their third season of plantation and the remainder in their second. Since being set out some have attained a height of over three feet, with from six to fifteen lateral branches measuring from twelve to eighteen inches each. Last year there

were three blossoms seen on one of the trees. While in a few places, where there is a little deep soil, they grow luxuriantly, they seem to grow best on an average on the very top of the hills where there is comparatively little soil. They stood splendidly the long spell of dry weather which we experienced last summer, and not one in every two hundred died from that cause. They suffered from the grasshopper plague, which played such great havoc in so many places last year in California, but two-thirds of those that were so attacked, and that appeared to be dead during the summer, started again in the fall and are now growing nicely. Mr. Flamant claims, after his recent experience, that we need no more fear the grasshopper. Since the introduction of the newly discovered arsenic remedy he can keep the grasshoppers out of all mischief.

The Olive.

Napa Reg. 12/7/86

I have been asked here to-night if the olive is a profitable tree to cultivate. Is it profitable? Just listen for a moment: Italy is one of the great olive producing countries. Its territorial extent is about 114,000 square miles, nearly one third less than California, which has 156,591 square miles. Italy is situated between the 38 and 46 degrees north latitude, and has a population now of about 28,000,000 people. In 1879, 2,224,000 acres of land in Italy were used in the cultivation of the olive alone, which produced in oil over 89,438,000 gallons, besides pickles and other uses to which the olive was applied, the whole bringing Italy an annual income of about $40,000,000. Are olives profitable? [Laughter and applause.] California is the home designed by nature for the olive, and the possibilities in this direction are boundless. The olive tree will stand great drought, will endure neglect, but prospers by care, grows among rocks, and often on poor land, will flourish on fifteen or twenty inches of rain a year, prospers well along fences and on avenues and other uncultivated places, if the soil is deep, bears but one good crop in two years, is a beautiful evergreen tree, can be propagated from cuttings, produces well in from six to ten years, lives to a great age, and increases in product until it is twenty to thirty years old. Its true home is near the seacoast.—*M. M. Estee's Speech at Citrus Fair.*

FACTS ABOUT THE OLIVE.

Figures Showing its Great Commercial Value Throughout the World.

Petaluma 1/30/86

Italy has 2,225,000 acres planted in olives, and her annual production of olive oil is estimated at 90,000,000 gallons. Crete alone produces 13,000,000 gallons of olive oil annually, and the little island of Mitylene 2,500,000 gallons.

Over half a million gallons of olive oil is annually imported into the United States. The following is an official statement:

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In the three months ending September 30th, 1884, the imports of olive oil by the United States amounted to 106,454 gallons, valued at $132,285. For the corresponding period of 1885 the imports reached 148,721 gallons, valued at $156,653. Most, if not all, of this oil is adulterated with cotton seed or lard oil. These figures are taken direct from the last report of the Washington Bureau of Statistics. The duty on olive oil is a dollar a gallon.

Dr. Agard, who has a young forty-acre orchard of olives at Auburn, Placer county, recently visited the famous olive orchard and oil works of Ellwood Cooper, at Santa Barbara. This establishment makes olive oil of wide celebrity, for which the demand far exceeds the supply. The market is at present bare of Cooper's brand, and none can be had until the new stock comes in next March. Dr. Agard asked a dealer in Santa Barbara, who has the handling of Cooper's oil, to book an order for a case to be delivered next March, but the dealer said it was doubtful if the order could be filled, owing to the large number of advance orders. Just as good oil can be made anywhere in the Sacramento Valley and its foothills. Cooper's brings $13.50 a dozen bottles—about five of which make a gallon.—*Bee.*

FACTS ABOUT THE OLIVE.

Napa Reg. 2/5/86

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Olives and Nuts.

Lakeport Democrat 2/5/86

In reporting the Cirtus Fair at Sacramento and commenting on the same, we think the various journals of the coast have overlooked the great importance of the olive and nut-bearing trees. Tis true that too much attention cannot be called to the cultivation of the orange and the lemon in Northern California, but at the same time there are vast sections of land that will produce good olives that will not grow good oranges and lemons. All through the foothills there is a good deal of land that can be profitably planted to the almond, the walnut and the pecan as well as the Italian chestnut and the beechnut.

While we have great faith in the future of Northern California as a citrus region it is not well to lose sight of the fact that many other valuable semi-topical trees can be grown. We have on a dozen different occasions called attention to the fact that the camphor tree would thrive here, and that possibly it might pay to grow the camphor. Other trees might be named such as the lequot and the Japanese persimmon, that have not received their share of attention, but it may be that the fine exhibit of oranges and lemons was all that our esteemed cotemporaries could stand at one time, and that it will take a second or even a third exhibit to bring these other useful productions into general notice.—*Oroville Register.*

California Olive Oil.

San Francisco Journal of Commerce. 1/31/86

Among the noticeable exhibits at the Citrus Fair is a new brand of pure olive oil from the Quito Olive Farm at Gubserville, near Santa Clara. The orchard consists of eighty acres, thirty of which are now in bearing, and the Quito olive oil is now being put on the market for the first time. Those who are best informed state that there is no really pure olive oil imported. A gentleman who speaks Italian, and who is now traveling in Italy and carefully investigating the matter, says in a recent letter that he has been told by friends in Italy that there is no pure olive oil in Florence. Cotton seed is put in with the olives and the two are crushed and manipulated together, and the result is a compound of olive and cotton seed oil. It is now well know that stuff is sold in America for olive oil which consists almost wholly of cotton seed oil. What is the use of importing and paying a high price for an adulterated article, when a perfectly pure and wholesale olive oil is produced less than fifty miles from this city? The oil produced at the Quito olive farm is guaranteed to be absolutely pure. The proprietors wish to establish the reputation of the new brand, and to accomplish this they propose to make and sell a strictly pure and first-class oil. They invite criticism and analysis. Mr. Cooper has demonstrated that California can produce an olive oil superior to any produced anywhere else in the world. The olive is a very hardy tree, will stand considerable cold and even snow, and can be grown in most sections of the State. Pure olive oil is a most valuable article of food. In Spain and Italy among the peasants it takes the place of both meat and butter, and is found to be palatable and nutritious, and a good substitue for meats of all kinds. It is extensively used by the best physicians, both as an emollient and as an ingredient in various pharmaceutical preparations. As it is of the first importance when used medicinally to have only a pure article and as all imported olive oils are adulterated, physicians and druggists will find it to their interest to purchase the Quito oil, which is guaranteed strictly pure. There is no reason why California should not supply the whole United States with a pure, wholesome article of olive oil, to the exclusion of the inferior and adulterated article of home or foreign manufacture. As it becomes known and appreciated its consumption ought to be indefinitely increased. The Quito oil retails at $1 25 per bottle for the best and 85 cents for another brand, both equally pure.

This second brand is much better than the imported oil which sells at the same price, 85 cents, but contains only about 10 cents worth of olive oil. As Mr. Cooper's product for last season is all sold, and nearly all the output of his coming crop is already contracted for in advance, doubtless the Quito oil, which is said by the best judges to be as good as the Cooper oil, will soon be in great demand. The Quito olive oil farm employs a skilled and experienced superintendent, and the utmost care and cleanliness are observed in every step of the process of manufacture. The olives are first dried on bricks—after the Italian method—in order to absorb the moisture; thus increasing the density and improving the flavor of the oil. The Quito olive oil took the first prize at the Citrus Fair in Sacramento, and can be seen at the Citrus Fair now in progress at the Mechanics' Pavilion. A. T. Marvin of 516 California street is agent. Besides the Quito olive oil he also sells rooted olive trees, two and three years old, and is

prepared to furnish applicants with full instructions as to the best methods of setting out and cultivating olive orchards. Olive culture is one of the most hopeful of our home industries, and promises to become a source of great wealth to the State. The United States import annually over 500,000 gallons of olive oil, valued at about $600,000. Italy produces annually about 90,000,000 gallons, worth in round numbers $100,000,000. Why cannot California do equally as well?

THE OLIVE.—California is the home designed by nature for the olive, and the possibilities in this direction are boundless. The olive tree will stand great drought, will endure neglect, but prospers by care, grows among rocks, and often on poor land, will flourish on 15 or 20 inches of rain a year, prospers well along fences and on avenues and other uncultivated places, if the soil is deep, bears but one good crop in two years, is a beautiful evergreen tree, can be propagated from cuttings, produces well in from six to ten years, lives to a great age, and increases in product until it is twenty or thirty years old.

Or. Reg. 2/11/86

CALIFORNIA OLIVE OIL.

A New Brand Produced in Santa Clara County.

3/4/86

J. Journal of Comm.

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This second brand is much better than the imported oil which sells at the same price, 85 cents, but contains only about 10 cents worth of olive oil. As Mr. Cooper's product for last season is all sold, and nearly all the output of his coming crop is already contracted for in advance, doubtless the Quito Oil which is said by the best judges to be as good as the Cooper Oil will soon be in great demand. The Quito Olive Oil Farm employes a skilled and experienced superintendent, and the utmost care and cleanliness are observed in every step of the process of manufacture. The olives are first dried on bricks—after the Italian method—in order to absorb the moisture; thus increasing the density and improving the flavor of the oil. The Quito Olive O[illegible]ook the first prize at the Citrus Fair in Sacra[illegible]o, and can be seen at the Citrus Fair now in p[illegible]s at the Mechanics' Pavilion. A. T. Marvin of 513 California street is agent. Besides the Quito Olive Oil, he also sells rooted olive trees, two and three years old, and is prepared to furnish applicants with full instructions as to best methods of setting out and cultivating olive orchards. Olive culture is one of the most hopeful of our home industries, and promises to become a source of great wealth to the State. The United States imports annually over 500,000 gallons of olive oil valued at about $600,000. Italy produces annually about 90,000,000 gallons, worth in round numbers $100,000,000. Why can not California do equally as well?

Success With Olives.

V. Courier 3/2/86

There is not a single place in this county from which a failure in growing an olive tree has been reported after the tree is well started in orchard. Everywhere they do remarkably well. J. O. Loomis, at Pino, has a row that were set out in an old hard roadway, and they have been cultivated but little, if any, and yet they are very fine young trees. J. P. Whitney has 12 or 15 that were planted some years ago as a curiosity and they are all large, thif y trees. P. W. Butler has 200 that he planted four years ago and they are among the finest trees on his ranch. In no case are they troubled with any kind of pest. It does not seem as if it needed further proof that this is one of the best sections for producing olives. The only difficulty is in propagating the young trees, but nurserymen furnish trees of the Picholine and Mission varieties for from $25 to $50 a hundred, which is as cheap as many other kinds of fruit trees, and the Mission will be a good stock on which to graft other varieties if any better ones shall be brought from Europe. In any case the Mission produces a good olive both for pickles and oil. The Mission oil now brings the highest price of any made in the State. Olive culture is sure to be a prominent and one of the most profitable industries in this part of California.—[Placer Republican.

Plant Olive Trees.

Call 3/6/86

The Quito olive produced in this county took the first premium at the late citrus fair in Sacramento city. The orchard from which this was produced contains eighty acres, thirty of which are now in bearing, and is situated about seven miles southwesterly from San José, at Gubserville. It has been demonstrated that a better quality of sweet oil can be produced here than anywhere else in the world. This is an industry which should have been entered upon in this State long ago. It would have been only that other fruit-producing trees produce quicker returns. It takes longer for an olive orchard to come into full bearing than most other fruits, but not nearly so long as in Europe. The olive tree is a very hardy, handsome and long-lived tree. From the very fact it takes longer for returns from it than from other fruits, this industry is not likely to be overdone. In planting a peach orchard for instance, it would be wise to plant the peaches farther apart and intersperse them with olive trees. In a few years the peach trees will have passed their bearing days and then they can be removed and the same land will by that time have a paying crop of olives. The Quito oil brings the largest price in the market because it is the best article. By all means let California supply the United States with olive oil.

EARLY BEARING OLIVES.

Pac. Rural 3/5/86

GUSTAV EISEN, in the Fresno *Republican*, says: "It was unfortunate that the Mission olive was the first kind to be introduced into California. Its slow-growing qualities and its tardiness in bearing make it very undesirable, except in orchards where the owners can afford to wait. On this account there is a popular prejudice against all olives, the general idea being that it takes olives too long to bear. This is an error. We have seen olive trees that bore over 1,000 olives the third year after they were set out, and even as early as the second season had several hundred. When this variety is five or six years old it will have paid for itself many times over, and will then yield a handsome profit to the orchardist. Those who wish to set out an olive orchard should select some stock that will easily take the graft, and wait their time. In a few years they produce scions of fine varieties for grafting. Though we have many fine varieties of olives in this State, none are to be had in great quantity at present. It takes years for the newly-imported trees to supply all the cuttings necessary."

The Olive.

Press 3/6/86

Fruit growers in the central part of the state are turning their attention to the olive. This is a sensible move. This fruit is more profitable than wheat, and the ranchers of the state are beginning to realize that fact. The Auburn *Republican* says: "The Quito olive oil, which took the first prize at the citrus fair, is described as having been pressed from olives first dried on warm bricks. Mr. Gould prepared his olives for the press by drying them on the trays of an ordinary raisin dryer with equally good results. The only object of the process is to get rid of the water in the berries, while at the same time the oil collects together in little globules and makes the pressing process comparatively easy. Drying them on bricks is the Italian method, but there seems to be no reason why an ordinary fruit dryer is not equally as good."

Success With Olives.

Acad. 3/24/86

[illegible] Republican.

There is not a single place in this county from which a failure in growing an olive tree has been reported after the tree is once well started in orchard. Everywhere they do remarkably well. J. O. Loomis, at Pino, has a row that were set out in an old hard roadway, and they have b[illegible] cultivated but little, if any, and yet they are very fine young trees. J. P. Whitney has twelve or fifteen that were planted some years ago as a curiosity and they are all large, thrifty trees. P. W. Butler has 200 that he planted four years ago and they are among the finest trees on his ranch. In no case are they troubled with any kind of pest. It does not seem as if it needed further proof that this is one of the best sections for producing olives. The only difficulty is in propagating the young trees, but nurserymen furnish trees of the Picholine and Mission varieties for from $25 to $50 a hundred, which is as cheap as many other kinds of fruit trees, and the Mission will be a good stock on which to graft other varieties if any better ones shall be brought from Europe. In any case the Mission produces a good olive both for pickles and oil. The Mission oil now brings the highest price of any made in the State. Olive culture is sure to be a prominent and one of the most profitable industries in this part of California.

BLACK KNOT ON GRAPES.

Several vineyardists are now using paint and coaloil mixed as a remedy for this disease. The black knot is carefully pared off or dug out and the mixture put on. This remedy is said to be both cheap and effective. 3/23/86

OLIVE CULTURE.

What Is Being Done in Auburn—A Glance at Dr. Agard's Orchard.

We paid a brief visit to Dr. Agard's olive ranch the other day, and we found much to interest us and also the general public in the work that is there being pushed forward. He has several men employed plowing, planting, building fence, etc. His place, bought about eighteen months ago, comprises some forty-six acres, part of which, including a very eligible building spot, shaded and protected by pines, is on a very sightly knoll overlooking on one side the railroad, the town, and the Sacramento Valley, while on the other it commands a beautiful view of the eternal snow-capped Sierras in the distance. During the past year the Doctor has planted about 1000 olive trees, some 300 peach trees, and from 500 to 600 French and Hungarian prunes—mostly the former. He has also planted a number of nut trees, pecans, filberts, and several varieties of the *præparturiens* English walnuts. He intends as soon as possible to put in an assortment of plums—Coe's Golden Drop, Columbia, Washington, and a new, rare, and excellent variety known as Kelsey's Japanese plum. He is also planting a cherry orchard, about 150 trees of which are already set out. Around his house, which, though snug and commodious enough for any bachelor, is destined soon to give way to a larger and more elegant structure on the knoll above mentioned, he has a nice orchard of pears, apples, etc. The ranch is irrigated by means of a huge cistern which holds 12,000 or 13,000 gallons of water placed high enough up to command every rod of the ground. The water is obtained from a pool, distant a few hundred yards. From there it is pumped up into the tank by the aid of a steam-engine and pump which occupy covered quarters between the pool and the tank.

But the one thing of paramount interest to fruit-growers and the general public is the experiment of olive culture in this locality and altitude. The doctor regards success as assured and with very excellent reasons for his belief. Mr. L. A. Gould whose place is about two miles north of Auburn, has demonstrated the fact practically this Winter by manufacturing oil from trees grown on his place. The oil is pronounced by connoisseurs to be strictly first-class in all respects. The Doctor's trees are yet too young to bear, having been planted, as we said already, only a year ago. But they are looking extremely thrifty. They were chiefly from root-cuttings and were for the most part three years old. Only about six per cent have been lost by transplanting, the usual average of loss being something like ten per cent.

We have proclaimed in season and out of season, that for the hills olives were the thing. On a 40 acre tract purchased of J. W. Gates, J. M. 'Brooks 'the tree man' and Geo. Cary of Oakland, will plant twenty acres in Picoline olives. A nursery devoted to specialties will also be established. The land is a portion of the choicest property of Mr. Gates, and is capable of being irrigated. Strawberries and small fruits are to receive a good deal of attention.

OLIVE CULTURE.

MANY of our enterprising interior exchanges are making continuous efforts to interest and encourage the people of California in olive culture. Very gratifying success has been obtained by many, in different parts of the State, who have devoted themselves to this industry. There are many things said in its favor. The olive tree needs but little care while growing, and can be raised from a cutting. Almost any farmer has some poor land, which he considers to be almost worthless. This, set out in olive trees, would, in a few years, yield a fair return, and it would help to give variety in the production of a place. "Putting all the eggs in one nest," or using all one's land for some particular crop, is not generally the wisest course to follow. The farmer who succeeds best, in the long run, is he who has more than one crop to depend upon. Then, failure in any particular line, does not hopelessly cripple him. Hence, a combination, as vines, fruit and olives, with the cereals, is generally advisable.—*San Bernardino Index.*

OLIVE OIL.—We have had the pleasure of testing a sample of olive oil made at the ranch of C. C. McIver, at Mission San Jose, in Alameda county. It is a fine product, clear and fine flavored, and having the true hue. Mr. McIver now owns the fine ranches formerly owned by Messrs. Palmer and Cook. He is improving them in many enterprising ways. The Mission has improved wonderfully during the last few years. We always regarded it as one of the most delightful locations in the State.

A CALIFORNIA OLIVE ORCHARD.

About 10 years ago Ellwood Cooper gave up his business in New York and came out to California in search of health. The climate proving most beneficial, he bought 2,500 acres of wild land, including a fine canyon through which a pretty stream finds its way from the neighboring mountains. Driving in at the gate we passed through half a mile of walnut orchards, the trees being in perfect order and promising an abundant yield. This tree thrives well on the coast and is very profitable, but as it does not bear well until 10 years old, a good deal of patience must be exercised. The great work of this enlightened and cultivated agriculturist has been the introduction of the olive tree, which Mr. Cooper finds the most profitable of all his fruits, and to which he now devotes his chief attention. In this climate the olive flourishes even better than in Italy, and in seven years begins to give an abundant yield. The berries are gathered in December and after being crushed by great rollers are pressed until every drop of oil is extracted. The oil is then left in immense casks for four months, during which the dark and bitter dregs sink to the bottom. From the upper part of the casks or vats the oil, now clear as crystal, is drawn off and bottled for sale. Perhaps no article of domestic consumption is more adulterated than olive oil, and very much that is used in this country has not a drop of the juice of the olive tree. When in New Orleans, not long since, I visited a mill for crushing cotton seed, and found that nearly all the oil went to Italy. Immense quantities of lard oil are put up in this country for the same market, and curiously enough the American peanut is being sent in the same direction. There is too much reason to believe that these oils come back to us in the well-known flasks, probably wholesome enough and pleasant to the taste, but still not olive oil. The rapidly extending knowledge of this Italian deception is causing a growing demand for American olive oil, and I was not surprised to find that Elwood Cooper had already sold in New York and Chicago his entire season's yield of 24,000 bottes. California is a big State, and we shall soon be independent of the Italians, even if it spoils the markets for cotton seed and lard. The peanuts we can leave to the rising generation. —[*Denver Christian Hour.*

"The Anglo-Teuton and the Olive."

In the last number of the *Southern California Practitioner* Dr. J. P. Widney has a paper on the olive of so much interest that it seems worthy of a wide circulation. Olive-growing is destined to become a matter of great importance to Southern California. The paper is reprodnced as follows: In an article entitled "The Anglo-Teuton in a New Home," allusion was made to the olive as one of the food-plants of the new climate belt within which he is now beginning to make his abode. Its dietic value is by him not as yet fully appreciated.

Fat as a food is essential in some form to the physical well-being of man, and nature seems to have wisely provided for each climatic zone a supply of that especial form of fatty material best suited to it. The Esquimaux finds in the blubber of the walrus or the seal the strong animal fat, rich in hydro-carbons, which he instinctively craves, because of the system's need of a strong heat-producing diet to enable him to keep up bodily temperature, and thus do battle with the rigorous Arctic colds.

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The animal fats, if used to any great extent in the warmer climates, seem to develop disease in the human organism. It took the English colony of India a century to find out that the strong meat diet of the North used in the climate of India invariably produced a diseased liver and death. Now that they, learning by experience, are adopting the light vegetable diet of the natives, they endure the climate much better.

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One who has never personally tested the olive as an article of food can hardly understand its value. The writer has frequently for days at a time in warm weather almost lived upon bread and olives, feeling as well nourished as upon a meat diet.

The culture of the olive seems to be almost coeval with the races of the Orient. Under the shade of its fruit-ladened branches rested the old patriarchs in the old tent of Syria. It accompanied the Græco-Latin in his migration along the shores of the Mediterranean. It passed with the Roman arms to Gaul and Hyspañia, and crossing the ocean with Conquistadors adde its pale green foliage to the verdure of every old mission orchard from Vera Cruz to Monterey.

It is no chance or mere sentiment that thus made it like the vine and the corn-producing plants the companion of race migration.

Whenever we find a plant thus accompanying man for thousands of years in his migrations across oceans and continents it is because of a positive utility or food value which it is proven to possess for the human race.

Somewhat of the extent of that economic food value as estimated by one nation may be surmised from the fact that in Italy the number of olive trees under coltivation is one hundred millions, covering one million acres.

It is a safe rule to follow, that the foods which a people have adopted after inhabiting for generations any especial belt of climate are the foods best suited to the requirements of the system in that climate; that back of it is the working of some general law.

If then, for thousands of years the races dwelling within this climate belt which the Anglo-Tenton is now, for the first time in his race history, making his home, have thus proven the economic food value of the olive, and its especial adaptability to the dietic demands of the climate, he, if he would accommodate himself to his new climatic surroundings, would do well to learn a lesson from their experience, and to test in his own dietary the olive. And indeed we can already see in the rapidly multiplying olive orchards and the long rows of barreled olives at the grocers indications that the lesson is not unheeded.

But what will be the physical effect upon the meat-eating Anglo-Tenton of the isothermal line of 50 degrees as he moves southward to take up his abode in the isothermal belt of 60 degrees, and abandons the animal diet of his fathers for the olive of the Græco-Latin?

VINEYARD, ORCHARD AND FARM.

A Department for Agriculturists of Northern California.

This department is intended as a means of communication for the agriculturists of Northern California. There is nothing which se tends to make a farming community successful and prosperous as interchange of ideas, and we trust our subscribers will favor us with such statements of their experiments, successful and failures, and general facts as they think will prove of interest.

Sac Bee 5/8/86

The "common Mission" olive, brought to California by the Spanish priests, has been identified as one of the best varieties cultivated in Spain—the "corniddbra." It is the olive from which Elwood Cooper, of Santa Barbara, makes his celebrated oil. George A. Cowles, of El Cajon Valley, San Diego, enjoys a reputation for the excellence of his pickled olives. Recently a member of the BEE staff wrote to him for information as to the variety he cultivates, and received the following reply: "The olives on which I have gained my reputation are the Mission. Although I have imported several varieties, I have found none, thus far, equal to the Mission." The Mission variety has thus been shown to be superior for both oil and pickles—an advantage possessed by few other varieties. It is doubtful whether a better variety, for general purposes, or one better suited to the California climate, can be found anywhere in the world.

GREEN MANURING.

By the term green manuring is meant the practice of growing and plowing under crops in the green state, to enrich the soil. A soil is said to be productive in proportion to the amount of humus it contains. Humus is formed by the decomposition of animal and vegetable matter. If a heavy growth of vegetation, grain, clover or weeds is plowed under, a certain amount of plant food is returned to the soil. It would be very natural to suppose that the decayed stem of one plant would contain good acceptable food for another. If plowing under has been done on a yellow clay soil, six months afterwards, by digging down through the furrow, a dark stratum will be found where the weeds fell and rotted. Repeated plowing under of green crops will fill the ground with humus, and restore the worst worn out land to fertility.

One objection to this method of fertilizing is the length of time required as several years must elapse before many crops could be added to the soil. It is very important then to adopt the rotation that will admit of the greatest number of crops in the shortest time. Some plants add more fertility to the soil than others, but these are not always the ones that are easiest grown, especially on poor ground, and it is very important to get a good growth to plow under. Rye will grow where no other grain will, and yield a fair crop. Another advantage is its growth in Winter. In the latitude of Southern Illinois rye may be sown in November and plowed under when fully headed out in May, and the ground sowed immediately with southern cow peas and plowed under in July or August. Another sowing of peas will make a partial crop by the first frost, when it can be turned under and the ground again seeded to rye. This makes three crops plowed under in one year.—*American Agriculturist.*

The Olive for Food.

Fat as a food is essential in some form to the physical well-being of man, and nature seems to have wisely provided for each climatic zone a supply of that especial form of fatty material best suited to it. The Esquimau finds in the blubber of the walrus or the seal the strong animal fat, rich in hydrocarbons, which he instively craves, because of the system's need of a strong heat-producing diet to enable him to keep up bodily temperature, and thus do battle with the rigorous Arctic colds.

The animal life of the polar region is marked by a tendency to the abundant formation of fat. In the warmer regions of the world, on the contrary, animals possess less fat-producing and fat-storing power, and men lose their appetite for animal foods. Yet even in the tropics fat in some form is a necessity in the food of man. Corn and wine and oil were ever symbols of earthly well-being, not only in the promised land of the old Hebrew, but to all the races clustering about the shores of the Mediterranean. And it is the vegetable oils that have replaced the grosser animal fats of the more northern climates as being better adapted in their dietetic uses to the higher temperature.

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Fresno Rep 5/8/86

THE MISSION OLIVE.

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to better advantage than anything else. Olive roots are long, run down deep, and are not easily susceptible to changes produced by surface cultivation or by weather. He thinks he may be able to procure a better olive than we now have; expects to investigate European orchards with this in view, and if he can find an olive combining quality and quantity in a high degree, will procure it for trial here. The ordinary Mission is the best variety of olive grown here now.

The fig requires but little cultivation, and we can produce a larger and finer fig, and one that can be afforded cheaper to the people of the United States, than those raised in Italy or any other of the old countries. Figs are recommended as a wholesome diet, and the products of our fig orchards properly handled should become very popular in Eastern markets. They can be dried and kept long. Many fruits are quite perishable, and must be disposed of soon after maturity, even at a sacrifice. The keeping qualities of any product is with cultivators an important consideration.

Mr. Portal thinks both the olive and the fig have been too much neglected by our people and is quite sanguine about their future in our state. He will, while in Europe, investigate the cultivation of both the olive and the fig, with a view to raising both on his own ranch here in Santa Clara valley.—*Santa Clara Cor. Rural Press.*

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The Olive for Food.

BY DR. P. WHITNEY, IN *Practitioner*.

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It is usually the case that olive trees do not bear fruit until they are about eight years of age, but there are a number of these trees in Dr. Welges' yard, Woodland, near the Court-house, only three years old and they are in full bloom.

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OLIVE TREES IN FLOWER. 3/25/86

The olive tree, when in flower, is an object of rare beauty, and we think that even as an ornamental tree the olive should be planted everywhere. Fresno or indeed California is exceedingly well adapted to olive culture, provided the right variety is planted in the right place. The olive trees in our immediate vicinity are now in full blossom and are setting fruit. Those in Mr. Ferguson's garden have never been more covered by blossoms, and promise a large crop. Professor Braly's trees, only four years old, have this season their first flowers, and this proves conclusively that in favored localities even the else tardy Mission olive bears at an early age. In the olive orchard of the Fancher Creek Nursery some 20 varieties are grown, and of these ten or more are now blooming. Some varieties only two years old are literally covered with bloom and the olives are setting freely. This speaks volumes for the success of olive culture, the profits of which are so large and so regular that in Europe a very few trees suffice for the sustainment of a family the whole year round. The olives now promising the most are the Nevadillo Blanco and the Manzanillo, both the best varieties of Spain, the former for oil and the latter for pickled fruit. The Mission does not produce a highly flavored oil, and is in this respect very inferior even to the Picholine, though small fruited, produces a highly flavored and valuable oil.

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THE OLIVE.

Rural Cal

FRUIT-GROWERS in the central part of the State are turning their attention to the olive. This is a sensible move. This fruit is more profitable than wheat, and the ranchers of the State are beginning to realize that fact. The Auburn *Republican* says: "The Quito Olive oil which took the first prize at the Citrus fair is described as having been pressed from the olives first dried on warm bricks." Mr. Gould prepared his olives for press by drying them on the trays of an ordinary raisin dryer with equally good results. The only object of the process is to get rid of the water in the berries while at the same time the oil collects together in little globules and makes the pressing process comparatively easy. Drying them on bricks is the Italian method, but there seems to be no reason why an ordinary fruit dryer is not equally as good.—*Valley Echo.* 6/14/86

The Los Angeles Olive Crop.

Chron *Los Angeles Herald.* 7/1/86

The beautiful olive grove of James Craig, near Lamanda Park, is loaded with fruit. Mr. Craig last year made some fine pickled olives and some fine olive oil. This year he will make a large amount of oil that will yield him $1000 per acre.

All along the high mesas in the San Fernando, Canyada and San Gabriel valleys the olive is at home and in its glory. The fruit must have high land, full of oxygen, in order to produce its best results, and its results are most rich and rewarding. It is most surprising that the landowners of the highland plateaus do not plant more olive cuttings. They cost but little, they are not devoured by gophers or rabbits, they grow by inspiration more than by irrigation and live almost forever.

Facts on the Subject From a Napa Horticulturist. 7/1/86.

Chron *Napa Reporter.*

We occasionally receive letters from subscribers, or correspondents, asking information in regard to the possibilities of olive culture in our section of the State. We are in the habit of referring all such parties to Adolphe Flamant, whose large vineyard and olive plantation on the county road, between Napa and Sonoma, are well known. Mr. Flamant's experience in those matters is unquestioned; and, desirous to witness the success that has attended his olive plantation of over 6000 trees, we concluded to visit it in order to present to our readers the result of our inspection.

The hospitality received by guests or even mere callers at the Flamant vineyard is a thing so generally known that we will not dwell on the cordial welcome that was extended to us.

The Flamant vineyard and olive plantation are situated about half-way between Napa and Sonoma on the county road. The vineyard lies on a gradual slope from the road and extends to hill lands of quite a high altitude, on which is the olive plantation. The whole property bears the evident mark of experience and work. Our surprise was great when, reaching the olive plantation, we found trees two and three years old thriving luxuriantly on arid and rocky lands on which no one except experienced parties would ever expect to see a fruit tree grow. But the olive tree seems to prefer such location, for those planted on the top and slope of hills, amidst beds of rocks where but little soil is to be seen, are thriving with more vigor than those on adjoining richer ground, which is not so well drained during winter and early spring.

Mr. Flamant confirmed to us what has been so repeatedly said in reference to olive culture, namely:

First—That such trees can be planted more successfully on rocky lands whose value is but one-fourth or one-fifth of those suitable to vine culture.

Second—That the cost of plantation and ultimate yearly cultivation do not reach one-third of the cost of a vineyard.

Third—That the crops can be gathered with much more economy and celerity than grapes can, and that the olive oil or pickled olive, which can be made with outfittings costing about one-tenth part of those required for wine-making, can be disposed of within a week from the gathering of the berries.

Fourth—That the insect pests that are liable to attack the olive tree can be fought, with ordinary care, with much more ease and economy than phylloxera or other enemies of the vine.

Fifth—That an olive tree planted in a permanent site from the one-year-old rooted cutting will develop with more vigor and rapidity than if kept several years in a nursery, to be transplanted when six or seven years old, as is sometimes done in Europe by parties who wish to retain meantime the use of their rocky lands for pasturage, and that, when so planted, it brings berries when four years old, and, beginning with its fifth year, gives paying crops, which increase in quantity from year to year until the tree reaches its full development, when it will pay several times more than the best vineyard.

Sixth—That the profit on the crop can be computed at about 50 cents net per gallon of berries, and that while the tree is apt to give 6, 8 or 10 gallons of fruit when 6, 8 or 10 years old, its capacity of bearing will reach 20, 30 and 40 gallons per tree when in from 15 to 20 years it will have reached its full maturity.

Seventh—That the tree seems to be harder to die than old Mathuscla, and that it can be considered as a permanent investment, since there are olive trees still living at Jerusalem which were known during evangelical times.

Eighth—That the tree will stand the longest spells of dry weather and not be affected, unless by such extremes of hot or cold weather as are absolutely unknown in California.

Ninth—That the Picholine variety which Mr. Flamant has adopted for his plantation, while it makes very good oil, stands as the best for pickling. Moreover, it grows quickly and is less subject to damages by insects than other varieties are.

Mr. Flamant entered into a great many details while developing all of the points, which satisfied us as to the correctness and practicability of his views on the subject. The growth of his trees, some of them absolutely on beds of rock with hardly any soil around, are now a standing evidence that this plantation, that was so much discussed at its start by parties who have never seen an olive plantation, has passed now from the phases of doubt into a progressive march to permanent success. By it Mr. Flamant, through his indomitable energy and enterprise, has taught us how to make use of rocky lands entirely unfit for any other culture. If his example is followed, as it should be, we may look forward to the time in the near future when the rocky patches of land of our beautiful valley will be adorned by the light of those graceful evergreen trees, which will add to the beauty and prosperity of our section of the State.

THE OLIVE IN FRANCE.

Some Details of the Cost of Cultivation.

DISEASE INJURING THE TREES

Peculiar Methods Pursued—Annual Product of Italy—Facts About Sardines.

Chron July 15/86

[Correspondence of the CHRONICLE.]

PARIS, June 5, 1886.

In the present article are given details regarding subjects previously treated and necessary to their complete comprehension. They relate chiefly to the cost of cultivating the olive in France, and to the edible olive, while some facts are added in regard to industries of less relative importance to France, yet still representing branches of commerce of considerable value. The olive cultivators in France, with the exception of some of those at Nice mentioned in the articles on the olive written some months ago, have paid little attention to improved methods of culture, consequently there are new statistics relating to the last five or six years. It may nevertheless be taken for granted that the figures given represent very nearly the cost of culture to-day. In the Maritime Alps, that is, the department of which Nice is the capital, there are about 120,000 acres in the olive. Thirty-five years ago a hectare (two and a half acres) in olives was worth $2000. Ten years ago it was worth only $1400, owing to the diseases which had ravaged the orchards, and now it is worth much less. The tree could be cultivated from the seashore to the height of 1350 feet on the mountain sides, and till late years, in spite of the fact that good harvests were rare even when the industry was in its prime, it constituted the chief support of the people. The arrondissement of Grasse contains 60,000 inhabitants in the two-thirds of its area planted in the olive. The remainder, given up to other industries, contained a few years ago only 6000, though owing to poor harvests the proportion may since have somewhat

changed. The cultivation of flowers seems now to be the only certain industry in this region. But the figures show what the olive may do toward the support of a people in a region that an American would regard as almost barren and uninhabitable. A hectare on sloping ground is expected to contain 200 olive trees; on the plain only 125. The following has been reckoned as the cost of culture in the Maritime Alps for a hectare containing 150 trees, the harvest being biennial, and the expense divided between the two years:

Spading the trees (50 days at 50 cents), one-half	$12 50
Manuring	22 50
Topping and pruning	15 00
Gathering	18 00
Total	$68 00

This, representing the cost of one year, or half the harvest, must be doubled for the whole of it. The product of a hectare in good seasons is estimated at 450 double decaliters (4 2-5 gallons), which at 60 cents gives $270, half of that amount being the annual value of the product per hectare. Deducting the cost of culture ($68) and there remains $67 net profit per hectare. It must be remembered that other crops can be cultivated among the olives, or that the orchards can be used for pasture. The profits are divided among the proprietor and the tenant in a manner that need not be specified. Since these statistics were tabulated the ravages of the fly and worm have caused many proprietors to devote their lands to the cultivation of cereals or other crops, and the quality of the oil has deteriorated, and consequently commands a less price. But the figures showing what the industry has been and what it may again become retain their value. When it is in an ordinary state of prosperity it is in France more profitable than the culture of either cereals or the vine. Since the deterioration of the oliva the exportation of oil from Nice has continued by uniting with the product of the country imported oils from the Riviera, Naples, and from the Adriatic coast of Italy, near Bari.

IN OTHER DEPARTMENTS.

In the department of Var, next west of the Maritime Alps, there are 127,000 acres in the olive, that is to say, one-half its area. It is the district of which Toulon is the great seaport. The land given to the culture is not so valuable, it being held six or eight years ago at a little over $400 the hectare, and has since, owing to the diseases of the tree, decreased. The department has suffered severely, not only from the failure of this industry, but from the destruction of its vineyards by the phylloxera. The vine has nearly everywhere throughout the department been toru up to give place to other crops. The cultivators of the olive have also complained bitterly of the competition which they are obliged to contend with in the adulterated oils made and exported from Marseilles. An increase in the price of labor has also seriously affected the industry. The annual expense of cultivating the olive and making the oil is estimated at $72 50 per hectare, the biennial product at 220 gallons the hectare, worth $24 the hectaliter (22 gallons); which gives a net profit of $47 60 per hectare.

In the department of Bouches du-Rhone (Marseilles), the olive is cultivated in orchards and in rows among the vines. The trees are small, and also the fruit, though it is of good quality. If the harvest were certain, the preparation of the oil and of edible olives would be a profitable industry. The price of cultivation is from $50 to nearly $60 the hectare, and the mean price of olives 4 francs the double decalitre (five and two-fifths gallons). In Gard, the department lying west and northwest of Marseilles, the olive has been partially replaced by the mulberry. It lies nearer the Cevennes and has suffered severely from all the severe winters of the present century. According to recent statistics, there were only about 13,000 acres in the olive, lying principally about the ancient cities of Nimes, Uzes, Alais and Vigeru, and yielding an annual product valued at six or seven million francs. There are in the department 237 oil mills. The annual value of preserved olives is $50,000 or $60,000. The profits arising from the olive culture are not so great as in the departments already mentioned. The principal attention of the people of the province of Herault, of which Cette is the metropolis, which lies next west on the Mediterranean, is given to the vine. Still the olive is cultivated for its oil and for preserving, which constitutes a considerable industry. Green olives sell at from 35 to 40 francs the 200 pounds. The good oil, which is not abundant, sells at 15 cents a pound, and the poorer, which is used chiefly in the woolen-mills, for 24 cents. In Aude and the Pyrenees-Orientales, which lie still further west, and in the Basses-Alpes, Vaucluse, Drome and Ardeche, which lie north of Var and the Bouches-du-Rhone, the culture of the olive has not been prosperous for many years and presents no interesting features. The island of Corsica has an Italian climate, and is nearly all mountain, narrow valley and hillside. It is, therefore, well suited to the culture of the olive. The annual expense of cultivating a hectare is about $5, and the product worth $100, though the oil is sold at a low price. The entire crop of the island is worth not less than $1,300,000. Each tree brings to its owner a rent of 40 cents. The yield per hectare in the different departments where the olive is cultivated in France is as follows: Var, 321 liters; Maritime Alps, 450 liters; Bouches-du-Rhone, 119; Corsica, 375; Herault, 266; Gard, 303; Pyrenees-Orientales, 171; Basses-Alpes, 142; Vaucluse, 251; Aude, 220; Drome, 247; Ardeche, 278. Mean yield per hectare, 262 liters. France has barely 400,000 acres in the olive, producing quite recently, according to the estimated mean, about 100 liters per acre, a very low estimate for California, where the soil is so rich and the climate so favorable. Italy has now in olive orchards probably not less than 1,500,000 acres, and the superficies is constantly increasing. Thirty-one communes in the province of Lucca produce 1,320,000 gallons. Rome and vicinity consume nearly all the produce of the district. In 1865 Sicily alone exported 66,000,000 pounds. A recent estimate, far too low for the present, gives the entire produce of olive oil in Italy at 36,200,000 gallons, valued at $40,000,000.

ADULTERATED OILS.

In the articles written on the culture of the olive and the manufacture of oil little has been said about the falsifications carried on principally at Marseilles, because it has been thought more important that the Americans should know better how to produce a good article than a bad one. The adulteration, like those of wines, are well known to every intelligent person in France, and only those whose trade would be injured try to conceal them. Honest merchants of Marseilles freely acknowledge the practice. It must be confessed that the temptation to falsify is very great, the demand for good olive oil continuing while the sources of supply are gradually diminishing. There is a penalty for every kind of adulteration in France, but it makes no more difference with the adulteration of oil than with that of wine. Fortunately imitation olive oil cannot be made, like wine, by the barrel, by mixing a little alcohol with certain liquids and then coloring and flavoring the compound. There must always be a percentage of the genuine product to give the resemblance. The sophisticator is always limited in his imitations by cost, peculiarities of tastes and color, etc. The oils that cost less are cotton-seed, peanut, poppy, sesame, rapeseed and colza. Peanut oil and oil of colza are somewhat objectionable on account of peculiarties of taste, but are used. The first preserves usually the distinct flavor of the nut and does not keep well. Chemists have various means of testing olive oil. They introdnce air and judge by the bubbles. They introduce tubes to mark the capillary attraction, or they drop the oil on water to observe the forms which it assumes. The point of congeliation indicates the character of the mixture. The various kinds of oils congeal at the following temperature, centigrade:

Pure olive	2.5 degs.	Colza	6.0 degs.
Peanut	2.0 degs.	Hazelnut	10.0 degs.
Cottonseed	2.0 degs.	Poppy	18.0 degs.
Sesame	5.0 degs.	Walnut	27.0 degs.

OTHER TESTS.

There is a resemblance between the first and second, but where olive and peanut oil are mixed lumps having the appearance of sand form and are deposited at eight degrees. At four degrees the olive oil becomes thick and the lumps remain suspended in the liquor. The power of conducting electricty is a means employed, pure olive oil conducting 675 times less rapidly than the others. The tests based on the relative density of oils are thought to have the greatest precision and are the most used in commerce, little floating instruments like the alcoholometer being used. These instrumeuts are so graduated that seventeen degrees indicate pure olive oil and twenty-five degrees poppy oil, which is much denser. There being eight degrees between these two extremes, if the instrument sinks to eighteen degrees it makes an eighth mixture, and so on. By means of it the density of all other oils as related to olive oils are shown. Other instruments are sometimes used and various chemical devices are resorted to that do not need to be explained here. The oils most used by the adulterators at Marseilles are cotton-seed, peanut and colza. The first is preferred as colorless and absolutely tasteless. Of the vast quantity imported into France principally at this port none appears as an export. When exported it is in the form of olive oil. Cotton-seed oil has the merit of keeping well, in which it differs from peanut oil, which in many respects is a valuable article of commerce, and should be made in California. Vegetable oils for illuminating or other purposes should be made on the Pacific coast from the grains, nuts or fruits grown there. All of them would find a ready market, and might easily be made into a special industry.

HOW THE ANCIENTS PRESERVED THE OLIVE.

The preservation of the olive to be used in some form as an article of diet has been known from the most ancient times. The Latin poet Horace used to eat it just as it ripened on the trees, and he has thought his preference worth mentioning in one of his odes. Other Latin poets allude to olives in complimentary terms. No one now thinks an olive picked up under a tree has the pleasant taste of the oil. The olive produced by different localities in Italy had each its special reputation. The Romans had not all the habit of eating their olives raw, but on the contrary preserved them in a variety of ways. Instead of trying to extract the natural bitterness they often disguised it by adding aromatic herbs or other substances whose names were forgotten until they were diligently looked for by classical scholars. Here is a recipe found in Columella: 'The olives gathered in September or October were first bruised, then soaked in warm water, strained, and put into a vase with fennel, lentisk and burned salt, which was filled up with very new must, cooked wine or water sweetened with honey. This was one method. A second was to give a preliminary bath in brine, then to drain and put into an amphora with fennel, afterward filling up with a mixture of must and brine. Sometimes instead of beating the olives they were cut in pieces. There were other methods of treatment. Sometimes they were macerated in green oil with leeks, rue, smallage, mint and a little vinegar, honey or wine. Sometimes the fruit was mixed with salt, fennel, lentisk and weak vinegar added. Forty days after, when the bitterness of the olives had been taken out, the juice was removed and replaced with three parts of cooked wine and one of vinegar. If one preferred, the olives after having been beaten were put into a mixture of brine and vinegar. If it was desired to preserve the green color they had when gathered, the wine was replaced by oil of prime quality. When the olives were gathered nearer maturity there was a slight variation of the process, but there was a close resemblance between all the methods, and they are much like those still practiced in some parts of Italy and Spain. Other recipes are so much like these that it is unnecessary to give them. The Latins had received their recipes from Greece, where from the most ancient times it seems to have been the practice to preserve olives in a brine flavored with fennel seeds. Vinegar was also from remote times used, as well as salted water. As among the Romans, different places in Greece or in the Grecian islands were celebrated for their edible olives.

MODERN METHODS.

It will be observed from this statement of ancient methods that there has been little progress made in the manner of preserving the olive. At the end of the last century green olives were preserved by bruising them slightly and soaking them for nine days in water several times renewed. Warm water acted more rapidly. At the end of that time they were put in brine. The kinds which grew sweet as they ripened were dried in the sun like figs, put in baskets and seasoned with salt or pepper as they were needed. As in ancient times, lye has also been used in Italy to take out the bitterness of the olive, the limit being the ease with which the fruit became detached from the stone. When drawn from the lye they are washed and put in a brine made of water in which about 10 per cent of salt has been dissolved. In the south of France fenuel or coriander is sometimes added to the pickle, or the stone is taken out and a bit of anchovy and caper put in its place, in which case the olives are preserved in oil. There is a similar practice among the Bordeaux merchants. The stone of the crescent olive is punched out and a little forcemeat put in by hand. Although the preparation of edible olives is nowhere an industry comparable with that of the oil, still, in the departments of Gard and Var the trade in them is considerable. In the Bouches-du-Rhone little is done in this line, the varieties *picholine* and *verdales*, generally cultivated there, not being suited to the purpose. The Spanish olives are larger, and when seen on the tables of the hotels of Madrid and Barcelona, they look appetizing to the visitor. But they are tough and comparatively tasteless, and if he tries them he is sure to demand the smaller ones, which are tenderer and better in every respect. The center of the industry in edible olives in Spain is at Seville and Cordoba. The olives are gathered green and kept five or six days in salt or strong brine to prevent their decaying, the brine being flavored with thyme, garlic and bay. Methods are somewhat varied, but Spain has not a great deal to teach to other nations in respect to any of its industries.

THE OLIVE KATERA.

The extent to which the olive is used varies greatly in different countries. In northern countries it is used chiefly as a relish eaten by itself, or as a sauce, seasoning or stuffing for meats, fowls or game. It is on the tables of the rich what the French call a *hors d'œuvre*—that is, a side dish or table superfluity. But it is far otherwise with the poor in the south of Europe, to whom it is an important article of diet. In ancient times the poor made an entire meal of bread and olives. It is still the same in some parts of Europe, where a peasant thinks himself prepared for a journey with a piece of bread under his arm and a handful of olives in his pocket. In Southern Italy no meal is made without olives. The olive merchants pass regularly at supper time through the poorer quarters of the city. It is the Spanish habit to eat olives at the end of a meal, but not too many. Three or four are usually thought enough, or if they are very good one may eat a dozen. An Italian author recommends the preserving of Spanish olives—that is, of those grown on Italian soil—but prefers those called Saint Francis, which is common at Ascoli, where it attains the size of a walnut. It is, however, generally agreed among *gourmets* that the smaller olives are best for eating. The manner of treatment has, nevertheless, perhaps, something to do with the coarse quality of the Spanish olive when found in the Peninsula. Olives are preserved in Italy, as elsewhere, in weak lye or brine. They are also bruised, stuffed in the Bordeaux manner or dried. In Eastern countries, whence the olive came, the fruit forms still an important article of diet. A traveler relates that he found delicious a meal of eggs, olives and grapes offered him by the monks of the monastery of Mount Libanus. It is traditional in the Catholic Church that the monks living in the desert fed principally on olives. Throughout Turkey, Asia Minor, Greece and other countries about the Mediterranean, the olive has remained as in the most ancient times, a substantial article of food and a necessary means of existence to the toiling millions.

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THE SARDINE INDUSTRY.

The sardine industry has been for the last forty or fifty years one of the most important of the west of France, furnishing employment to a large fleet of fishing vessels and supporting many thousand fishermen and their families. Sixty years ago it was at its best, and the fish were so numerous during the season that it was found necessary to reinforce the regular fishermen with laborers from the neighboring portions of Brittany. Wages were good and everybody was prosperous and happy. For some years past the annual supply has been becoming more and more irregular, causing great anxiety among the population hitherto supported by this means, attracting the attention of scientists and inducing the French Government to appoint a commission to examine into the subject. The question which is first naturally asked is, whence did the sardine come, and why have its visits of late years been so irregular? Some writers have designated that part of the ocean called the *Mer des Sargasses*, while others have thought that it occupied, when not seen, parts of the deep sea bottom nearer to the coast of Europe. On these points there is a wide difference of opinion. The only fact that seems to be clearly established is that in the spring it ascends along the European coast, following the current, or rather meeting the current of the Gulf stream, passing beyond its mild waters that have a temperature of 14 or 15 degrees centigrade in May and June. Since the change has occurred it has stopped farther south, compelling those fishermen who had a sufficient amount of enterprise to go to seek it on the coast of Portugal or of Africa, where it can be had at a low price but of inferior quality. But the affairs of those who have been depending on the catch have been constantly going from bad to worse. Sailors out of employment have been compelled to seek other means of existence, packers have been ruined, six or seven out of every ten doing an exceedingly bad business, if not failing entirely. Some sardines are still caught, but the greatly diminished quantity has caused widespread disaster among both working and commercial classes.

CAUSES OF DISAPPEARANCE.

The gradual disappearance of the fish is attributed to the fickleness of the Gulf stream, a succession of severe winters and the inundations of the Loire, which pour every year into the bay of Biscay a vast volume of water, coming from the snowy heights of the Cevennes and Alps. The dredge, which came into more general use when the diminution began, in order to seek the sardine in its proper haunts nearer the bottom of the sea, has destroyed the small crustacea, all kinds of marine vegetation and the fish spawn, so that when it comes in favored years it finds its favorite places of resort ravaged and uninhabitable. The dredges having been reduced to fish for shrimps have also nearly destroyed this little marine delicacy, which is considered another disaster for the Breton coast, if not for the country. Efforts are being made by some public-spirited individuals to interdict the use of the dredge in certain places and thus try to remedy an evil that can no longer be prevented. Should mild winters be the rule for some years to come, and should the Gulf stream dispense its former warmth along the French coast, the fish may return and the sardine industry may possibly recover its once prosperous condition.

METHODS OF CURING.

The misfortunes of France in respect to the sardine, as well as the olive and the vine, may be the opportunity of California. The time is opportune for inquiring into the sardine industry on the Pacific coast, for determining the actual value of the species caught there, and if it is not equal to those found on the French coast to see if the latter cannot be planted there by the Fish Commission. The sardine multiplies indefinitely, and if the more delicate species did not like to ascend the coast as far as Humboldt county, they might find the milder waters of San Diego and Santa Barbara counties just to their liking. Those already caught on the coast of California might be greatly improved and rendered more marketable by being properly cooked. The French method is the method *par excellence*. The sardine is dipped into boiling oil of the best possible kind at the earliest possible moment after being taken out of the water. If it could be thrust alive into the oil it would be tenderer and its taste more delicate. To secure the best result the fish should not remain in the boiling oil an instant longer than is necessary to cook it sufficiently and the oil should be changed in the caldron at intervals. If the fish is too long out of the water before being cooked it is tough and tasteless. The Spanish sardines are not good for several reasons; a poor quality of oil is commonly used, the fish are too long out of the water before cooking and there is probably also an inferiority of species. Spanish sardines are miserable at half the price asked for the French. The Italian sardines are inferior to the French, though better than the Spanish. The instrument used for dipping in the oil is a sort of double wire rack, not unlike those used in toasting bread, having hinges on one side and handles on the other. When the rack is opened as many fish are laid on as it will hold. It is then closed, holding them firmly in place, when the person performing the process grasps the handles and dip them in the caldron, using his judgment as to the length of time they should remain there. The potting in cans or boxes thereafter is simple the cooking to a turn being of the greatest importance. The boxes are of all sizes, and in some cases have ingenious patents which make them easily opened, and therefore add greatly to the convenience of the consumer.

Olives in the Foothills.

A correspondent of the Auburn *Republican* writes:

"Very often we have heard it said that it might result in failure to attempt to grow olives high up in the foothills of California, as there they would be too far away from the sea; and in every scientific treatise about olives, we find that those trees like the vicinity of the sea. In looking around over its native places, there is not one farther away from the sea than one hundred miles. They are growing all along the coast of the Mediterranean, but we do not find them in the interior either of Spain, Italy, Turkey, or Asia Minor. Near Avignon (120 miles from the sea), the olive is dwarfish, and a little further north it cannot be found at all. Around Bologna (hardly 100 miles from the Adriatic and not much more from the Tyrrhenic sea), there are no olives. Thus it seems that those who think olives will not thrive at a distance from the sea are in the right. But why would this be so? Even the closest examination could not prove that in the air near the sea there is more salt or moisture than in the air 100 miles distant. And still the fact that olives will thrive in one place and not in the other remains. The explanation, however, we think is plain and convincing. It is that in the old world the continental climate (hot summers, cold winters) is changed in the sea climate (moderate summers, moderate winters) only in the nearest vicinity of the sea. In Bologna, for instance, it is possible nearly every winter to skate on ice for four of five weeks. But in California we have sea climate not only along the coast, we have it also in the valleys and everywhere in the foothills up to an altitude of 2500 feet; and therefore, though not all, many varieties of the olive will do well as high up as Colfax. The thrift of the olive does not depend on the vicinity of the sea, but on the temperature; and this is a well-known fact, that olives cannot bear excessive heat or severe cold, the extreme cold the hardiest varieties can endure being eighteen degrees."

The Cactus Lady Bug.

W. F. Klee in Bulletin No. 3.

It seems very desirable that all fruit growers should become fully acquainted with the predaceous insects, which must be considered their friends, as it is through their agency that all the worst pests are kept in check, and what naturalists term the "balance of nature" is preserved. Unfortunately, by the propagation of certain trees, the food plants of these insects, pests often increase to an alarming extent, and generally so fast that their enemies are far from being able to cope with them. Such has been the case in California for the last few years, and without washing and spraying of the trees with antidotes, many orchards would have been totally destroyed. Gradually, it seems, however, that the law of nature is asserting itself, and parasites and predaceous insects are making their appearance in vast numbers. The Ichneumon flies are making war on the scales and on many other insects. Of the more conspicuous insects, the Syrphus flies have been very numerous; this season their green, blind larva having, apparently, totally annihilated the aphis in the young orchards, formerly badly infested. The lady-bugs have kept them company, and have also destroyed vast numbers of woolly aphis and grain aphis; appearing in many instances, as it seemed, in the eleventh hour, just in time to save the latter from destruction. The lace-winged flies (Chrysopa), so conspicuous by their large, delicate wings, and large, lustrous eyes, have appeared in vast numbers, and their larvæ have made havoc with the scale insects. But, perhaps, the most striking acquisition in this line is the so-called "Cactus lady-bug," the *Chilocorus Cacti*, whose principal food is the various scale insects.

Some four weeks ago, when in the town of Santa Cruz, I found the *Chilocurus* feeding on the Olive scale (*Lecanium oleæ*) on trees badly infested. At Los Gatos they were noticed by me, at Mr. Yocco's place, feeding on soft Orange scale. However, the most striking case presented to me was in the Willows, at San Jose, where Mr. Newhall, the nurseryman, directed my attention to it. We found at an old orchard five large pear trees, which, by the rough appearance of the bark, clearly showed that they had been once badly affected by scale—in this case by *Aspidiotus perniciosus*. In patches all over the trunk could be seen the mature insect, with its black, shiny body and two conspicuous red spots, and numerous pupæ still partly covered with the black, soft spines of the larval skin. No live scale could be found, and the two last years' growth was clean and smooth. It was stated to me that the orchard had not been washed for three years, which seemed to point strongly to the conclusion that at least the final subjugation of the scale was due to the lady-bug.

Another case in question, the orchard of Messrs. Wintou and Webster, in Castro valley, near Haywards, Alameda county. A number of plum trees were some years ago found to be badly infested with *Aspidiotus perniciosus*, and from them spread to the currant bushes close by, which previously were badly infested with another species of scale, and by the united efforts of those pests a good many were killed. The plum trees were sprayed with a strong solution of lye, which, although killing most scales, did not kill them all. The currant bushes were not sprayed, but, although showing by the thick coating of dry scales that they had been once fearfully infested, no live scale could be seen on them, while the trees were absolutely clean. In looking around on the trees I found a number of larvæ of *Chilocorus*, as well as mature beetles; and on the currant bushes I found quite a number. On the whole, all evidence indicated that here also the lady-bugs had been instrumental in killing the scale bugs.

THE OLIVE.

An Excellent Fruit well Adapted to the San Joaquin Valley.

Methods of Propagating and Planting—Proper Temperature for Cultivation—Manner of Extracting the Oil.

Visalia Delta 5/19/80

The olive is indigenous throughout Southern Europe. In Spain, Greece, Italy and the south of France, especially on the shores of the Mediterranean, it is successfully cultivated. Many varieties have been produced from the "European" olive. A temperate, equable climate is best adapted to the olive. On the sea coast, which suits the olive admirably, at a temperature of 52 degrees Fahrenheit, its buds form in March, its blossoms in April, at 60 degrees Fahrenheit, and its fruit in June, at 58 degrees Fahrenheit. The maximum cold that the tree stands without injury is 21 degrees Fahrenheit. Snow does not hurt these trees if it lasts but two or three days at a time. Should there be no rain during the months of

June, July and August, a full crop of sound olives may be counted on. The annual rainfall in Sicily is 22 inches, where irrigation is not required for full-grown olive trees. The olive zone extends 1,500 feet above the sea level in Central Italy, and 1,800 feet in Sicily. In Italy the approximate area devoted to olive culture is 2,224,668 acres, producing 89,437,150 gallons of oil. In Sicily the area planted in olives is 267.800 acres; production of oil, 19,-285,550 gallons. In Tuscany the average yield to the acre is 64 gallons; in Sicily it is 75 gallons. The olive bears but every other year. Sandy and low ground are unsuited to the olive.

VARIETIES GROWN IN SICILY.

The best varieties of olives grown in Sicily are the "Paesano" (native) and the "Oglalo;" both are long-lived and prolific bearers. In the neighborhood of Syracuse and Palermo there are many groves of immense olive trees, hundreds of years old—veritable patriarchs.

PROPAGATION OF OLIVE TREES.

All olive trees have a tendency to revert to the wild olive; hence they are always grafted. Propagation by seed is but little practiced, as it takes sixteen years for a seedling to come into bearing. This method, however, presents the most perfect root system. Cuttings take root readily. They are set out between November and March. The olive is also propagated by suckers. The best method, however, is by eyes (ovoli). These ovoli are woody excrescences that grow on the foot of the trunk and on the roots of the olive. They are detached from the tree in March, the green wood carefully scraped off and their base hollowed out. Should it not be convenient to plant these ovoli at once, they will keep perfectly in moist earth from fifteen to twenty days. The end of March, or the first week in April, holes are dug three feet apart each way, and eight inches in diameter. These holes are filled in one-third with dry top soil and scrapings from the manure heap; the eye is dipped in fresh cow manure (diluted in water), placed in its bed, and covered with three inches of top soil; it is then watered, and the holes filled up with ashes or sand, as otherwise a crust would form which would prevent the tender shoots, that begin to put out early in June, from coming up. When these shoots are five or six inches high, all but one—the most vigorous—are carefully cut away down to the eye itself. The young plants grow rapidly, and soon throw out lateral branches from the axil of each leaf. These branches are pinched off, great care being taken not to mar the trunk or leaf. By the frequent repetition of this operation the young plants grow vigorously, and ere winter are seven or eight feet high. They are then topped; five or six lateral branches are trained to form a head; the trees are then staked. Such of the young trees as have not attained to the requisite height are also staked. If their tops have been uninjured by the cold during the winter, they are trimmed and topped in the spring; if they have been affected by the cold, they are cut down below the ground in March, and their eyes send up new shoots. The trunks of the young trees should be straight, smooth and without bumps.

PLANTING AN OLIVE GROVE.

Young trees are worked four times a year, and remain in the nursery four years; they are then from one and one-half to two inches in diameter at their base, and are transplanted to the grove between the 15th of March and the 10th of April. The holes are dug in the autumn and remain open during the winter; they are thus exposed to the fertilizing action of the air, sun and cold. A small quantity of well-rotted manure, mixed with top soil, is used in transplanting. The trees are moved with great care, their heads having previously been well trimmed back. While in the nursery the trees are watered during droughts; fertilizers during this time are rarely used, it being thought better to accustom the plants to a soil of moderate fertility. When the plants appear to be stunted for lack of nourishment beans are sown in the nursery in November and turned under green in April.

TREATMENT OF BEARING TREES.

After the trees come into bearing (at 10 years from suckers, cuttings and eyes) they should be manured every other winter and fertilizers of slow assimilation, such as bones, and horn scrapings preferred, and trimmed every other spring, after all danger from frost is over, the trimming to follow the manuring. Olive trees reach maturity at forty. The distance between trees on good soil is from 42 to 48 feet and from 27 to 33 feet on poor soil. In trimming it is desirable to open out the head of the tree that the fruit-bearing branches may have plenty of light, sun and air. On an average four gallons of olives yield one gallon of oil. An olive grove yields about 3¼ per cent on the investment.

COLLECTING AND PRESSING THE FRUIT.

While the soil, the location and the variety of the olive affect the quality of the oil, the harvesting and pressing of the fruit affect it much more. Greater care is taken in this matter in Central Italy than in Sicily. It is much to be regretted that Sicilians are so wedded to their ancient customs. Here, as a rule, the olives when gathered are thrown into heaps and allowed to ferment. The natives labor under the impression that they thus get a larger yield of oil. The oil extracted from fermented olives has (to us) a most disagreeable smell and taste; it is strong and often rank. The olives are frequently gathered before they are ripe, which prevents the yield from being as large, and the quality as good as they would be were they allowed to mature. The excuse for early gathering is that the rainy season sets in in December, and should the olives be exposed to inclement weather, the loss will be great.

THE OLIVE OIL MARKET.

In consequence of competition from cotton seed oil and oils from sesame nuts, etc., the price of olive oil has fallen off of late years. The demand for first quality table oil is, however, as large as ever, and the price for this article keeps up. The introduction of kerosene for lighting purposes has lessened the demand for inferior oil, but large quantities of Sicilian oil are still shipped to Russia, where the inhabitants burn lamps in their houses as well as in their churches before the images of their saints. Prof. Basile says, "were the devotion of the Russians to their saints to cease, Sicily would have to pay in hard cash for all the grain she imports from Odessa and Fangarog," and adds: "It would be indeed a sad day for us should the heresy of Luther ever reach the heart of Russia."

On the Duc d'Aumale's estate, near Palermo, a powerful hydraulic machine is used to press the olives, and the oil is filtered, being made to pass through three thicknesses of woolen cloth, by hydraulic pressure.—*Cor. S. F. Bulletin.*

The Olive in California.

This hardy little tree, the olive, is always assigned the ugliest and stoniest and meanest bit of land to be found on the farm. And the olive takes kindly to any place you choose to put him. He takes root from the slip and grows right along, and in due time drops his little black and oily apples down in the tall grass in such abundance that you can sometimes see the oil spreading over the rocks and running down and enriching the soil in the hot sun.

What a country this will be when the olive becomes established here as in Italy! At present it is not abundant, for the olive is a slower grower as compared with other things here, and so the planters have been slow to cultivate it. Yet I believe that now almost every ranch has more or less olive trees growing, for there is a great demand not only for the oil but also for the olive itself.

It begins to look as if olive oil may take the place of butter out here after awhile. Fancy a group of little children on a farmer's porch, with bread in hand, dipping it into a dish of olive oil. The scene is so frequent here that I asked a woman not long ago why she did not give her children butter on their bread instead.

She answered me that her children would not eat butter if they could get olive oil to sop their bread in. And I think they are about right. I have found myself more than once preferring olive oil to butter here. And the butter is of the best. But any one who has a taste for pickled olives, either natural or acquired, will find himself becoming very partial to the oil of olives.

Yet never before did I find this taste for olive oil so supreme. Even in Italy and Spain and Palestine, places where there is no butter fit to eat, I did not care for olive oil. But this here is so superior to that of all other lands that, as I said before, I suspect it may drive out the use of butter to some extent. The people here eat their pickled olives with great relish. The plate of little purple olives is ever present on the table and is soon emptied. This purple or black olive is a new invasion of the old

custom. And just why anybody ever pickled the olive green I do not know. Certainly no one who ever ate a purple ripe olive would ever eat a green one. Maybe the olive was put up green in Spain and Italy for better transportation. Be that as it may, I desire to call attention to the little purple California olive. This oily, luscious and soft little pickle is a new delight for the epicure. And no one who ever tastes a ripe olive properly prepared will ever touch one of the tough, old-fashioned green ones from over the sea. This olive here is prepared for the table in the simplest way possible. They are gathered, thrown into a tub of water, where the few bad ones float off, and then they are simply packed in brine. That is all.—*Joaquin Miller in Chicago*

Olive Oil in California.

Rural Cal Sept.

THE name of Elwood Cooper is held in high esteem by all *bon vivеurs*, for to his intelligent perseverance they owe one of the rarest of table delicacies. Pure olive oil had almost ceased to exist as a marketable article when he established his noted ranch in Santa Barbara county, but at the present day it can always be had if one can afford to pay for it. To this gentleman the State of California owes a debt of gratitude, in that he has started and brought to assured success an industry that promises to be one of the most valuable on the coast. So superior is the California olive oil manufactured by Elwood Cooper that it commands a price far in excess of the best foreign importation, while its sale is limited only by the amount of its production. The choicest olive oils of France and Italy, after they have passed from the manufacturer through the hands of numerous middlemen, and after they have paid the cost of transportation and customs duties, sell for from 30 to 40 cents per bottle less than the oil that is produced at our doors—because the latter is the acknowledged standard of purity and palatableness. This statement is no "advertising puff," for it is impossible to puff an article for which the demand is infinitely greater than the supply, and the object of this writing is simply to call the attention of California farmers to a valuable and too much neglected product of the soil. Last evening a reporter of the *Call* met Mr. Cooper in the Lick House, and asked him for an account of his experience as an olive grower and a manufacturer of olive oil. A lengthy conversation ensued, and the gist of it is here given for the benefit of those who may profit by it. Avoiding the form of dialogue, the substance of Mr. Cooper's remarks was as follows, portions of them here and there being scraps that he read from his brochure on Olive Culture:

THE FIRST PRACTICAL OLIVE-GROWING.

"I first came to California in 1868," said Mr. Cooper, "and was at that time merely travelling for pleasure. Much that I saw here delighted me, and I was especially charmed with the climate of Santa Barbara. There the idea struck me that I would like to live there if I could only strike upon some interesting and remunerative occupation. At each of the missions visited I found a few thrifty olive trees, and the possibility of becoming an olive-grower struck me favorably. I knew nothing of the plant or its culture, nor of the manufacture of oil, but I did know that it was a valuable product of Southern Europe, and felt that with equally good soil and climate an American ought to do as well as an European. At that time the experiments made here in olive growing had been at the Catholic missions for the sole purpose of supplying the absolutely pure oil necessary for the Church service. In this connection I may remark that all the oil now used in the Catholic churches out here is grown and manufactured at the Mission San Jose. On returning East, the new project survived the journey, and I at once got together all the literature I could that bore on the subject. After long and careful reading, I reached the decision, which subsequent experience has proved to be true, that no part of the world was better suited to olive-growing than a large belt in Southern California. The olive belt of the world is very limited, as the tree will stand neither excessive heat nor cold, nor any amount of moisture where there is a high degree of temperature. In other words, it is only to be found in those parts of the almost semi-tropics where severe frosts are unknown, and where the atmosphere is comparatively dry, although tempered by a certain amount of moisture from the sea. It may be said that the olive belt of California extends from the lower part of Shasta county, on the North, to the Mexican line on the South, and runs East to the base of the foothills. The hot season in the foothills of the Sierras is too long and dry. It is generally best to have your olive grove somewhat removed from the sea, but the tree will thrive directly on the coast where it is not exposed to the severe north-west trade winds. I may say here that a rich olive belt is also found all along the South-east coast of Australia, as good a one as anywhere in the world, probably. —*San Francisco*

THE NEEDS OF THE OLIVE.

It is an ancient error that the olive does not flourish in situations away from the sea. This error obtains to some extent in California. It should be dissipated, as it has a tendency to check the extension of what ought to become a great industry throughout the interior of the State. An examination of the reports made by United States Consuls, upon fruit culture in foreign countries, affords abundant refutation of the mischievous notion that we have here to deal with. Writing from Milan, Consul Crain remarks that the olive is found in Italy "at great distances inland," and that "it has been erroneously claimed that the olive would only grow near the sea." Consul Welsh, at Florence, says the olive "thrives well on the sea-coast or on the hillside." Consul Oppenheim, at Cadiz, thus testifies:

The ancient dictum, laid down both by Latin and Arab authors, that olive culture could only be prosecuted within thirty leagues of the sea, has been disproved by modern experience.

Consul Marston, at Malaga, says that olive trees do not grow to any extent near the sea-coast in that province "on account of the sea winds, which are injurious." From Constantinople Consul Heap furnishes this information:

Although it is not the most suitable situation for them, olive orchards are sometimes planted near the sea coast, and in such places may be frequently seen extending to within a few yards of the shore. In such situations they often suffer from exposure to cold winds, and are not so healthy.

Consul Robeso at Beirut, writes that the olive orchards of Syria extend from the coast to places 2,000 feet above the level of the sea. His statement is followed by that of Consul Meshaka, of Damascus, who, to the question of "how near to the Coast are the olive orchards?" answers: "Forty-five to 75 miles." From Haifa, also in Syria, Consul Schumacher writes that the olive trees are planted "within half a mile of the sea, and from that distance throughout the interior country." Consul Abela, at Sidon, says the olive "thrives both near the coast and in the mountains, where it is found at an elevation of 3,000 feet," and that "the best soil is the red, porous soil of the hills."

One of the most efficient of American Consuls is Colonel F. A. Mathews, a Californian, stationed at Tangier. He has furnished the State Department with a most interesting and valuable report on the olive, which is largely cultivated in Morocco. He finds that the olive tree "prospers and yields abundantly on the top and sides of mountains, amongst rocks—matters not the shallowness of the soil—in gravelly and stony ground where neither wheat, barley nor oats will grow."

The most essential conditions for the successful cultivation of the olive are those of temperature. There must be a sufficient mean annual temperature to ripen the fruit, and the mercury must at no time fall below 16° or 18° Fr. These conditions of temperature in the Mediterranean are not often found remote from the sea, which tends to equalize the climate. But the influence of fogs and moist sea air has been found to be unfavorable. The dry air of the interior, wherever the requisite conditions of temperature are found, is much better than sea air. The successful cultivation of the tree at Marysville, Chico, Colusa, Smartsville, Oroville, Auburn, Sacramento, Florin, Winters, and other interior points in this State, is a practical confirmation of these deductions. It has been found that the climate of the southern coast counties promotes the multiplication of the scale insects (the olive's worst enemy), which do not thrive in the drier air of the interior. The very best locations for olive culture in this State are to be found in the foothills of Northern California.

SAN FERNANDO OLIVES.

Los Angeles Herald. 23/86

To a lover of the ancient, historic and most useful tree, the olive, the symbol that the earth was tillable by the children of men, and has shown by its persistence of life that it meant to stay and demonstrate the truth of the proposition contained in the rainbow, by laughing at the centuries as they pass, a sight of the sturdy olive trees of San Fernando that have faced the storms of a hundred years and are now more laden with fruit than was ever before witnessed in California, is peculiarly exhilarating and instructive.

All around the ancient enclosure built by the Franciscan Fathers a century ago stand the olive trees, which they planted with reverent hands before the Constitution of the United States was adopted. Like that Constitution they have borne fruit only for the good of mankind, and to-day are gracefully bending beneath a load of nutritious fruit for the benefit of the people.

The old trees of the San Fernando Mission, owing to a legal contest of title about the land on which they stood, were neglected for about ten years, and left unpruned, while the land was left untilled. Still the grand old trees maintained their living, hot with limited fruiting.

About three years ago, when the title was settled, Mr. P. Cazanave took charge of the grounds and plowed them thoroughly. He then pruned the trees judiciously and awaited results. These have been most gratifying and surprising. Without delay these centennarians commenced sending out hundreds of thousands of new branches, and loading both young and old with precious fruit, while all around the heavy crop of barley thrives, and the trees, though they have received no irrigation, each year produce a glorious crop of handsome olives, that will make a rich return for trifling labor. On the bending branches of these

ancient trees the fruit is now bronzing under the sunny sky of San Fernando, and next month will furnish 10,000 gallons of olives for oil or pickles, as may be desired by the owner.

Mr. Cazanave is now building on the new San Fernando Colony grounds the largest olive oil factory in the State, so that he can use up all the olives grown in Southern California. The sight of these ancient trees with their rewarding fruit should be an incentive to others to plant this kind of fruit on the warm, high mesas, where the scale-bugs never come, and the crops never fail, and the tree outranks Methuselah and bears fruit for a thousand years.

OLIVE CULTURE IN CALIFORNIA.

Suggestions as to Varieties, Modes of Culture, and Care of the Trees.

Rural Cal Oct.

THE culture of olives in South California on the dry mesas of the interior valleys and on the fog-covered hill-sides of the coast hills, is attracting such universal attention just now, that we gladly make room for the lengthy and exhaustive bulletin on "Olive Culture," written by W. G. Klee, present Inspector of Fruit Pests, and issued by the University of California some time since:

The olive is attracting a great deal of interest in this State, and justly so. California is the only State in the Union that possesses a climate suitable for it. Abundant testimony exists to show that that tree will thrive throughout the larger part of California. The greatest point to be made in favor of the olive is, that it will grow on a soil too dry even for the grape vine and too rocky for any fruit tree. The hills and mountain slopes, not fit for the pasture of even a goat, can be made to produce olives. Precisely such will produce the fruit much earlier than the rich valleys, although in the latter the tree will attain a larger growth. The olive will fill the largest gap in our cultures, and its sphere is such that it will not encroach on any other culture. It is perhaps not as great and valuable product for export that the greatest importance attaches to the olive in California, but rather as a food product for home consumption. It has often been said that the olive is truly the poor man's tree. In a country like California, where a scanty rainfall is the characteristic of many parts, pasturage, and consequently the production of meat and butter, must necessarily be limited, relatively more so as the population increases. The olive can largely supply this growing deficiency. It is the richest and most nutritious of all fruits, for upon it and bread alone a man may be sustained so as to perform the hardest of labor. In the Mediterranean region the olive is of such vast importance that a failure of this crop is a public calamity. A few facts and figures will convey the best idea of its financial value. The crop of Italy, for instance, is estimated to be worth about 200,000,000 francs; Southern France, 61,000,000 francs; in Spain it is variously estimated at from 84,000,000 to 100,000,000 francs and in the Ottoman Empire at 24,000,000 francs annually.

That both olive oil and pickles of the finest quality can be produced in this State, is a fact not to be questioned, after Mr. Ellwood Cooper, of Santa Barbara, has taken the prize at the Paris World's Fair. Years ago, when the Mission fathers first landed in California, they brought with them two varieties of olives, one of which especially has been propagated throughout the State, in different localities. Although a most excellent and hardy variety, and, as we have lately learned from Mr. F. Pohndorff's investigations, one of the best Spanish varieties, known by the name of Cornezueto, it is here, as in Spain, adapted to the warmer parts of the country only. In a cooler climate the maturing of the fruit falls so late in the season, that it interferes sensibly with the blooming of the next. The importance of introducing earlier ripening varieties is, therefore, apparent. Hence it is a matter of congratulation that private individuals, as well as enterprising nurserymen, have begun to import and propagate French and Spanish kinds. At the experimental grounds of the University, we have received, through Mr. Pohndorff's importation, two valuable varieties, the *Nevadillo blanco*, an oval-shaped olive of medium size, ripening very early, and the Manzanillo, a rather large olive, of more rounded shape, also of early maturity. No less than thirteen kinds are the generous gift of Mr. Rock, of San Jose; while Mr. Gould, of Auburn, a gentleman who has been very active in proving the adaptability of the olive to the foothill regions of the Sierra Nevada, has presented five specimens of the Picholine. This is a very hardy and rapidly growing variety. In addition to these, six varieties have been propagated from seed. While the latter are not sure to develope anything valuable, the differences in foilage and habit of growth indicate widely different types. All the kinds have been planted along a road in a soil and exposure well suited to their development, and we hope before many years to ascertain something definite as regards their value.

VARIETIES.

As might be expected, a tree cultivated for such a long period of time, has developed numerous varieties. Owing to their great similarity many writers upon the subject, among them Gasparin, avoid the study of these varieties and give this advice: Cultivate the best variety for your locality, *i. e.*, the one that gives the best oil in the greatest quantity. It seems, therefore, that the best we can do in California is to try a large number of varieties, as it is safe to say that in our diversified climate no one variety will everywhere succeed equally well.

SOIL.

From the experience of the older countries, as well as that of California, it seems that the olive will grow in a variety of soils; the most important point to be observed being that they should be warm and well drained. The most striking instance of this kind that I can recall is from my own experience. Some few years ago I brought a few rooted olives to a place in the Santa Cruz mountains. They were set out in the best of soil, in rich and comparatively moist ground. The growth here for two years was almost nothing, although the trees were well attended to. In March of last year they were removed to different places, some being planted on a high knoll, where the soil is very sandy but contains considerable lime; others in small pockets on a southeast slope, the soil in this case being very rich in humus. With the former, small rooted cuttings but a few inches high were planted. In many instances the holes in which they were planted were made in the rock, and the roots spread on almost bare rock. Without any further attention than being hoed to prevent weeds from smothering them, all grew right along, the older ones making several feet of growth, where they had before made but a few inches. Of the feasibility of setting out such small plants I shall speak later, but desire here to draw the attention to the fact that the locality in question is a comparatively cool one. This experience illustrates the fact that in different sections the exposure should be different. In a warmer section, such as Winters or Vaca valley, evidently the southern exposure on a sunny slope is not needed to produce abundant growth. We find this on Mr. John R. Wolfskill's place, on Putah creek, perhaps the largest trees for their age in the State. Some of these growing on level ground, and 21 years old from the cutting, when measured by me several years ago, were over six feet in girth.

PROPAGATION.

The mode almost exclusively used in California is from cuttings, which are set either in the permanent site or in nursery rows. We quote Mr. Cooper in his treatise on "Olive Culture:" "The common and preferred method is to plant the cuttings taken from trees of sound wood, from three quarters of an inch to an inch and a half in diameter, and from 14 to 16 inches long. These cuttings should be taken from the tree during the months of December and January, neatly trimmed without bruising, and carefully trenched in loose sandy soil. A shady place is preferred. They should be planted in permanent sites from February 20th to March 20th, depending upon the season. The ground should be well prepared, and sufficiently dry so that there is no mud, and the weather should be warm. In Santa Barbara, near the coast, no irrigation is necessary; but very frequent stirring of the top soil with a hoe or iron rake for a considerable distance around the cuttings is necessary during the spring and summer. About three-fourths of all that are well planted will grow. My plan is to set them 20 feet apart each way, and place them in the ground butt end down, and at an angle of about 45°, the top to the north barely covered. Mark the place with a stake. By planting them obliquely, the bottom end will be from 10 inches to one foot below the surface."

This mode of propagation, especially, in a changeable climate, is liable to several objections. One is that the large cuttings often remain dormant for several years, thus causing an uneven stand. By first rooting the cuttings in nursery rows this, of course, is avoided, but never will so fine a root system, almost equal to that from seedling plants, be developed as by starting the trees from small *herbaccous* cuttings. For at least the cooler parts of the State we do not hesitate in recommending this method: Take from young, growing trees the young tops, when neither very soft nor perfectly hard, having three to four sets of leaves and cut with a sharp knife below a joint. Put in a little frame with sand. In the course of three or four months the little cuttings will have rooted, and should then be potted in small pots, where they should remain until well rooted. In a few months more they will be found ready to set out When very warm weather prevails a thin mulching around the little tree may be advisable, but when a moderate temperatnre prevails a few waterings in a month will be all that is necessary — and even this in only an unfavorable spring. It should be added that nothing is gained by setting out the tree before the soil is warm, as it will not grow. The trees referred to previously as planted in the Santa Cruz mountains, were propagated in this manner, and have received no irrigation since setting out. Trees raised from such small cuttings resemble closely young seedlings, and form a beautiful root system.

To get cuttings from large truncheons, such as are imported from Spain and other countries, proceed in the following manner: Cut the truncheons in pieces about 18 inches long, split these pieces in two, put the halves so made into the ground horizontally, with the bark side up, covering with soil four to five inches deep. Let such bed be in a warm, well-drained place, kept moderately moist. In a few months a large number of young shoots will break through the ground. When of suitable size and hardness, as before described, take the cuttings and treat in the manner previously mentioned.

GROWING OLIVES FROM SEED.

This is a mode little practiced so far in this State, but worthy of adoption. Of course the process necessitates grafting or budding. It is the general practice in France to do this after the tree has formed its main branches, either budding or grafting into these during the month of May or June.

The advantages of seedling stocks over cuttings are many: First, vigor of the tree, which produces for a longer time, and more regularly; second, its great hardiness and ability to accomodate itself to the most arid and rocky soil; third, great abundance of horizontal as well as deep-growing roots, especialy deep-growing ones, the latter enabling

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the tree to better resist wind and frost; fourth, a better form in general and easier to develop and guide than that obtained from a cutting.

The olives should not be planted with the pulp, but must be cleaned of this either by letting them rot in a pile or by putting them into an alkaline solution. A simple way to hasten germination is to break the pits, taking care not to hurt the germ. An instrument similar to the nut-cracker has been invented in France which is said to work very well. When the kernels are deprived of their shell, they are steeped in a compost or mixture of cow-dung and sandy soil, and are sown thickly in the month of April. If it is thought too much work to take the kernel out of the pit, they must be soaked in an alkaline solution.

The seedling olive grove at the experimental grounds were treated with an alkaline solution of one-fourth pound of concentrated lye to the gallon of water. Most of them sprouted the first year, although there were a few stragglers produced the next year. Planting the naked kernels gives the quickest result. Without using this artificial means the seeds will remain dormant at least for two years.

The failure in growing plants from the olives produced in this State is clearly due to the fact that the common Mission olive has, at least in most parts of the State, but a small percentage of well-developed germs. This has been observed by Mr. J. R. Wolfskill, of Winters, who told me that he had broken hundreds of pits without finding a sound germ. Our experience at Berkeley has been similar, although the last year's crop showed a larger percentage than was the case in previous years. Mr. E. Cooper in his treatise speaks of the failure to get any Mission olives to grow from seed, and I find upon inquiry that he has also observed the non-development of the germ. It is my belief that other varieties, and perhaps even the common Mission, in other localities will be much more fertile. The following facts seem to substantiate this:

To obtain more insight in the matter, Mr. C. H. Dwinelle obtained for me from Mr. A. S. White, of Riverside, some dried olives, which, upon examination, proved to have nearly 50 per cent. of apparently good kernels. The result of sowing was however very small, some five or six per cent. only germinating, nevertheless, enough to prove that there is a difference in the fertility of the seeds of the Mission olive in different parts of the State; although, perhaps, the cause may lie in difference of variety. There exists in Southern California at least one other variety besides the common Mission—a variety of more straggling habit and with larger fruit. It is generally mixed with the ordinary kind, and not often recognized as being distinct.

The percentage raised from the European seeds of six different kinds was about 15 to 20 per cent. To save considerable work in selecting olives for seed, they should be put in pure water; all those that sink at once will be found to have the seed wholly or partly developed. In Europe the wild olive is much used for grafting stock; this species is nearly always fertile, and it would pay any one who desires to grow olives on a large scale to get a quantity of its seeds.

TIME OF BEARING.

It is argued by many people that the olive requires an excessively long time to come into bearing. In favorable localities this is by no means the case. In the southern part of the State, large olive cuttings commence to bear in the fourth year. Mr. Cooper, of Santa Barbara, reports two gallons of berries on some of his best trees at that age, and as much as 30 gallons from the best at six years. Mr. Kimball, of National City, San Diego, reports similar results. Our own experience at Berkeley, when the summer temperature is very low, must be termed very encouraging. Two small trees, but a few feet high, brought from the Mission of San Jose, were planted in 1873, by Mrs. Jeanne Carr. For two years after Mrs. Carr's departure, they were neglected, but answered very quickly to kind treatment; and after six years from planting produced some fruit, and have produced full crops every two years, steadily increasing. The yield at eight years thus was about 50 pounds; at 10 years over 100 pounds per tree, while this year each tree averaged 225 pounds. In the off years the yield has been about one-quarter as much. Compared with warmer localities, where the Mission olive ripens earlier, the yield perhaps looks small, but with varieties better adapted to our cooler climate the result would doubtless be different. As olives are worth four cents a pound the profit would be very good. Judging from what we know about the adaptability of the olive, it would seem that an olive grove would be one of the safest investments all over the State, provided no over-production should take place.

ENEMIES OF THE OLIVE.

There are, however, a number of drawbacks, chief of which are the insect pests. So far, with the exception of twig-borers, the only insect enemy the olive-grower has had to contend with is the scale, coupled, however, invariably with the black fungus, which it is now pretty well understood feeds upon the viscid excretions of the scale. So severe has the attack of this scale been in the moister parts of the State, that only the most persevering men, led by Mr. Cooper, of Santa Barbara, have succeeded in its suppression.

I do not believe as some do, that the sole remedy for this evil is to leave the coast and seek localities where owing to the intensely dry air, the olive scale seems to be an impossibility. Other factors governing the condition of the tree, and not often considered now, will show themselves. It must be remembered that with the influence of the sea we also lose the more uniform climate which always has been considered of prime importance to the olive. But by starting with thoroughly clean trees and keeping them so I think there need be no fear. For the purpose of keeping the trees clean from the first, whaleoil soap dissolved in a decoction of tobacco water, viz., one pound of soap and one-half pound of tobacco per gallon, is to be recommended. It is here that the small green cuttings previously described are much to be preferred to old cuttings, which nearly always are more or less infested with scales. But the scale is by no means the only formidable enemy the olive-grower of the Old World has to contend with.

The principal ones to be feared there are the *Decus oleæ*, a dipterous insect affecting the pulp of the fruit; the olive moth, *Finea oleela*, which like the apple moth feeds on the seed of the olive; finally, the *Psylla*, a hemipterous insect. Of these three, the first, *Decus oleæ*, is by far the most destructive. According to Pouchet it destroys in France yearly 3,000,000 francs worth of olives; and the other coasts of the Mediterranean do not escape its ravages. It seems to breed all the year round. The fly lays its eggs, one to several, in the pulp of the olive, and the larvæ when hatched live on the pulp next to the pit. It remains here as chrysalis, and finally leaves the olive a flying insect. Whether it has left the fruit before the harvest, or is crushed with the oil, it is almost equally objectionable. This insect is *la mouche* of the French and *macha del olivo* of the Italians.

The olive moth works almost like the apple or codlin moth. The eggs are laid while the pit is still young and tender, the larva living on the kernel of the olive until it leaves it a complete moth, causing the fruit to drop prematurely. This insect does not, however, confine itself to the fruit alone, but works also on the leaves and bark, causing tuberosities and crippling of the leaves.

The *Psylla olew* is a hemipterous insect, which like the dreaded white cottony scale, covers itself with a white viscid covering, fastening itself on young foliage and fruit.

OLIVES AND OLIVE OIL.

Call 4/28/80

It is announced that an extensive plantation of olive trees is to be established in Solano County. The growing of olives and the manufacture of oil have already passed beyond the experimental stage. In San Diego and Santa Barbara counties, in particular, olives have been grown for several years at a very handsome profit, while the California olive oil is so noted for its excellent quality and freedom from adulteration that retailers in New York buy up all they can of our present product, and one or two have recently made large contracts for several years to come. This makes it more difficult for San Francisco grocers to buy enough for their own trade, hence prices both here and in New York are said to be higher than for the best brands of foreign oil. A leading San Francisco dealer, when asked the reason for this demand and the high prices, replied, with emphasis: "Because it is known to be pure. Of course it is free from adulteration."

We have been sending our wines and fruits to the East for a long time. They have gradually made their way against foreign rivals, slowly at first, but rapidly of late, until there is no longer any fear that we shall have a surplus which we cannot dispose of. It is so with what olive oil and pickled olives we ship East. Authorities in such matters declare that both if sent from here in large quantities would immediately overcome the most formidable competition of Europe. If our oil is as fine, relatively, as its admirers claim and the demand for it evidences, and our olives also, then there seems to be no reason why our fruit-growers should not pay more attention to this fruit. At any rate it will do our fruit-growers no harm and cost them nothing to look into the matter a little more closely. It might result very profitably for them.

NOTES.

4/8/80

E. Cooper of Santa Barbara has an olive grove of 6000 trees which yields him 50,000 bottles of the finest oil annually, worth $1 a bottle, or $1000 per acre. Visalia Delta.

OLIVE CULTURE.

An Interesting Essay from a Practical Man.

Rural Calif 1880

From the earliest days the olive has been invested with a peculiar interest. Originating in the distant East, where tradition locates that earthly paradise, the Garden of Eden, it has remained there to sustain, satisfy and gladden successive generations, and also been carried by man as something essential to his comfort and pleasure, through all his wanderings and journeys westward, even to our own fair land upon the shores of the western sea.

The olive and its product, oil, figure most prominently in the sacred writings. The tree is frequently referred to as

AN EMBLEM OF BEAUTY,

Whether clothed in its profusion of white flowers in springtime, or in its evergreen foliage in winter. Again it is presented as an emblem of profusion and gladness when its branches are bending with fruit ready for the harvest. By Divine direction olive-wood was used in constructing certain parts of the temple at Jerusalem, while its oil was made a constituent part of the offerings of the Mosaic ritual, and was also used in consecrating Hebrew kings and priests to their high offices. In the literature of the Eastern empire, especially Mythology, we also find the olive frequently mentioned. Sacred to Minerva, it was to the polished Greek of that early day an emblem of peace and chastity. In reading Plutarch's lives of the great men whose names have been preserved, we find that when the people wished to bestow the highest honor upon their favorite, the investiture was made by publicly placing upon the brow of the candidate a crown wrought of the sprays of the olive. And in the celebrated Olympic games, amidst the acclamation of the multitudes of spectators, this was be-

stowed as the highest prize with which to crown the victor with glory and reverence. And in time of war, when the vanquished wished to approach his powerful opponent, he carried an olive branch as a token symbol of a peaceful disposition. When we make

A CRITICAL STUDY OF THE OLIVE

We find it distinguished for its great longevity and its wonderful usefulness to men. In respect to longevity it ranks the orange, although the famous tree in the garden of the Vatican in Rome is said, upon good authority to be a thousand years old. A high degree of reverence is awakened when we see the photographs of those noted olive trees of Syria and Palestine, still standing as monuments of the dead past, spreading their green branches to the summer sun, and inviting the weary traveler now, as they did Titus and his Roman legions, to rest in their grateful shade.

It is reasonable to suppose that a tree, living on in a healthy condition from age to age, should, under favorable conditions, attain a great size, hence we are not surprised to read the statement of travelers giving the measurement of some of these grand old giants of the East. Some are mentioned having a diameter of fifteen feet at the ground. This

GREAT TENACITY OF LIFE

Permits a treatment which would kill an ordinary fruit tree. If its leaves and branches have become infested with smut or insects, the entire head can be cut away, leaving only the main stem, which will send out new branches, forming a new head with renewed fruitfulness. Olive-wood is used extensively in Europe for cabinet work. At the Cape of Good Hope, on account of its hardness and strength, it is called iron-wood. In China the flowers of the fragrant olive are used for flavoring tea.

THE OLIVE BELT OF THE WORLD

Is quite extensive. Beginning with its home in Asia it extends westward, including parts of the northern coast of Africa, Southern Europe, a part of the coast of Australia and the southern coast of California.

Its true home is a semi-tropical climate, and go where you will along this belt you find it within hailing distance of the sea. From three to ten miles covering the foothills, and sometimes along the Mediterranean it is planted near the water edge. There are exceptions to this rule; at Damascus it is in a flourishing condition fifty miles from the sea. The extreme heat of the interior valleys is unfavorable, also a tropical climate with its accompanying heat and dampness. It is also quite as sensitive to cold. It will not bear well where severe frosts occur at midwinter, as the leaves and branches are killed when the mercury reaches fourteen degrees above zero.

In southern Europe, where the conditions are favorable, olive culture is a marked feature of industry among their dense population.

In Italy, Spain and the south part of France eight million acres are devoted to this industry, producing one hundred and sixty million gallons of oil, besides a large amount of olives in barrels for export. This business in southern France is considered very lucrative. The well-to-do farmer makes oil or prepares the fruit for domestic or foreign market, while in many parts of Spain and Italy the poor are largely dependent upon their olive trees for their support. When compelled to sell their homesteads, whenever it is possible, they reserve their olive trees.

A part of this belt on the Mediterranean, between Genoa and Naples, we can duplicate on this coast from Point Conception to San Diego. Our sea breeze is much stronger, carrying its vitalizing power farther inland, penetrating the nearest valleys—as at San Fernando—and thus making the area of cultivation much more extensive. We cannot of course, now, give a definite estimate of the area of this belt on the Pacific coast where olive culture will give profitable returns, but we feel sure, judging from the results of the work done at Santa Barbara, San Diego, San Fernando, and from what we have done here and at other points, that we have here a true olive belt, side by side with that devoted to the orange, the raisin and the fig.

Now, if the conditions here are favorable to success, and we know the amount of imports in fruit and oil, have we not the motives for extension in doing some thing for ourselves, and in providing the means to save the large amount of money sent to southern Europe for these products?

Many of our own producers thought we could never compete successfully with the Mediterranean oranges in the markets of our Eastern cities, but that fallacy has been destroyed by our shipments this year, through the Orange Growers' Union.

It has been demonstrated that

THE BEST KIND OF OLIVE OIL

Can be produced here, bring a price in market highly satisfactory to the producer, and when the plantations are large enough it can be made in abundance to supply the demand in the market of our whole country.

But again it is said we can not cure olives to supply the demand in market when brought in competition with those from abroad. Our answer is, we have made a good beginning and we can improve, as we have in the process of curing raisins.

There are men still living, who looked on with incredulity, when the first efforts in the raisin industry were made in Riverside; but who will go to-day through the extensive factories there, and not be convinced of the ability of the people to cure raisins. So it will be in curing olives, it can be done, and well done too, by the producer who will work carefully and intelligently until he masters his business. This work can also be done by co-operation in factories, where skilled labor is employed.

I have been requested to give

SOME PRACTICAL DETAILS,

According to my own observation and experience. My first effort in olive culture was made in 1876, when I planted twenty well-rooted cuttings of the Mission variety, giving them all necessary care and attention they made a very rapid growth, and in 1884, gave the first full crop of fruit. Selecting two of the largest and finest trees, kept a careful account of the berries and when all were taken from the trees in February, I found the amount to be seventy-five gallons. These olives after being prepared for the table were retailed by two of our merchants in Pomona for seventy-five dollars. I sold my crop in this way by the barrel, for seventy-five cents per gallon. For three or four years previous to 1884, I had been making experiments and reading everything I could find, explaining or giving direction in the curing process. Being thus prepared, when the full crop came I was able to handle it without loss, and put it upon the market at a very satisfactory price. This curing process is effected with alkali, water and salt. A thorough knowledge can only be obtained by working with a person who has mastered his business.

The same trees which bore so heavily in 1884 are now bending under the weight of fruit, requiring numerous supports to keep the limbs from breaking. I have been offered

EIGHTY CENTS A GALLON

For all that I can prepare for market. Mr. E. T. Palmer, of Pomona, in connection with his preserving and crystallizing business, bottles the olives and sends them to the large cities on this coast and also into the Territories East.

My trees are planted upon gravelly mesa land, and did not require water until they bore a full crop, and very little then, applied when the crop began to color. Be it well understood that they have a good soil and thorough cultivation.

Irrigation required by the orange would prove highly injurious to the olive. It does not do well shaded, in the least, by other trees, and as we know it lives for centuries and attains a great size, we should give it ample room for expansion, I should say from thirty-three to forty feet apart would be a proper distance on rich hill sides, found along the base of the mountains from Pasadena to San Bernardino. The olive will find a congenial home and in return for care and attention will bless the husbandmen in "basket and in store."

So far the Mission olive holds its own for making oil and also for pickling. The Franciscan Fathers knew what they were about when selecting this variety from all those in cultivation in Spain. It will be a difficult matter for us to improve upon their choice for oil or pickles. My neighbor, Mr. E. E. White, has thirty varieties growing in his nursery; only one has yielded fruit up to this date. We shall watch the fruiting of these trees with great interest. The tree bearing fruit this year came to Mr. White labeled "Picholine," or *Olea Oblonga*. I am quite sure it is a misnomer, as it answers fully the catalogue description of the *Olea Subtratunda*, being very small, perfectly round, and intensely bitter, ripening its fruit now October 15th, while the Mission is still green, showing no sign of color. If this tree bearing this small fruit is sold by our nurserymen for the Picholine, it will result in great disappointment, as it is entirely too small for pickling. It is used in France for oil.

Our nurserymen are charging from twenty-five cents to one dollar a tree, according to size, age and variety; planting thirty-three feet apart, forty trees to each acre would be required.

If desired, I will give, in a succeeding number of the RURAL, directions for preparing olives for domestic use according to the Spanish method, discharging the bitterness by water alone.

And now, Mr. Editor, in concluding this letter, I will only add that my highest wishes will be gratified if anything has been written that will awaken thought and interest in this matter of olive culture. Strangers are coming among us to make new homes, and a word in season will sometimes help materially in directing attention to the new forms of industry peculiar to this coast.

C. F. Loop.

An Interesting Essay from a Practical Man.

San Diego Ave

Rural Californian.

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OLIVE CULTURE.

Marysville Appeal Dec 17

It is now in order for every man or woman, who is the owner of land, more or less, to plant the Oriental olive. The olive grows freely anywhere in the Sacramento valley and foothills, and this planting has already ceased to be an experiment. The olive is now grown by hundreds of farmers and amateurs, and it has been demonstrated to a certainty that an acre of olives will net the grower more dollars per acre than any other fruit in this State. The oil commands a commercial demand at a high figure. It is neither bulky or perishable like peaches, pears, grapes and oranges. The transportation on $1,000 worth of oil is trifling in comparison with other fruits. Pickled olives are also cheaply marketed, imperishable, and pay well for pickling. It is no more work to put up olives than small cucumbers, and in the jar they command a very remunerative price. The olive being an evergreen, it is not only useful and profitable but ornamental. There are a number of olive trees growing thriftily in this city which were planted purely for ornamental purposes. These trees demonstrate the fact that they will grow hereabouts, and bear heavily. It grows with a shapely top and its green foliage renders it sightly and attractive. If its culture was entered into largely it would furnish to the laboring masses, as it does in Europe, a healthy substitute for both butter and meat. It will grow in the poorest rocky soil, and with less care and cultivation than almost any other nut or fruit tree. It grows as readily from cuttings as the fig, and the first cost of trees is therefore nominal. When bearing the grove will last for ages.

OLIVES IN SANTA YNEZ.

Delta Santa Maria Times.

We were shown yesterday a sample of olives from Mr. Selby's orchard, near the Mission of Santa Ynez, that would be hard to beat in any country. The orchard is only three years old, yet it is bearing a good crop. Mr. G. W. Lewis brought us the fruit and he says that A. M. Boyd has a fine one-year-old orchard of several thousand trees all growing well, and will plant out forty acres more the coming season. Mr. D'Urban will also put out twenty acres to this fruit the coming season near the town of Ballards. 12/11/86

Visalia Delta

RIVERSIDE ORANGE ORCHARDS.

In the spring of 1880 Hon. A. P. Johnson paid $8000 for a forty-acre tract of land which was planted to orchard, vineyard and alfalfa. On his place are 1500 Muscat vines, some of which were planted after he bought the place. They yielded 1650 boxes of raisins this year and 1200 boxes last year. He has an orange orchard in partial bearing of fifteen acres, we believe. He has been offered $8000 for his crop this season—the same amount that he paid for his whole place six years ago. 12/18/87

A. J. Twogood last spring sold his home place to Mr. Hewittson for the sum of $27,000. A portion of the place was planted to orange trees, but some of them were not yet in bearing, and another was only in light bearing. About six acres, we believe, were what might be considered in good bearing, and now the owner expects to take $10,000 for his orange crop on the trees. He has been offered $8000, but declines the offer. Thus, in six month's time he gets back one-third of his purchase price from a single crop, and has his place left ready to grow and increase in value and get ready to come into full bearing.

Again we ask, what are orchards worth in Riverside ?—*Riverside Press.*

OLIVE CULTURE.

An Exceedingly Promising Branch of Horticulture.

Especially Adapted to the San Joaquin Valley — Already Extensively Introduced in Tulare County.

Visalia Delta

"An olive plantation," says an old Italian proverb, "is a gold mine on the surface of the earth." For centuries it has been an important product of Greece, Italy, France, Spain and the Islands of the Mediterranean, and the extent to which it is grown will probably be a cause of surprise to those who have given little thought to the matter. In Italy alone, which has a total area of 114,000 square miles, considerably less than California, not less than 2,225,000 acres are devoted to the cultivation of the olive. An inferior variety of the fruit was first planted along the coast of California by the Spanish *padres* who established the mission settlements toward the close of the last century or early part of the present. They were never planted in large numbers in any place but were found to grow admirably and bear well, and their cultivation was found to be quite profitable in later years. The Mission olive is a good one

on which to graft better varieties, of which there are many, but should not be planted with any other object in view. In some nurseries in the southern part of the State are more than thirty varieties, most of which are preferable to the Mission. During the past twenty years, and more particularly during the last ten, the cultivation of this fruit has received considerable attention from experienced and intelligent horticulturists, and is now developing into an important industry. The few groves that are bearing are proving themselves more profitable than any other kind of fruit, and there is no doubt that ere many years the olive will figure as one of the most important products of California.

ADAPTED TO THE INTERIOR.

The character of the tree, methods of cultivation and of preparing the fruit for market, are little understood, and many erroneous ideas regarding it prevail. For instance, it is thought by many that it will not thrive when far removed from the sea coast. It does not in the countries of southern Europe, where it is mainly grown, because the valley or hill lands between the sea shore and the mountains in those countries occupy a narrow belt, and the mountains rise percipitously to a height where the cold of winter is too great for them to live. In California the topographical peculiarities and mildness of climate make it possible to grow these trees much farther from the sea and at a greater altitude than in Europe. During a long term of years these trees have been grown as ornaments in many counties of this State, and seem to grow to perfection in the mountains surrounding the upper Sacramento valley, from the fruit of which an excellent quality of oil has been produced. They are growing to-day in nearly every county of central and southern California, and those who have had experience with them are preparing to engage more largely in their cultivation. They were first planted in the San Joaquin valley about fifteen years ago, and began to bear at an early age; and it may not be known to many readers of the DELTA that there are more of these trees growing in Tulare than in any other of the counties in or bordering upon the valley of the San Joaquin, yet such is the case. They have been tried in the prairie lands and in the foothills, and the success met with in their cultivation in both is such as to encourage our orchardists to plant them more largely, for they have many things to recommend them. They will grow on stony foothill lands, too sterile to produce any other fruit tree, or crop of any kind, but will, of course, yield more on better land. The current idea that one must live a lifetime to gather the first crop from a newly-planted orchard, is erroneous. The seeds are slow to germinate, and the young trees require close attention for two or three years before they are set out in their places in the orchard, and in Italy it was sometimes four or fifty years before the trees came into full bearing. In California they are propagated from cuttings, and as early as the third year in the orchard a single tree has been known to bear 1000 olives, but this is far above the average. At five years of age they become quite profitable, and when seven years old and ever after yield abundantly. They are long lived and grow to immense size. In Italy there are olive trees said to be one thousand years old.

PLANTING.

When first planted about one hundred trees are set out on each acre, and it necessary in after years they can be thinned out. The wood is durable and highly prized. On stony hill land they are planted farther apart; and when planted in consociation with grape vines—that the land may be made productive before the trees come into bearing—they are set sixty to seventy feet apart, with rows of grape vines between. As the trees increase in size the vines are removed. In California the average number per acre is about one hundred. The fruit is gathered usually from November to January, or later. When pickled whole they are divided into different grades, and will average seventy-five cents per gallon in value, and are usually put up in barrels. The best are worth $1.25 per gallon. If made into oil the olives are crushed thoroughly and pressed. Water is then added, when they are again pressed and a second quality made. They are pressed a third time making a third quality, and a fourth grade is also made. In Italy the residue is pressed into bricks and used for fuel, but in California this is unnecessary. The oil is worth about $5 per gallon, and the receipts from a California olive grove reach as high as $2,000 per acre. But with a yield of 200 gallons to the acre (which is a small amount) valued at $5 per gallon, the returns from each acre would amount to $1000. In Italy occasional cold years blast the crop and in some instances destroy the trees, but in California loss from this source would be unknown. In the interior of California they should also be free from the ravages of insect pests or diseases. And when attacked the trees may be cut back to the stump, from which will shoot a new and healthy growth. In France it is calculated that about 1,250 gallons may be produced each year from an acre. In California, with a more even climate and more fertil soil the yield should be much larger.

There is no likelihood of over production, for there is a comparatively limited portion of the world adapted to the cultivation of the olive, the demand for which is increasing constantly. The olive crop of France is worth $100,000,000 annually. The United States imports from Europe 500,000 gallons yearly, on which is paid a duty of $600,000.

To speak of the methods of cultivation, preparing the fruit for the market, making the oil, the expense and profits, etc., will not be attempted in the present article, but the DELTA will have more to say concerning the olive in future issues, for some day, certainly, this valuable and beautiful tree will be largely grown in California, and should be in Tulare county.

The Ancient Fruit Now One of America's Great Products.

New York Mail and Express.

From ancient writings, including the Holy Scriptures, it can be ascertained that the olive is one of the oldest known fruits. The Mount of Olives, near Jerusalem, is famous in history. Long before butter was known olive oil was used in the preparation of food. Large quantities of the oil have from time to time been imported here from the shores of the Mediterranean Sea, whence most of the product has been obtained. The climate of California, not being unlike that of the Mediterranean, was considered suitable for the growth of the olive, and an experiment was made which has proved successful. The tree itself is pretty and ornamental. In springtime it is covered with a profusion of white flowers, and in the winter it has an evergreen foliage. When ready for the harvest it is so prolific that the branches bend under the weight of the fruit. Olive wood is also beautiful, and was chosen as parts of the ornamentation of the spacious and magnificent Solomon's temple. The oil is considered by many as something sacred. As such it is used in consecrations and coronations. The ancients used the spray of olive leaves to crown their great men, as it was believed to be an emblem of purity and peace. It was considered the highest honor to be crowned with olive leaves. In time of war an olive branch borne in the hand was a token of peace, and is even now spoken of as such.

The olive tree lives for a long time. Some of the trees on the Mount of Olives, in Judea, are said to be fifteen feet in diameter and over two thousand years old, while that in the Vatican at Rome has a record of over a thousand years. The olive is very hardy and will endure treatment which would kill other trees. If infected with insects the entire head can be cut off and thrown away, while the trunk will sprout again with renewed vigor. In Southern California it has prospered beyond expectation. Being sensitive to excessive heat or cold, its home is in the semi-tropical belt, represented by the Pacific Slope of the United States. It prospers best near the sea, but can be cultivated a short distance inland. With ordinary culture the olive in Europe will produce over twenty gallons of oil per acre, besides allowing a large quantity of the fruit to be used for eating. Although yet in its infancy in this country, experts have said that the oil produced in California is equal to any which has been imported. Growers say the California coast from Point Conception to San Diego, is equal to that between Geneva and Naples for the production of olives. The importations amount to a large sum annually, and if the best olive oil can, as is claimed, be produced here and in sufficient quantities, that product will form another addition to the wealth of the United States. So far as the curing of the fruit is concerned, experience is likely to teach the proper treatment, as it has with the raisin crop. The cuttings of two trees planted in 1876 yielded well in 1884—the ordinary time required for bearing being ten years. The crop of these two trees was then seventy-five gallons of fruit, which sold readily at $1 per gallon after being prepared for the table. When taken from the tree grower realized seventy-five cents per gallon. The same trees were loaded down with fruit this season, and in February will produce a large crop that can be readily sold at the place of growth at eighty-five cents per gallon. The trees are placed upon hillsides, about thirty-five or forty feet apart, to allow for expansion, as they will live and produce for centuries. An acre of ground will hold about forty trees. The small fruit is used for oil, while the large or queen olive is pickled for eating.

Olive trees can be planted on rocky lands where the vine would fail, and the cost of planting the former is about one-third of the latter. The crops are more easily gathered than grapes, while the outfit for preparing olive oil is about one-tenth of that necessary to produce wine. The insect pests can be fought much easier and with less cost than the phylloxera or other enemies of the vine. Being so prolific it becomes sooner profitable to the grower, and each year after bearing the olive tree produces a good crop until it reaches its full development, when it pays a much larger revenue than a vineyard, bearing a crop of from thirty to forty gallons of fruit per tree. The olive oil is also not so much affected as the vine by drought. From the experiments already made and their results it is believed that the American olive groves will in a few years become successful rivals to those of the Mediterranean.

San Fernando Olives.

Los Angeles Herald.

To a lover of the ancient, historic and most useful tree, the olive, the symbol that the earth was tillable by the children of men: and has shown by its persistence of life that it meant to stay and demonstrate the truth of the proposition contained in the rainbow, by laughing at the centuries as they pass, a sight of the sturdy olive trees of San Fernando, that have faced the storms of 100 years and are now more laden with fruit than was ever before witnessed in California, is peculiarly exhilarating and instructive.

All around the ancient inclosure built by the Franciscan Fathers a century ago stand the olive trees which they planted with reverent hands before the Constiution of the United States was adopted. Like that Constitution, they have borne fruit only for the good of mankind, and to-day are gracefully bending beneath a load of nutritious fruit for the benefit of the people.

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The old trees of the San Fernando Mission, owing to a legal contest of title about the land on which they stood were neglected for about ten years and left unpruned, while the land was left untilled. Still the grand old trees maintained their living, but with limited fruiting.

About three years ago, when the title was settled, P. Cazanave took charge of the grounds and plowed them thoroughly. He then pruned the trees judiciously and awaited results. These have been most gratifying and surprising. Without delay these centenarians commenced sending out hundreds of thousands of new branches and loading both young and old with precious fruit, while all around the heavy crop of barley thrives and the trees, though they have received no irrigation, each year produce a glorious crop of handsome olives that will make a rich return for trifling labor. On the bending branches of these ancient trees the fruit is now bronzing under the sunny sky of San Fernando, and next month will furnish 10,000 gallons of olives for oil or pickles, as may be desired by the owner.

Mr. Cazanave is now building on the new San Fernando colony grounds the largest olive oil factory in the State, so that he can use up all the olives grown in Southern California. The sight of these ancient trees with their rewarding fruit should be an incentive to others to plant this kind of fruit on the warm high mesas where scalebugs never come and the crops never fail, and the tree outranks Methuseleh and bears fruit for a thousand years.

OLIVE CULTURE.

An Exceedingly Promising Branch of Horticulture.

Especially Adapted to the San Joaquin Valley — Already Extensively Introduced in Tulare County.

Tulare Delta

"An olive plantation," says an old Italian proverb, "is a gold mine on the surface of the earth." For centuries it has been an important product of Greece, Italy, France, Spain and the Islands of the Mediterranean, and the extent to which it is grown will probably be a cause of surprise to those who have given little thought to the matter. In Italy alone, which has a total area of 114,000 square miles, considerably less than California, not less than 2,225,000 acres are devoted to the cultivation of the olive. An inferior variety of the fruit was first planted along the coast of California by the Spanish *padres* who established the mission settlements toward the close of the last century or early part of the present. They were never planted in large numbers in any place but were found to grow admirably and bear well, and their cultivation was found to be quite profitable in later years. The Mission olive is a good one on which to graft better varieties, of which there are many, but should not be planted with any other object in view. In some nurseries in the southern part of the State are more than thirty varieties, most of which are preferable to the Mission. During the past twenty years, and more particularly during the last ten, the cultivation of this fruit has received considerable attention from experienced and intelligent horticulturists, and is now developing into an important industry. The few groves that are bearing are proving themselves more profitable than any other kind of fruit, and there is no doubt that ere many years the olive will figure as one of the most important products of California.

1/6/

ADAPTED TO THE INTERIOR.

The character of the tree, methods of cultivation and of preparing the fruit for market, are little understood, and many erroneous ideas regarding it prevail. For instance, it is thought by many that it will not thrive when far removed from the sea coast. It does not in the countries of southern Europe, where it is mainly grown, because the valley or hill lands between the sea shore and the mountains in those countries occupy a narrow belt, and the mountains rise percipitously to a height where the cold of winter is too great for them to live. In California the topographical peculiarities and mildness of climate make it possible to grow these trees much farther from the sea and at a greater altitude than in Europe. During a long term of years these trees have been grown as ornaments in many counties of this State, and seem to grow to perfection in the mountains surrounding the upper Sacramento valley, from the fruit of which an excellent quality of oil has been produced. They are growing to-day in nearly every county of central and southern California, and those who have had experience with them are preparing to engage more largely in their cultivation. They were first planted in the San Joaquin valley about fifteen years ago, and began to bear at an early age; and it may not be known to many readers of the DELTA that there are more of these trees growing in Tulare than in any other of the counties in or bordering upon the valley of the San Joaquin, yet such is the case. They have been tried in the prairie lands and in the foothills, and the success met with in their cultivation in both is such as to encourage our orchardists to plant them more largely, for they have many things to recommend them. They will grow on stony foothill lands, too sterile to produce any other fruit tree, or crop of any kind, but will, of course, yield more on better land. The current idea that one must live a lifetime to gather the first crop from a newly-planted orchard, is erroneous. The seeds are slow to germinate, and the young trees require close attention for two or three years before they are set out in their places in the orchard, and in Italy it was sometimes forty or fifty years before the trees came into full bearing. In California they are propagated from cuttings, and as early as the third year in the orchard a single tree has been known to bear 1000 olives, but this is far above the average. At five years of age they become quite profitable, and when seven years old and ever after yield abundantly. They are long lived and grow to immense size. In Italy there are olive trees said to be one thousand years old.

PLANTING.

When first planted about one hundred trees are set out on each acre, and if necessary in after years they can be thinned out. The wood is durable and highly prized. On stony hill land they are planted farther apart; and when planted in consociation with grape vines—that the land may be made productive before the trees come into bearing—they are set sixty to seventy feet apart, with rows of grape vines between. As the trees increase in size the vines are removed. In California the average number per acre is about one hundred. The fruit is gathered usually from November to January, or later. When pickled whole they are divided into different grades, and will average seventy-five cents per gallon in value, and are usually put up in barrels. The best are worth $1.25 per gallon. If made into oil the olives are crushed thoroughly and pressed. Water then added, when they are again pressed and a second quality made. They are pressed a third time making a third quality, and a fourth grade is also made. In Italy the residue is pressed into bricks and used for fuel, but in California this is unnecessary. The oil is worth about $5 per gallon, and the receipts from a California olive grove reach as high as $2,000 per acre. But with a yield of 200 gallons to the acre (which is a small amount) valued at $5 per gallon, the returns from each acre would amount to $1000. In Italy occasional cold years blast the crop and in some instances destroy the trees, but in California loss from this source would be unknown. In the interior of California they should also be free from the ravages of insect pests or diseases. And when attacked the trees may be cut back to the stump, from which will shoot a new and healthy growth. In France it is calculated that about 1,250 gallons may be produced each year from an acre. In California, with a more even climate and more fertil soil the yield should be much larger.

There is no likelihood of over production, for there is a comparatively limited portion of the world adapted to the cultivation of the olive, the demand for which is increasing constantly. The olive crop of France is worth $100,000,000 annually. The United States imports from Europe 500,000 gallons yearly, on which is paid a duty of $600,000.

To speak of the methods of cultivation, preparing the fruit for the market, making the oil, the expense and profits, etc., will not be attempted in the present article, but the DELTA will have more to say concerning the olive in future issues, for some day, certainly, this valuable and beautiful tree will be largely grown in California, and should be in Tulare county.

OLIVE CULTURE.

Interesting Essay by Rev. C. F. Loop, Pomona.

WHAT AN EYE-WITNESS SAW

In Italy and France---Statistics of the Industry In These Countries.

From the earliest days the olive has been invested with a peculiar interest. Originating in the distant East, where tradition locates that earthly paradise, the Garden of Eden, it has remained there to sustain, satisfy and gladden successive generations, and also been carried by man as something essential to his comfort and

pleasure, through all his wanderings and journeys westward, to even our own fair land upon the shores of the western sea.

The olive and its product, oil, figure most prominently in the sacred writings. The tree is frequently referred to as

AN EMBLEM OF BEAUTY,

Whether clothed in its profusion of white flowers in springtime, or in its evergreen foliage in winter. Again it is presented as an emblem of profusion and gladness when its branches are bending with fruit ready for the harvest. By Divine direction olive-wood was used in constructing certain parts of the temple at Jerusalem, while its oil was made a constituent part of the offerings of the Mosaic ritual, and was also used in consecrating Hebrew kings and priests to their high offices. In the literature of the Eastern empire, especially Mythology, we also find the olive frequently mentioned. Sacred to Minerva, it was to the polished Greek of that early day an emblem of peace and chastity. In reading Plutarch's lives of the great men whose names have been preserved, we find that when the people wished to bestow the highest honor upon their favorite, the investiture was made by publicly placing upon the brow of the candidate a crown wrought of the sprays of the olive. And in the celebrated Olympic games, amidst the acclamation of the multitudes of spectators, this was bestowed as the highest prize with which to crown the victor with glory and reverence. And in time of war, when the vanquished wished to approach his powerful opponent, he carried an olive branch as a token symbol of a peaceful disposition. When we make

A CRITICAL STUDY OF THE OLIVE

We find it distinguished for its great longevity and its wonderful usefulness to men. In respect to longevity it ranks with the orange, although the famous tree in the garden of the Vatican in Rome is said, upon good authority, to be a thousand years old. A high degree of reverence is awakened when we see the photographs of those noted olive trees of Syria and Palestine, still standing as monuments of the dead past, spreading their green branches to the summer sun, and inviting the weary traveler now, as they did Titus and his Roman legions, to rest in their grateful shade.

It is reasonable to suppose that a tree, living on in a healthy condition from age to age, should, under favorable conditions, attain a great size, hence we are not surprised to read the statement of travelers giving the measurement of some of these grand old giants of the East. Some are mentioned as having a diameter of fifteen feet at the ground. This

GREAT TENACITY OF LIFE

Permits a treatment which would kill an ordinary fruit tree. If its leaves and branches have become infested with smut or insects, the entire head can be cut away, leaving only the main stem, which will send out new branches, forming a new head with renewed fruitfulness. Olive-wood is used extensively in Europe for cabinet work. At the Cape of Good Hope, on account of its hardness and strength, it is called iron-wood. In China the flowers of the fragrant olive are used for flavoring tea.

THE OLIVE BELT OF THE WORLD

Is quite extensive. Beginning with its home in Asia it extends westward, including parts of the northern coast of Africa, Southern Europe, a part of the coast of Australia and the southern coast of California.

Its true home is a semi-tropical climate, and go where you will along this belt you find it within hailing distance of the sea. From three to ten miles covering the foothills, and sometimes along the Mediterranean Sea it is planted near the water edge. There are exceptions to this rule; at Damascus it is in a flourishing condition fifty miles from the sea. The extreme heat of the interior valleys is unfavorable, also a tropical climate with its accompanying heat and dampness. It is also quite as sensitive to cold. It will not bear well where severe frosts occur at midwinter, as the leaves and branches are killed when the mercury reaches fourteen degrees above zero.

In southern Europe, where the conditions are favorable, olive culture is a marked feature of industry among their dense population.

In Italy, Spain and the southern part of France eight million acres are devoted to this industry, producing one hundred and sixty million gallons of oil besides a large amount of olives in barrels for export. This business in southern France is considered very lucretive. The well-to-do farmer makes oil or prepares the fruit for domestic or foreign market, while in many parts of Spain and Italy the poor are largely dependent upon their olive trees for their support. When compelled to sell their homesteads, whenever it is possible, they reserve their olive trees.

A part of this belt on the Mediterranean, between Genoa and Naples, we can duplicate on this coast from Point Conception to San Diego. Our sea breeze is much stronger, carrying its vitalizing power farther inland, penetrating the nearest valleys—as at San Fernando—and thus making the area of cultivation much more extensive. We cannot of course, now, give a definate estimate of the area of this belt on the Pacific coast, where olive culture will give profitable returns, but we feel sure, judging from the results of the work done at Santa Barbara, San Diego, San Fernando, and from what we have done here and at other points, that we have here a true olive belt, side by side with that devoted to the orange, the raisin and the fig.

Now, if the conditions here are favorable to success, and we know the amount of imports in fruit and oil, have we not the motives for extension in doing something for ourselves, and in providing the means to save the large amount of money sent to Southern Europe for these products?

Many of our own producers thought we could never compete successfully with the Mediterranean oranges in the markets of our eastern cities, but that fallacy has been destroyed by our shipments this year, through the Orange Growers' Union.

It has been demonstrated that

THE BEST KIND OF OLIVE OIL

Can be produced here, bring a price in market highly satisfactory to the the producer, and when the plantations are large enough it can be made in abundance to supply the demand in the market of our whole country.

But again it is said we can not cure olives to supply the demand in market when brought in competition with those from abroad. Our answer is, we have made a good beginning and we can improve, as we have in the process of curing raisins.

There are men still living, who looked on with incredulity, when the first efforts in raisin industry were made in Riverside; but who will go today through the extensive factories there, and not be convinced of the ability of the people to cure raisins? So it will be in curing olives, it can be done, and well done too, by the producer who will work carefully and intelligently until he masters his business. This work can also be done by co-operation in factories, where skilled labor is employed.

I have been requested to give

SOME PRACTICAL DETAILS,

According to my own observation and experience. My first effort in olive cult- was made in 1876, when I planted twenty well-rooted cuttings of the Mission variety, giving them all necessary care and attention; they made a very rapid growth and in 1884 gave the first full crop of fruit. Selecting two of the largest and finest trees in February, I found the amount to be seventy-five gallons. These olives after being prepared for the table were retailed by two of our merchants in Pomona, for seventy-five dollars. I sold my crop in this way by the barrel, for seventy-five cents per gallon. For three or four years previous to 1884, I had been making experiments and reading everything I could find, explaining and giving directions in the curing process. Being thus prepared, when the full crop came, I was able to handle it without loss, and put it upon the market at a very satisfactory price. This curing process is effected with alkali, water and salt. A thorough knowledge can only be obtained by working with a person who has mastered his business.

The trees which bore so heavily in 1884, are now bending under the weight of fruit, requiring numerous supports to keep the limbs from breaking. I have been offered

EIGHTY CENTS A GALLON

For all that I can prepare for market. Mr. E. T. Palmer, of Pomona, in connection with his preserving and crystalizing business, bottles the olives and sends them to the large cities on this coast and also into the territories East.

My trees are planted upon gravelly mesa land, and did not require water until they bore a full crop, and very little then, applied when the crop began to color. Be it well understood that they have good soil and thorough cultivation.

Irrigation required by the orange would prove highly injurious to the olive. It does not do well shaded in the least, by other trees, as we know it lives for centuries and attains a great size, we should give it ample room for expansion, I should say thirty-three to forty feet apart would be a proper distance on rich hillsides, found along the base of mountains from Pasadena to San Bernardino. The olive will find a congenial home, and in return for care and attention will bless the husbandman in "basket and in store."

So far the Mission olive holds its own for making oil and also for pickling. The Franciscan Fathers knew what they were about when selecting this variety from all those in cultivation in Spain. It will be a difficult matter for us to improve upon their choice for oil or pickles. My neighbor, Mr. E. E. White, has thirty varieties growing in his nursery; only one has yielded fruit up to this date. We shall watch the fruiting of these trees with great interest. The tree bearing fruit this year came to Mr. White labeled "Picholine," or *Olea Oblonga*. I am quite sure it is a misnomer, as it answers fully the catalogue description of the *Olea Subtratunda*, being very small, perfectly round and intensely bitter, ripening its fruit now October 15th, while the Mission is still green, showing no sign of color. If this tree bearing this small fruit is sold by our nurserymen for the Picholine, it will result in great disappointment, as it is entirely too small for pickling. It is used in France for oil.

Our nurserymen are charging from twenty-five cents to one dollar a tree, according to size, age and variety; planting thirty-three feet apart, forty trees to each acre would be required.

If desired, I will give, in a succeeding number of the *Rural*, directions for preparing olives for domestic use according to the Spanish method, discharging the bitterness by water alone.

And now, Mr. Editor, in concluding this letter, I only add that my highest wishes will be gratified if anything has been written that will awaken thought and interest in this matter of olive culture. Strangers are coming among us to make new homes, and a word in season will sometimes help materially in directing attention to the new forms of industry peculiar to this coast.—*C. L. Loop in the Rural Californian.*

POMONA, Oct. 15, 1886.

A PROFITABLE OLIVE ORCHARD.

Rural Cal Jan 87

On a recent visit to Ellwood, Mr. Cooper's farm, twelves miles west of Santa Barbara, a general surprise awaited us. There could be no room for doubt that Mr. Cooper had been very successful in the management of his farm of 2000 acres, as the four-horse wagon loads of English walnuts and almonds coming into town recently from his place gave abundant evidence, but we were not prepared to spend a half-day on such a farm, with its tens of thousands of trees of various kinds, its hundreds of acres in cereals, and its large dairy of blooded stock, and after a close look at many parts of it never to see a single weed, even by the roadside. That was a real surprise; but the astonishing thing to see was his olive orchard of about fifty acres, all the trees clean, healthy and strong growers, the branches all bending with the enormous weight of the fruit, many of the seven-year trees having a full barrel of olives to the tree, the larger nine and ten-year-old trees having on them two barrels of olives apiece. On the other hand, in Santa Bar-

baba, trees much older, will not produce a hatful to the tree, and simply because they are not kept free from the black scale nor properly pruned and cultivated. For example, near Mayor Fernald's on the south, is a block with two or three acres of olive trees on it, and the ground on which they stand is used for a cow pasture, the trees are fruitless and worthless, and near the lighthouse more than two hundred trees about ten years old have just been dug up and cut into firewood. All this neglect and destruction around Santa Barbara would be exceedingly discouraging had not Ellwood Cooper courageously set himself to work to destroy the scale bug instead of the tree, and he is now rewarded with the astonishing crop hanging on his 5000 trees and just ready for the oil mill. Our readers are aware that a barrel of olives will produce about four gallons of oil, worth $5 a gallon, or $20 to the well-laden tree seven years old. He has just completed an oil mill on a large plan and in the most substantial manner, which is capable of reducing 4000 pounds of olives each twenty-four hours, and will be run day and night for a week at a time until his crop for the year has been turned into oil. Let olive skeptics go and see the olives and olive trees at Ellwood.—*Santa Barbara Press.*

Profits in Olives.

Those seeking a profitable tree to plant in the hills where water is scant should carefully examine the olive. It thrives with the least possible amount of moisture, is grown from seed or cuttings, comes into bearing at five or six years old but reaches its full development at thirty and continues to bear for one hundred and fifty years.

The estimated crops are from 1,000 to 4,000 gallons of olives to the acre worth seventy-five cents a gallon, thus giving from $750 to $3,000 an acre. It stands frost better than the orange, its fruits can be easily transported and the market for pickled olives and olive oil extends over the habitable world.

THE OLIVE TREE.

It Yields Its Fruit Probably for Centuries.

San Jose Times.

Among the many trees now claiming the attention of the people of Santa Clara County and the whole State, few give promise of more flattering returns than the olive. This is an ancient, historic and useful tree, living through centuries and yielding its fruits to the generations as they come and pass away.

The cultivation of the olive, like that of the grape and the date, was introduced into California by the Catholic fathers around the old missions. But while much attention has has been given to the grape, it is only during the last few years that any considerable attention has been paid to the olive. Some of the trees about the old missions in Southern California are now a century old and are still as vigorous as could be wished.

There is no variety of tree that thrives better or needs less care than the olive. The trees can be planted on rock lands where the vine would fail, and the cost of planting these trees is not one-third that of vines. The crops are more easily gathered than grapes and the plant necessary for the production of olive oil is about one-tenth that necessary for making wine. The insect pests affecting the olives are the same as those affecting other fruit trees—no more difficult to fight, and not near so much to be dreaded as the phylloxera. It will stand great drougth, will endure neglect, and will prosper along fences, avenues and other uncultivated places.

The olive requires a longer time to bring in returns than some other kinds of fruits, but when once in bearing it yields prolific crops, and continues with proper care, to improve for centuries. It does not, like the peach and some other kinds of fruit, die out in a few years, but yields increased returns each year for generations; thus making itself one of the most profitable of trees.

The tree can be propagated from cuttings, and there is no trouble about packing and shipping, as with green fruits. The transportation difficulties, so discouraging to the producers of grapes, peaches, etc., hardly enter into the business of olive growing.

From what has been said the impression must not be received that olives are only suited to poor soil, and need no care. While they produce well on poor, and rocky soil not adapted to other kinds of trees, or even vines, they grow much better and yield much more handsome returns when planted on good soil and given a generous cultivation. It is not adapted, however, to very damp land; and even on rich bottom lands, while its growth is vigorous, the fruit is said to be inferior. The "Mount of Olives," mentioned in the New Testament, near Jerusalem, is a high rock ridge 3000 feet above the sea; and near the noted ruins of Baalbec is an olive grove which seems to grow out of a mass of rocks.

Italy has an area about one-third as great as California, and the acreage in olives in that country is two and a quarter millions. Large quantities of olives are used for pickling and other purposes, and about 90,000,000 gallons of oil are produced. The exports of oil alone bring the Italians an annual income of over $40,000.

The ancient Greeks and Romans as well as their modern successors in occupancy, and indeed the entire people who inhabit the countries on both shores of the Mediterranean, held, and hold, the olive in the highest esteem. It grows on the summit of all their rocky heights and furnishes them with an element of food scarcely less valuable than bread-stuffs. Many olive trees planted before the Christian era still flourish. A tree 100 years old, drawing its sustenance apparently from rocks, yields what is equal in nutritious value to two pounds of flesh meat or half a pound of butter daily, so that with good bread and olives the hard-working peasant keeps up his energies of daily toil.

Intelligent and educated natives of Southern Europe have no relish for butter, regarding dairy products generally as uncleanly and only fit for semi-barbarous people to use as food. But the olive they regard as correspondent to purity and mental cultivation. They adduce the disgusting diseases prevalent among people who largely use hogs' flesh and other animal food as proving that the highest civilization of the world has been reached where the olive supplies, directly from nature, the carbon element so needed in nutrition. These latter were evidently the first to reach civilization, and, it is believed, that they will excel, when freed from certain disadvantages, nations who depend mainly upon cattle and hogs for their subsistence.

These sentiments are said to be largely shared, though not distinctly formulated, by all grades of people in Southern Europe. It is certain that carbon in some form is indispensable to healthy nutrition; that it cannot be secured, with reasonable certainty of purity, from flesh or dairy products, but can be from the olive. In this aspect of the case, California can, by its cultivation and extensive use, secure a position in advance of any people on the globe.

The salted olive has been highly recommended as a remedy for dyspepsia, causing no nausea, but healing and soothing inflamed surfaces.

The tree is much hardier than the orange, growing in portions of Italy where snow often falls to a depth of a few inches and sometimes to two feet. Rain freezing on the tree is fatal to the smaller twigs, but the tree and roots remain uninjured. There are very few portions of California cold enough to prevent the olive from growing. It is very tenacious of life and easily propagated. The usual mode of propagation is by cutting one to three inches in diameter and three feet in length.

For use as oil the berries are allowed to ripen which they do here about January 1st. They are then dried, and the oil extracted much the same as in flax seed, but the filtering must be done with great thoroughness, or the oil will become rancid, while if pure it will keep for a long time.

If the berries are for table use they are picked a little earlier and soaked in water for six weeks, the water being changed daily to remove the acid taste. They are then placed in brine, and the process is complete.

For olive oil known to be pure, $4 per gallon can be obtained, though imported oil, believed to be largely adulterated with cotton seed oil or lard, may be obtained for half the money. The berries sell for fifty cents a gallon, and one man can gather from 150 to 350 pounds a day.

It is now stated on good authority that another important railroad move will shortly be made, being the extension of the Denver and Rio Grande railroad from Frisco, in Utah, to the Calico mining district, in San Bernardino county, and thence to all important points in California. The object of this extension, it is said, is to have an outlet for the product of the anthracite coal mines of Crested Butte, Colorado. It is believed that coal can be supplied to all Southern California at very low prices. And another object in seeking the mining districts of Southern California is to take return freights of ores to mix with the ores f r

the Denver smelters. Definite news as to the intentions of the Denver and Rio Grande it is believed will be made public in a few days. With a direct line through to Colorado a valuable section of San Diego's "back country" will have seaport communication.—San.

Olive Planting.

Valley Rec'd 3/22/87

THE BEST LOCALITIES.

For the cultivation of the olive as taught by observations in the countries of Europe and Asia where it has been raised for centuries are evidently outlined as follows: 1st, a semi-tropical climate. A temperature of 14 degrees is said to be fatal to them, and it were better if the limit were never reached.

2. The olive loves the air of the sea, not close to the shore but from five to fifty miles away where the winds are somewhat tempered. No tree is more sensitive to chilling winds than the olive, and torrid summer heats are equally unfavorable.

3. The soil must be dry, not permitting water to stand on or near the surface; hence that of gravelly nature is the best. We have all of these conditions in Santa Clara county. We have the climate everywhere. We are exactly the proper distance from the sea. We are protected from winds, and never have the extreme heat of valleys farther inland. Of soils we have many thousands of acres exactly suited. Almost all of our mountain lands, much of the foothill country, and many locations in the even valley are suitable for planting.

NO IRRIGATION

Is ever required, and lands that must be irrigated are not desirable, and we do not believe that success will even attend culture on such lands. The olive roots go down deep into the soil, and will creep down between the crevices of rocks even, preferring to find the proper moisture far below the surface.

THE PRODUCTS

Of the olive trees are oil and the fruit preserved as a pickle. Pickled olives are made both from the green fruit, and that which is mature. As picked from the trees the olive is not eatable. Prepared by soaking in alkaline water, and preserved in strong brine, there results an article of food, more and more sought after as it becomes known. People acquire a taste for pickled olives in a short time. They are very appetizing and nourishing, and seem to impart vigor and energy. A slice of bread, a dozen olives and a tiny glass of wine make a lunch that cannot be surpassed.

The oil is in use everywhere, and so great is the demand for it, that there are not olives enough in the whole world to supply it, and as a consequence, cotton seed oil, peanut oil, and other vegetable oils are bottled and sold for pure material. People will have the pure oil if they can get it, and will pay almost any price for it. Mr. E. E. Goodrich owns the largest orchard in Santa Clara county, partly planted twenty years ago and enlarged from time to time, till it now comprises 80 acres. He makes both oil and pickles, the latter selling at fifty cents per gallon, and the former at $5.

It does not require an extensive plant to take care of the crop. A few tanks for pickles; a simple grinding mill, consisting of a large stone rolling on its edge on a circular bed, with a small horse power for its propulsion; a small but powerful oil press, and tanks of brickwork lined with marble, comprise the outfit for manufacture.

VARIETIES AND PLANTING.

The Mission olive has been grown here for a hundred years and is good both for oil and pickles. The Picholine olive has been planted some of late, and Mr. John Rock, the present manager of the California Nursery Company at Niles, has secured some new varieties which not only come into bearing within two or three years after planting but seem to possess all the qualities required of a good olive. Olives are propagated by cuttings, pieces of large limbs or anything taking root freely.

The present practice seems to be to plant the trees and to plant vines at the same time. At two years the vines begin to yield their fruit, and will more than pay for the cost and care of the whole by the time the olives come to bearing, which will be in four to six years. The vines are then to be removed as fast as they are in the way of the proper development of the trees, until the olive is producing full crops, when they may be all removed. Olive trees require good cultivation, careful pruning, and spraying occasionally to keep them free from scale.

A LONG LIVED TREE.

Once planted the olive tree will grow and bear fruit for a century. If the top becomes too large it can be cut down to a mere stump and the whole renewed with new and vigorous wood. The tree grows about twice as fast in California as it does in Europe. According to past experience in six or eight years from planting, amounting, at present prices, to fully $10 per tree or $800 to $1000 per acre.

NO DANGER OF OVER PRODUCTION.

There can be no possible danger of overproduction. California is the only place in the United States which seems adapted to olive culture. Oregon has too much rainfall, and in most places is liable to be too cold in winter. Of the countries bordering us, Mexico is probably too hot in summer, except in the northern portion. With this limited area for production, and the fact that the imports into the United States from Europe amount to half a million gallons, with a constantly increasing demand for a pure article, there is no reason why there should not be a market for every gallon that can be produced on every acre in the State of California that is adapted to olive culture. The harvest comes from December to March, a season during which there is no rush of other work, and enabling orchardists to keep their trusted hands the year round.

The wood is very hard, with a beautiful grain, and susceptible of a high polish, adapting it to the manufacture of ornamental articles.

We therefore advise such of our people as have lands in suitable localities to make arrangements to plant a few acres of olives. The culture in this State has passed beyond the bounds of experiment and the prospect for financial success is as well assured as with fruit or vines. Besides this it introduces an element of diversity in our productions which is always desirable in any country. We believe the main reliance should be placed on the production of oil, yet the use of the pickled olive is increasing every year, particularly, among our own people as they become accustomed to it.

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OLIVE CULTURE.

A Remarkable Handy, Prolific, Valuable and Long-lived Tree.

Its Cultivation Well Adapted to the San Joaquin Valley Lands and Adjacent Foothill Region.

Visalia Delta

The cultivation of the olive is a matter that has received a considerable amount of space in these columns, as the region is well adapted to the growth of this valuable tree. The following article, which is an extract from a private letter from William A. Lawson to Dr. L. M. Agard, will well repay reading.

"I have read Mr. Whitney's articles on olive culture, and have been surprised to find him expressing the opinion that it is wrong to plant our best land in olives. Does it not seem reasonable, that if it pays to grow the olive at all, one should choose the land best suited to the purpose? The truth is that there is a great deal of land in the foothills that will scarcely support any other profitable tree than the olive, but it by no means follows, for that reason, that better land should not be devoted to the tree. The fact that the olive is planted on the steep slopes of the Alpes-Maritimes, where costly terracing has to be resorted to, is rather an indication of the value of the tree than anything else. Of course the orange could not be grown in such situations, because it demands irrigation. Besides, those mountain slopes are manured at great cost of labor, the peasants toiling up the terraces with baskets of fertilizers upon their backs.

Mr. Whitney seems to have overlooked the well-established fact that olives grown on hill-sides yield a finer quality of oil than those grown on valley land, a reason sufficient to induce planting on the rougher lands. Good drainage is essential to the olive, and bottom lands are, hence, unsuited to the tree.

You remember the letters from Sutcliffe that appeared in the San Francisco *Chronicle* last year, relative to the olive? Writing from France he said that the olive is there more profitable ("in an ordinary state of prosperity") than cereals or vine. And he went abroad with the special purpose of investigating the subject of olive culture.

It is possible, as Mr. Whitney says, that the duty on olive oil will sooner or later be taken off. But the same is true of wine and brandy, raisins, figs, nuts, oranges, lemons, prunes and other products of orchard and vineyard. And his argument, applied to the olive, of competition with the cheap labor of Europe, applies as well to the vine

orange, almond, prune, etc. Why should the olive be singled out? It can be grown with much less expense and care than the orange or the grape. I think the true idea for California is to grow such fruits as can not be produced elsewhere in the United States (Florida perhaps excepted), fearless of European competition. Thousands of years of the closest kind of competition have not destroyed the profits of olive growing in the countries about the Mediterranean. France has 400,000 acres in olives; Italy 1,500,000 acres; Spain an enormous area planted to the tree. But France can not, or does not raise olives enough to supply the foreign demand for oil, and notoriously uses cotton-seed and other oils to adulterate the insufficient product of olive oil.

Mr. Whitney says that 'in point of fact we get a great deal of the very best oil that is made in France or Italy.' This is contrary to the opinion of U. S. Consul Walsh, at Florence, who has officially reported to our Government that 'no pure oil is exported from Italy.' 'Twenty-five per cent,' he declares, 'of the liquid exported is composed of cotton-seed oil, and the mixture sometimes contains fifty per cent.' Our Consuls at France have made like statements. This is the 'virgin Italian oil" that can be bought in San Francisco at $2 38 a gallon.

Ellwood Cooper of Santa Barbara has had to compete against all Europe (save for the duty of $1 a gallon), and his oil is quoted at $13 50 per dozen 'quart' bottles, and hard to get. He has told me that ten-year-old trees should give an average of 150 pounds of berries each, and that 15 pounds of berries make one bottle of oil. His trees are all of the Mission variety, and the soil is good—some of it (or much of it), adobe.

The yield of Mr. Whitney's twelve-or-thirteen-year-old-trees (forty-five pounds each) is certainly small. This is probably the cause of his poor opinion of the olive for profit. A judicious pruning might greatly improve their bearing qualities. A ten-year-old olive tree blew down last winter in this city. Its owner, (Peter Kunz) told me it bore 150 pounds a year. Isaac Lea, at Florin, has some twelve-year old olive trees that he says bear 125 pounds each. There are some very old Mission trees at San Diego that have borne 150 gallons of berries each annually, for two years in succession. In Ellwood Cooper's pamphlet on the olive, he says that in 1878 he took over thirty gallons each off a few of his best trees, his orchard being then only six years old. He adds that he thought some of his eight-year-old trees would bear over forty gallons each. Mr. Whitneys trees do not, therefore, furnish a fair criterion of the yield of the olive in California. Our virgin soil gives far better returns than those obtained in Europe with the most costly fertilization. Thus in Venitia, sixteen-year-old trees are said to yield but four gallons of berries each, and throughout the Mediterranean region the olive tree does not bear until ten years of age.

Consul Oppenheim, at Cadiz, reports that 'the best' olive groves give a net income of $58 an acre, and that the average is $20 an acre. He estimates the net income of orange orchards there at $30 an acre. Consul Roosevelt, at Bordeaux, has estimated the net returns from the vinyards of that district at $23 an acre; not a bad showing for the olive, in comparison. I may add that one of our consuls gives the average net returns of the best olive orchards in Tuscany at $62 an acre. Manuring is there a heavy expense. In a total annual expense of 424 lire per hectare (2½ acres), the manure cost 300 lire.

Leaving oil out of consideration, there ought always to be a good profit in California olives for pickling purposes. Pickled ripe olives make up a large part of the food of millions of people in Europe. These are not the pickled green olives of commerce, but those taken from the tree after they have turned black. There is no more wholesome food. America will consume many millions of gallons of such pickles annually, when they can be retailed at a dollar a gallon, which would leave a handsome profit to the grower. The pickling need cost no more than ten cents a gallon.

At present imported pickled olives cost about $1 50 a gallon, wholesale, in San Francisco. The California pickled olive (Mission variety) sells readily at from 80 cents to $1 a gallon, to wholesalers.

I believe with Mr. Flamant of Napa, (who has sixty acres in olives) that 'the cultivation of the olive is going to attract much more interest in California than viticulture, because either by pickling or making oil, it will pay three or four times as much.' He was brought up in France among olive trees and vines, and his opinion is certainly valuable. He has an extensive vineyard, in addition to his olive orchard."

THE OLIVE.

Its History—Hardiness—Conditions of Growth—Propagation—Process of Oil Making—Importance of Its Culture in San Diego County.

[The following excerpts from a book on olive culture by Frank S. Kimball, of National City, to be published early next month, have been kindly furnished us for publication. In a note accompanying them the author explains that they are necessarily detached and therefore more or less incomplete; also that no reference has been made to the profits of olive culture, because his experience in manufacture has not proceeded far enough to permit him to do so. ED. UNION.]

To the Reader.

The wonderful adaptation of soil and climate—to the production of the olive in various sections of California, and especially in the southern counties, has attracted the attention of many far-seeing persons, who, after giving the subject some little study, have engaged in its cultivation.

So widespread has become the desire to learn if the probabilities and possibilities of returns will warrant its general cultivation that every *fact* relating to its propagation and cultivation should be placed in the most convenient and accessible form. To partially supply this want is the object aimed at in the preparation of the following chapters:

HISTORY.

The written history of the olive tree antedates that of any other representation of the earth's flora, and during all the ages which have come and gone since its first mention, we find no record of its extended distribution, and therefore conclude that no other plant so necessary to supply the wants of man is so restricted in its area of profitable cultivation, clearly pointing to the fact, that wherever it can be successfully cultivated, no other tree can equal it for profit.

HARDINESS.

When cultivated within the limits of its natural habitat, the hardiness of this tree secures to it a prolonged existence—in fact, it may be said to "live forever." Indisputable evidence exists that to-day there is growing in Pescia, Italy, an olive tree more than 700 years old. From all historical reference to the olive tree, we know that by the ancients it was held in high esteem, and by them was considered an emblem of peace.

CONDITIONS.

Soil, climatic conditions and latitude favor the introduction of the olive into several of the Atlantic seaboard and Gulf States, as well as on the Pacific coast. Its cultivation in California dates from the period immediately subsequent to the establishment of the first Jesuit Mission on the Pacific coast, which was founded in 1769, at a point about six miles northeasterly from the bay of San Diego, in San Diego county.

In 1869, when this Mission orchard had been planted for a century, I counted 347 trees, and not a single perfect specimen could be found, a large number of them having been burned to a greater or less extent by camp fires, while the Mission was occupied by United States soldiers after the close of the war with Mexico.

For years past this venerable orchard has been in the hands of those whose "tender mercies are cruel," and it is fast succumbing to a forest of malva; and to-day the wonder is that there exists a monumental olive tree to mark the spot where Junipero Serra laid the foundation of the first mission in California.

TENACITY OF LIFE.

Search through natural history in its relation to the flora of our globe, and there is not found another plant which has so strong a hold on existence. Even the pins which secured to the ground the tents of the quadron of cavalry, which accompanied the Emperor of Morocco on a journey, refused to surrender their existence and sent roots deep into the earth and their shafts toward heaven. Their position, as they grow, show that they once secured the tents of soldiers. In a nursery of olive cuttings which I planted in 1871, one of the cuttings showed no sign of growth till late in the summer of 1876, and then made one of the finest trees in the nursery.

PROPAGATION.

The usual and most successful method of propagation is to take limbs from bearing trees—selecting only those from trees which are the best bearers—cut them in pieces ten inches long, plant in rows two and a half to three feet apart and about one foot in the rows, the top of the cutting a little above the surface of the ground.

The earth *must* be kept *moist*, nor must it be suffered to get dry, for when this occurs the sap, which would under favorable conditions be converted into roots, is absorbed by the dryer ground and the vitality of the culling is destroyed.

It is not necessary to plant cuttings in the nursery and remove the trees thence to the orchard. The cuttings, if of good size, may better be planted in orchard form at first, but special care must be taken in packing the earth *firmly* around the cuttings, which, for orchard planting, should not be less than an inch in diameter. The ground around the cutting must be kept in a state of perfect tilth, to insure the best results.

There are various theories in regard to the distance between trees in the orchard. Some planters adopt forty feet as the proper distance, others plant at thirty feet, and still others at twenty-five fee .

I have planted at twenty and at twenty-four feet, and in future shall plant at these distances, depending on location and kind of soil, and by the quincunx method.

AS AN ECONOMIC PLANT

When applied to the uses of man none other holds a parallel relation to the olive, and this proposition applies not only to the countries where it is produced, but to all countries where civilization exists. To such an extent has this plant become indispensible, that Hon. Marshall P. Wilder, Commissioner from the United States to the Universal Exposition in Paris in 1867, after

a most exhaustive examination through the olive producing districts of southern Europe, in his report to the Senate of the United States, says of the fruit: "It plays a most important part in the domestic economy of Europe. It is not only a source of light, but to a great extent of life itself. A large portion of the inhabitants of southern Europe would perish were the olive crop to fail." Outside of its value as a food producing plant, its products enter into the indispensible requirements of man to a greater extent than does the fruit of any other tree—medicine, surgery, the arts, manufactures, especially those of woolen fabrics of the finer qualities. To such an extent is the oil demanded for the latter purpose that one manufacturing firm in Philadelphia has consumed more than 280,000 gallons in a single year, which represents the annual product of about 100,000 trees from eight to ten years old, requiring the cultivation of more than 1,000 acres to produce it.

Multiply this by the number of those who use a similar quantity, and an enormous aggregate is found.

For the purposes named, and for all culinary purposes, Europe sends us the oil, the quantity of domestic production being too small to be mentioned.

AS A TIMBER TREE

It is one of the most beautiful known to the turner's art, and to the cabinet maker a perfect treasure. Before ivory was used by the ancients, olive wood was the sculptor's choice from which to carve their divinities.

OIL MAKING.

The process is similar to that of making cider from apples, that is to say, the fruit is ground to a pulp, which is placed in a proper receptacle, and subjected to great pressure.

The entire process may be seen at my oil works in National City.

After the oil is expressed it must stand without the least disturbance for about three months, when the fibrous matter is thrown to the bottom by a natural settlement, and the oil above may be drawn off and packed for market.

It is not for a moment to be supposed that the best methods of preparing the olives for the press are known at this early stage of manufacture.

In Europe long experience has taught the olive-grower to dry his olives to a certain stage, only learned by long experience, on brick pavements, so that no peculiar or "oil" taste may be communicated to the oil by contact with any substance liable to produce this result.

The haste with which everything is done by Americans requires that the olives shall be picked to-day, placed in an evaporator and dried to-morrow, and the following day sent to the press.

No time is lost in putting the oil through a process of filtering, and in a few days the oil is on the market.

Whether the heat applied in the evaporator affects the oil favorably, unfavorably or not is a question which time alone can determine. The probabilities, however, are that the forcing of maturity by artificial heat may increase the density of the oil, making it too "fat," and that ultimately sun-drying on brick floors will be resorted to.

PICKLING.

Pickled in an entirely green state, the oil of the fruit is undeveloped, and as a food it is much less valuable than if prepared when partly colored or entirely black—the nearer ripe the more valuable as food—and when so pickled and prepared they almost or quite supply the place of meat, and, pound for pound, are equally as hearty and substantial food for the laboring man.

Of all the good things which nature has provided for man, the olive, in all countries where it can be successfully cultivated, stands pre-eminent.

In our exceptionally dry climate lies our wealth. Here the olive flourishes, not as would be reasonably supposed in our rich bottom lands, but on the high "mesa," or table-lands, where surface wells are thirty to sixty or even a hundred feet deep, and especially in rolling land, where natural drainage is secured. There are varieties of the olive which are said to flourish on heavy, cold soils.

What other land and in what other country will ten acres, around which one can walk in less than ten minutes, secure to its possessor an independence?

The olive is not a luxury, the consumption of which hard times may restrict, or perhaps cut off, but it is to become an article of *food* as common and indispensable as bread or potatoes, as is the case in all other olive-producing countries. Whoever plants a few olive trees around the homestead will, in three years find his table supplied with a substitute for meat, at hand at a moment's notice.

At ten years from planting, half a dozen trees will annually produce more food than the meat of a good pair of fat steers.

The vast area of land in this county adapted to the production of the olive, the vast and increasing demand for the various products derived from it, together with the limited competition ever to be offered, should stimulate the industry, and five years hence there should be a million acres planted to this tree alone. The more the question is discussed the more apparent will this conclusion become.

for this department.

Fresno — Republican 4/8/84

YIELD AND PROFIT OF OLIVES.

I have not sooner answered Mr. Whitney's application because I did not like to offer only new hypotheses and suggestions, but wanted to state facts. It might have seemed doubtful if Mr. Cooper really received net returns of $800 an acre for his olives. I received a few days ago some information from Mr. Cooper on that point. He does not measure either the olives or the oil, but weighs all the olives in and counts the bottles out. By keeping separate a few years ago a seven-year-old orchard, he found that the trees, large and small, yielded 122 pounds on the average, and that 10.56 pounds were needed for one large bottle of oil. This gives 11½ bottles to the tree, or in round numbers $12, as the bottles were sold twelve for $13. The expenses amount to twenty-five per cent, which leaves net returns of $9 a tree. If the trees are twenty feet apart, or 100 to the acre—seven-year-old trees, however, have room and light enough even at twelve feet distant, or 300 to the acre—there is a net return of $972 an acre without counting the pomace, which was fed to the pigs after the second pressing. Last year Mr. Cooper says he had a small crop, and 12½ pounds were needed to the bottle.

The next question is, may we count on the California foothills for a similar regular crop, first in olives, then in money? In a former article I mentioned an eight-year-old tree, near Auburn, which yielded sixty-eight pounds. Mr. Whitney calls it an exceptional tree. Well, it is an exceptional tree, since it had no irrigation, and, standing close to the road, little cultivation, and it is rooted in very shallow ground, where the bedrock comes up to within eight inches of the surface. With ordinarily deep ground, irrigation the first year, and due cultivation, we may expect much higher returns. How is it, then, that Mr. Whitney's trees averaged only 45½ pounds?—Auburn Correspondent Placer Herald.

THE OLIVE.

Some Interesting Facts Connected with its Growth, Etc.—How They Manage it in Asia Minor—Mr. Van Lennep has Something Further to Say About it.

Placer Argus

EDITOR ARGUS—Finding my communication of February 23d last in your paper of the 24th, I conclude it was acceptable and I will make another attempt in the same line, hoping I will not be considered ostentatious in doing so. I wish first to correct a mistake which occured in one place in that article. Your type made me say that "citrus trees become common and more plentiful as you proceed north"—It should be as you proceed south." 4/9/84

There are some general causes necessary to note, besides climate, that influences the cultivation of certain fruits in different localities in Asia Minor. The expense of transportation, the oppression of the agricultural class, the want of enterprise and the old ruts of custom are some of them. Transportion is mostly done on beasts of burden; camels, horses, mules and donkeys. In the northern part wagons with solid wooden wheels drawn by oxen are also used. The expense of transporting produce a hundred or more miles is frequently greater than the original value.

The taxes are sold by the Turkish Government to the highest bidder who has then authority and power to levy the tax. This they do with no lenient hand, getting all they can to be got by oppression, abuse, and fear. The agricultural class has generally no redress from the abuse and oppression of the ruling class; so that there is no encouragement in progress and enterprise, no new ideas are developed by emulation, success and enterprise of others, but on the contrary the old ruts of custom are followed as the surest and safest against awakening the cupidity of their rulers. For example, the cultivation of raisin grapes has been developed very much around the Bay of Smyrna and in certain localities in the Archipelago by the demand for the fruit in Europe and the facilities of shipping these localities afford, while grapes for wine used in the country are raisd in other places more remote from the coast. The olive trees are either old trees or grafts on the wild stock, which were left on clearing the land. It is not the custom of the country to plant orchards of olive trees and they are not found except those planted by enterprising Europeans, residents of the country, and this, though the olive is a necessity to to the natives and olive oil an article of home consumption, as of export. To show this more apparently it is necessary to state the value the natives place on the tree and the fruit.

The olive is mostly eaten when ripe, or put up in layers with salt to be kept for winter use. The natives make a meal of olives and bread. The owners of olive trees put them up for home use and pack them for sale. You see them at native groceries especially in town put up in hogsheads as described above and there the mechanic and common laborer supplies the needs of his family. The best oil extracted from it, is used for cooking purposes, as butter is used in this country. It is also used in salad with vinegar. The inferior kind is used in lamps. The reader will remember in connection with this the Scripture parable of the wise and foolish virgins.

The grind stones or mills put in motion generally by women and children are the public property of the village around which the olive trees are found. The transportation of oil is done in skin bottles on beasts of burden, by placing a bottle on each side of the pack-saddle. These are the bottles referred to by Christ, Mathew IX—17.

The possession of olive trees is regarded a good deal like the possession of a cow in this country, that is, an economy to the household and as providing a cheap means of subsistence.

The olive tree attains a very old age,

after the trunk and limbs grow old and there is much decayed wood, they are cut down and used for fuel, while the new growth sent forth in a year or two is a bearing tree, having renewed vigor. Young trees are found in thickets, the seed having been deposited by birds. In clearing the land the natives preserve them and graft them usually in place, so that, as stated before, you seldom find the olive trees in regularly laid orchards or groves. The trees are frequently owned by people not owners of the land on which they grow. For example, I own an acre of land with a vineyard in which there are three or four trees. If for any reason I want to sell them and not the land and vineyard, I do so, and the buyer can sell them again, and so on. The owner of the trees has a mark to distinguish them. It is frequently the case that you find a field with olive trees owned by several different persons. The green olive is used comparatively little, very much as we use pickles in this country.

It would seem very strange to Americans that more attention is not paid to the culture of the olive in regular groves and as a special industry, but to those who have resided in that country and have known how the people follow their old customs and habits, and seen the many obstacles met at every step by agriculturists, it is no mystery. Also the cupidity, injustice and opposition of the ruling classes have had their effects in every branch of industry in Turkey.

D. VAN LENNEP.

Auburn, April 6, 1887.

PROFIT IN THE OLIVE.

A Tree Remarkably Well Adapted For The Foothills.

Some Old Trees In California That Annually Bear 150 Gallons Each.

Handsome Returns From Either Olive Oil or Pickled Olives.

Appeal 4/22/84

Several inquiries having reached this office in regard to the culture of the olive, we republish from the *Placer Republican* the following extracts from a letter written by the editor of the APPEAL to Dr. L. M. Agard, of Auburn, who has a young olive orchard of twenty or thirty acres:

I have read Mr. Whitney's articles on olive culture, and have been surprised to find him expressing the opinion that it is wrong to plant our best land in olives. Does it not seem reasonable that if it pays to grow the olive at all, one should chose the land best suited to the purpose? The truth is that there is a great deal of land in the foothills that will scarcely support any other profitable tree than the olive, but it by no means follows, for that reason, that better land should not be devoted to the tree. The fact that the olive is planted on the steep slopes of the Alpes-Maritimes, where costly terracing has to be resorted to, is rather an indication of the value of the tree than anything else. Of course the orange could not be grown in such situations, because it demands irrigation. Besides, those mountain slopes are manured at great cost of labor, the peasants toiling up the terraces with baskets of fertilizers upon their backs.

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Elwood Cooper, of Santa Barbara, has had to compete against all Europe (save for the duty of $1 a gallon), and his oil is quoted $13 50 per dozen quart bottles, and is hard to get. He has told me that 10-year-old trees should give an average of 150 pounds of berries each, and that 10 pounds of berries make one bottle of oil. His trees are all of the Mission variety, and his soil is good—some of it (or much of it), adobe.

A ten-year-old olive tree blew down last winter in Sacramento. Its owner (Peter Kunz) told me it bore 150 pounds a year. Isaac Lea, at Florin, has some twelve-year-old olive trees that he says bears 125 pounds each. There are some very old Mission trees at San Diego that have borne 150 *gallons* of berries each annually, for two years in succession. In Ellwood Cooper's pamphlet on the olive, he says that in 1878 he took over thirty gallons each off a few of his best trees, his orchard being then only six years old. He adds that he thought some of his eight-year-old trees would bear over forty gallons each. Our virgin soil gives far better returns than those obtained in Europe with the most costly fertilization. Thus in Venitia, sixteen-year-old trees are said to yield but four gallons of berries each, and throughout the Mediterranean region the olive tree does not bear until ten years of age.

Leaving oil out of consideration, there ought always to be a good profit in California olives for pickling purposes. Pickled ripe olives make up a large part of the food of millions of people in Europe. These are not the pickled green olives of commerce, but those taken from the tree after they have turned black. There is no more wholesome food. America will consume many millions of gallons of such pickles annually, when they can be retailed at a dollar a gallon, which would leave a handsome profit to the grower. The pickling need cost no more than ten cents a gallon.

At present imported pickled olives cost about $1 50 a gallon, wholesale, in San Francisco. The California pickled olive (Mission variety) sells readily at from 80 cents to $1 a gallon, to wholesalers.

I believe with Mr. Flamont, of Napa, (who has sixty acres in olives) that "the cultivation of the olive is going to attract much more interest in California than viticulture, because either by pickling or for making oil, it will pay three or four times as much." He was brought up in France among olive trees and vines, and his opinion is certainly valuable. He has an extensive vineyard, in addition to his olive orchard.

Olive Oil Prospects.

Rural Press 4/30/84

Those who have planted olives and are in doubt about the outlook of the industry, and the possible adjustment of demand and supply, will find much comfort in some remarks which the Los Angeles *Tribune* reports as coming from Ellwood Cooper, of Santa Barbara, the well-known olive-grower. He said olive oil-making (if you know how to do it) is the easiest possible way of making money. The demand is increasing 10 times as fast as the supply. Last year he sold his oil for $12.60 per case; this year he has advanced the price to $24. He says this advance puts the oil beyond the reach of most people, it is true; the demand will be for invalids and medicinal purposes; but he can sell all he can make at that rate. He is increasing his olive plantation as fast as possible.

This confidence of Mr. Cooper is certainly refreshing when mails and telegraphs are bringing such doleful items as the following:

The former great industry at Florence of making their flasks for olive oil is said to be wholly destroyed by the English flooding the market with cottonseed-oil imitations, which is now almost universally sold under the name of olive oil. The matter, it is said, is going to be raised in the House of Commons, under the Adulteration Act.

It is quite possible that the last sentence gives the key to the future of olive oil. If legislative enactment in all countries can be had against selling cottonseed oil as olive oil, the genuine article will certainly be vastly helped. Cottonseed oil is a good oil, but not to be sold under a false name. Let it be sold for what it is. Keep it out of olive oil, keep it out of butter, and it is all right. It is quite possible that relief may come to the olive oil as it has come to genuine butter, by laws against selling the false as the true. California has asked Congress to do this, and will continue to ask it, although with the great cottonseed interest to fight in Congress, the right will be a difficult one to gain.

THE OLIVE.

5/5/84

Further Information Regarding this Valuable and Profitable Fruit.

Visalia Delta

The culture of the olive is a branch of the fruit-growing industry which is yet in its infancy on this coast but we believe that, in a few years, it will become one of the most important as well as profitable fields of horticultural enterprise with us, as it is at present with many countries in the south of Europe, whose chief revenue is derived from the export of olive oil and pickled olives.

The olive tree is distinguished for its great longevity and vitality. A tree in the garden of the vatican at Rome is said to be a thousand years old. During the Greek revolution the Turks cut

down the olive trees and burned over the stumps, with the result that, three years thereafter, the shoots from the scarred stumps commenced to give a crop.

It has generally been supposed that the olive rather prefers a rocky and somewhat barren soil. In Europe it certainly flourishes in places where a cactus would hardly grow, but Major Utt says it is a great mistake to presume that the olive can be grown on a barren soil without fertilizers. Use manure liberally, and use it to an extreme degree, to supplement the lack of irrigation. The olive is a voracious feeder, and will appropriate enough plant food during the months of winter moisture to carry the tree through the dry summer season, provided there is an abundant food supply ready for storage and assimilation. The Mission is generally recommended for oil and the European olive for pickling. The latter, also, is preferable for propagation, as the small limbs will serve for cuttings, and will root where a Mission cutting will fail. European olives ripen two months in advance of the Mission olives. Trees should be planted in an orchard, and cuttings in a nursery.. Plant not less than thirty-six feet apart, or you will regret it in after years; remember in planting that the olive root is more sensitive to exposure than the orange.

The olive is easily budded or grafted, so there is no trouble in obtaining varieties. Small, one-year old trees can be bought for twenty-five cents or less each. The roots of trees should always be puddled before shipping, and great care taken against exposure. The business of propagating the trees should be left to the nurserymen except in a case where a party cannot afford to buy trees.

When it comes to profits, olive growers can show figures which should satisfy the most exacting. Major Utt has an olive orchard of twenty-five bearing trees, planted in orchard seven years, to include 1886; the product from ten of them last year was 750 gallons of olives. He sold the surplus crop at forty cents per gallon, casks furnished, of $12 per tree. Fifty gallons of average crop to the tree at twelve years from the planting of the orchard would be a low estimate, and this amount would make six and a quarter gallons of oil. Ellwood Cooper gets $10 a gallon for his oil. Increased production will lower the wholesale price to $4 per gallon or at the lowest, $25 per tree, equal to $900 per acre. Allow one half for expenses and interest on investmet, and you have the neat sum of $450 per acre as net profit. Mr. Loop has been offered eighty cents a gallon for all the pickled olives he can prepare for market.

Of the great future which awaits the culture of the olive on this coast there can be no doubt. We are still in the experimental stage. In fact, olive culture stands about where the raisin industry did ten years ago.

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Of the great future which awaits the culture of the olive on this coast there can be no doubt. We are still in the experimental stage. In fact, olive culture stands about where the raisin industry did ten years ago.—[*San Joaquin Valley Resources.*

THE OLIVE.

Information Regarding This Valuable Fruit.

The following article from the San Joaquin Valley Resources is worthy of consideration by the horticulturists of Santa Barbara county:

"The culture of the olive is a branch of the fruit-growing industry which is yet in its infancy on this coast but we believe that in a few years it will become one of the most important, as well as profitable, fields of horticultural enterprise with us, as it is at present with many countries in the south of Europe, whose chief revenue is derived from the export of olive oil and pickled olives.

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Indian Olive Oil

In an official report to the British Government by the Secretary of the British Embassy at Rome, on the olive oil industry of Italy, he says: "Olive oil ranks next to wine as one of the mainstays of Italian agriculture. An average crop is estimated at 74,500,000 gallons, but since 1880, when these figures were reached, the yearly production has averaged about 38,000,000 gallons. A full clive crop never occurs two years running. In no other country in the world is the olive tree cultivated so extensively as in Italy. The largest production is obtained in the ex-kingdom of Naples and Sicily, but the oil produced in those regions, excepting the province of Bari, is of low quality, and is to the greater part fit only for manufacturing uses. Bari, Umbria, Tuscany and the riviera of Geno produced chiefly eating oil. Exports of the five years ending with 1885, averaged 16,000,000 gallons a year, worth about £4,500,000 sterling. But in 1835, owing to the deficient crops in different localities, the quantity fell to 9,633,000 gallons, valued at £2,000,000, of which 3,557,625 gallons went to France and 2,020,050 gallons to Great Britain. The finest olive oil in Italy is produced in certain hilly districts of Tuscany, such as Lucca, Calci and Buti. There the olive trees are of the best stock and carefully tended; great care is also devoted to harvesting the olives and to crushing and pressing them. The oil so obtained, pure and unsophisticated, which I had an opportunity of testing during a recent visit to Tus-

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many, is most delicate and delicious. But in these days of excessive competition, when quality is often sacrificed to cheapness, it is not always an easy matter to procure the best quality of Tuscan or Lucca oil, as it is generally, out of Tuscany. Italians complain greatly of the almost impossibility of obtaining on the market olive oil unadulterated by cotton-seed oil, of which latter over 79,000 quintals, valued at £270,000, were in 1885 imported into Italy, and which, it is stated, is solely employed for admixture with olive oil.—*Grocer and*

THE MOST PROFITABLE TREE.

Marysville Appeal

"The olive is the most profitable tree I know of." So wrote Ellwood Cooper, of Santa Barbara, not long ago, in answer to an inquiry from the editor of the APPEAL. Mr. Cooper has had experience in California with almost every description of fruit trees grown in the State. He has a large orchard of English walnuts, but he finds nothing to compare in profits with his famous olive orchard, of which the net yield, from oil, has been probably not less than $800 an acre per annum for a number of years past. So great is the demand for his oil that this season he has been unable to supply even his old customers the full quantity ordered by them. And he has this year doubled the price, which was formerly $3 50 per dozen quarts in the San Francisco market. At the present rate, Mr. Cooper's profit must reach the enormous sum of $1,500 an acre, and he has forty acres of twelve-year-old trees, besides a considerable acreage of young trees. Even the orange, though a very profitable tree, can show no example of such splendid returns as do Mr. Cooper's olives. 6/7/87

The olive is to be a source of great wealth to California. It will flourish here better than in Italy, where about 2,000,000 acres are devoted to the tree. We say "better," advisedly, because in the new soil of this State the yield is fully double the acreage attained in the worn soil of Italy. There is no tree worthy of so much attention here. It is pre-eminently adapted to the foothill region, since it thrives in the driest and most rocky soils without irrigation, and in such situations gives oil of a finer quality than that obtained from olive orchards on rich alluvial soil. But both valley and foothills are suitable to the olive. It demands good drainage, and with that supplied will flourish in any description of soil. Perhaps, if the design be to pickle the berries, valley land would give better financial results than could be had in the foothills. In rich soils the crop is more abundant and the tree grows more rapidly, though the quality of the fruit is not so good as that from orchards in hilly situations.

In six years from the time of planting rooted cuttings, so Mr. Cooper has informed us, an olive orchard will give a paying crop, and there will be a small yield for a year or two before the six years. An orchard increases in bearing capacity until a great age is attained. There is scarcely a limit to the life of the tree. There are specimens believed to be two thousand years old. The root system never wholly dies, and constantly sends up suckers that, in a state of nature, replace the parent stem should the latter decay. An olive orchard, once brought to a bearing condition, will give a constantly increasing revenue during the life time of its owner, and remain a source of revenue for many generations.

The olive is a much hardier tree than the orange. It will stand ten or twelve more degrees of cold. It can be planted anywhere in the Sacramento valley, or in the foothills up to an elevation of 2,000 feet or more, without the least danger of injury from cold. And the crop in this state seems to be entirely unaffected by frost. The blossoms appear about May 1st.

An olive orchard is much easier and much cheaper to establish than an orange orchard. Rooted olive cuttings, two years old, can be bought for 35 cents each, or thereabouts, while a first-class orange tree costs at least $1 50. The orange demands irrigation; the olive needs none. The olive can be successfully grown on cheap land, while the orange calls for a deep, rich soil. And either for oil or for pickles the olive can be counted upon to pay a larger profit than the orange for many years to come in California.

Comparatively few Americans realize the great food value of the olive. It is the value of the tree's products as nutriment that make it intrinsically of more worth than any other tree known to man. There is a fable that illustrates how well the ancient Greeks knew this. Athens, it is related, was founded by Cecrops, who offered the privilege of naming the city to that one of the gods who should bestow the most valuable gift upon man. Neptune smote the earth with his trident, and forth sprang the horse. But Athena gave the olive tree, and the city was named in her honor. As no nation has ever had a higher appreciation of the horse than had the ancient Greeks, one may perceive from this story the very high estimate they placed upon the olive. The consumption of olive oil and pickled olives is certain to enormously increase in America, as fast as those products are placed within the reach of the people at reasonable prices.

An olive orchard at the age of ten years should yield an average of twenty gallons of berries to the tree. Any quantity of pickled olives can now be sold at 75 cents a gallon in bulk. With 100 trees to the acre, as in Mr. Cooper's orchard, the yield per acre would be 2,000 gallons, which, at 75 cents a gallon, would furnish a return of $1,500 per acre. The cost of picking is not over 10 cents a gallon. Even at as low a price as 25 cents a gallon, the net return would be large.

The APPEAL hopes to see a large acreage planted with the olive in Yuba and Sutter counties next winter. There are several young olive orchards in Placer county, and one of 50 acres near Wyandotte, in Butte, owned by J. C. Gray, the District Attorney of that county. Mr. Gray's orchard, it is said, has cost him about $5,000 up to date. In a few years it will be worth $50,000, for it will be paying ten or twenty per cent. on that amount, with a certainty of a steadily increasing revenue as the years roll on.

Olives and Olive Oil.

Tulare—Delia 6/7/87

It is announced that an extensive plantation of olive trees is to be established in Solano county. The growing of olives and the manufacture of oil has already passed beyond the experimental stage. In San Diego and Santa Barbara counties in particular, olives have been grown for several years and at a very handsome profit, while the California olive is so noted for its excellent quality and freedom from adulterations that retailers in New York buy up all they can of our present product, and one or two have recently made large contracts for several years to come. This makes it more difficult for San Francisco grocers to buy enough for their own trade, hence prices both here and in New York are said to be higher than for the best brands of olive oil. A leading San Francisco dealer when asked the reason for this demand and the high prices, replied, with emphasis: "Because it is known to be pure. Of course it is free from adulteration." We have been sending our wines and fruits to the East for a long time. They have gradually made their way against foreign rivals, slowly at first but rapidly of late, until there is no longer any fear that we shall have a surplus which we cannot dispose of. It is so with what olive oil and pickled olives we ship East. Authorities in such matters declare that both, if sent from here in large quantities, would immediately overcome the most formidable competition of Europe. If our oil is as fine relatively as its admirers claim and the demand for it evidences, and our olives also, then there seems to be no reason why our fruit-growers should not pay more attention to this fruit. At any rate it will do our fruit-growers no harm and cost them nothing to look into the matter a little more closely. It might result very profitably for them.—*S. F. Call.*

THE OLIVE.

An Authority Calls It the Most Profitable Tree.

Auroral 6/29/87

Marysville Appeal.

"The olive is the most profitable tree I know of." So wrote Ellwood Cooper of Santa Barbara not long ago in answer to an inquiry from the editor of the *Appeal*. Mr. Cooper has had experience in California with almost every description of fruit trees grown in the State. He has a large orchard of English walnuts, but he finds nothing to compare in profits with his famous olive orchard, of which the net yield from oil has been probably not less than $800 an acre per annum for a number of years past. So great is the demand for his oil that this season he has been unable to supply even his old customers the full quantity ordered by them; and he has this year doubled the price, which was formerly $3 50 per dozen quarts in the San Francisco market. At the present rate Mr. Cooper's profit must reach the enormous sum of $1500 an acre, and he has forty acres of twelve-year-old trees, besides a considerable acreage of young trees. Even the orange, though a very profitable tree, can show no example of such splendid returns as do Mr. Cooper's olives.

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OLIVE CULTURE.

An Interesting Book on the Subject by Adolphe Flamant.

The Spanish fathers domesticated the olive and grape and wheat, on the lands around the Missions they established in California, more than a hundred years ago. Their motive was to secure a supply of the bread, wine and oil used in the sacraments of the church, and out of this pious purpose sprang three leading material industries of modern California. Mr. Elwood Cooper, seeking California for the betterment of his health, noted the ancient olive trees shading the ruined gardens of the old Missions, and was tempted to try the commercial value of the olive. The world knows the success of his experiment, and it has roused such interest than many hundred thousand olive trees are now growing in this State, and California will soon divide with the slopes of the Mediterranean the pleasures and profits of producing this luxurious oil. Joaquin Miller relates that, stopping recently in a wayside farm-house in Alameda county, near Mission San Jose, he found the children at lunch dipping their bread in a dish of olive oil, and upon inquiry learned that it was made on the place and was preferred to cream or butter by old and young. So, two thousand years ago, did the children at the foot of the Mount of Olives dip their unleavened bread in this sweet oil, and its use amongst the Hebrews, in preference to the grease of the prohibited pig, laid the foundation of that majestic physical type which, in the sons and daughters of Abraham, has survived all vicissitudes to be the puzzle of the modern world, and the pride of its most ancient race.

The ALTA notes with satisfaction the appearance of the literature of olive culture, in a monograph by Adolphe Flamont, of Napa, which he calls, "A Practical Treatise on Olive Culture, Oil Making and Olive Pickling." In this he has treated of the soils and situations suited to its culture, with comparisons between California and the lands in which the olive is historic; the methods of reproduction; the different varieties grown; the care of the tree from planting to production; the cost of an olive plantation; the diseases and insect enemies of the tree; the maceration of the berry and manufacture of the oil and its uses and commercial value, and the pickling of the berry. The work was originally written in French, but the author fortunately yielded to the urging of friends and translated it. It is written from a California standpoint, and but few Californians who read it will hesitate, if their location be right, to devote some acres to olive orchards. The work is published by Gregoire & Co., 6 Post street.

OLIVE CULTURE.

Some Interesting Facts From a Practical Standpoint.

From the Napa Register.

Olive culture is gradually attracting more and more attention and is bound to become one of the most profitable fields for agricultural enterprise with us. For this reason Mr. Flamant's "Treatise on Olive Culture," just published, will undoubtedly prove of great interest to those seeking reliable information on this most important subject. Whatever particulars we have been able to gather thus far in reference thereto were derived mostly from short paragraphs in newspapers, which were not complete enough to do full justice to such a vast subject. But by perusing Mr. Flamant's treatise one has a full bird's-eye view of the whole question.

Such works as this are of incalculable benefit to a country like ours, for, by their clearness and thoroughness of details, they induce both labor and capital to join hands in new enterprises which seem to promise as good results to their promoters, as they will add to the prosperity of our flourishing State.

Following is the concluding chapter of Mr. Flamant's book:

"In preparing for the public this brief treatise on olive culture, written from a California point of view, it was my object to enable agriculturists and capitalists, who desire to avail themselves of the unique advantages it has over any other culture, to form a correct idea of its general features, from the choice of the land most suitable for the olive tree to the marketing of its product.

"With this in view I thought it better to avoid lengthy demonstrations, or superfluous details, such as abound in some agricultural publications, the greater part of which is generally filled with diffuse and extraneous matter, which causes the reader to glance hurriedly from page to page, and to reach the last without having noticed what there can be of real interest in them.

"I also found it necessary to consult the works of the best-known writers on olive culture, and to quote them freely, placing them side by side with my personal observations, so as to add the weight of their acknowledged authority to my own statements. I thus hope that this treatise, which combines the best foreign and home experience, and which I have endeavored to make brief, clear and concise, will be instrumental in helping, to a certain extent, the development of olive culture in California, for it presents advantages that may be looked for in vain in any other agricultural pursuit.

"Columelle knew what he was about when he proclaimed the olive tree 'the first of all trees,' and Parmentier felt himself well justified in saying many generations after, 'of all trees that the industry of man has made profitable, the olive tree deserves, without contradiction, the very first place.' I therefore consider it unnecessary to dwell any longer on a point on which all the best agriculturists, ancient and modern, fully concur, and I will confine myself to passing briefly in review the main reasons, given more extensively in the previous chapters, that contribute to give it this universal reputation.

"In the first place, the hill or mountain lands, dry and rocky, which appear to be the most propitious for the robust constitution of the olive tree, can be bought in California at prices ranging much below those necessary for the culture of other fruit trees or vines.

"The cost of planting on such land and care of the trees during the first year will hardly reach $5 per acre; the purchase of one-year-old rooted cuttings will not exceed from $10 to $15 per acre and the annual care will be less than $5 per acre until the trees come to bearing in four or five years after planting the rooted cuttings.

"The machinery and appliances for picking the olive and for making the oil are of an extreme simplicity. Both operations can be done in a very short time and they are so easy that no farmer with ordinary cleanliness and care can fail in turning out as good a product as obtained anywhere else; while this is far from being the case in wine making, which requires special knowledge, as well as long and tedious care before the product is in a satisfactory condition to be sold.

"The gathering of the olive berries can be done gradually from November until March. By allowing them to dry in the barn, weeks can elapse before extracting the oil from them, which will enable a farmer to attend meantime to more pressing work, but, if he so prefers, he can do it at once. Moreover, if he has no oil crusher and press, he can ship his olives in sacks or boxes to any distance at a moderate rate of transportation, considering the value of the product under a small volume, thus avoiding the misfortune of becoming the prey of local monopolies. How different it is with grapes! They are to be picked hastily when ripe; they must be pressed within a very short time; they cannot remain long nor travel far without experiencing damage and loss; and if they are to be shipped to some distance to avoid the tyranny of monopolies, or because there is no wine-cellar near by, the cost of freight, drayage, brokerage, short weight, added to the cost of picking and delivering, absorb a good part of the value of a product which sold last year at an average of $20 per ton, and which is most likely to sell much cheaper this coming season.

"On an equal acreage, and when from eight to ten years old, the product of an olive grove will be worth several times that of a vineyard; and under the same volume the oil will be ten times more valuable than wine, so that it can be delivered in a more economical manner. While with a four-horse team a farmer will deliver about 600 gallons of wine per trip, representing a maximum value of $100, he can with the same team deliver olive oil to a value of over $1000. What an economy this represents.

"Much less cooperage, too, will be required. Whereas for 100 acres of vineyard room for 50,000 gallons might be calculated upon, 25,000 gallons will be all that can be expected from a similar acreage of olive trees, and as tin tanks and cans are mostly used, it will cost less. Moreover, oil can be made from November to March and sold shortly afterward to the merchant, who will clarify it himself, so that by spreading over the time of making it a maximum of 8000 or 10,000 gallons of such pack

ages will be sufficie[illegible] nd all this can be done and stored in wooden buildings of very moderate size, while a wine cellar should be built with stones or bricks, or be exposed to the danger of having the wine damaged or spoiled during the summer months, if it has not been sold before that time.

"The gathering of the olive crop, too, is very easy and cheap work. The berries that have fallen [illegible] the groond are first picked, then the tree is shaken and the branches struck w[illegible] long poles to cause the fall of the remaining fruit. The few of them that may be found a little moulded, by a too long contact with the earth, though good enough to make good oil, are generally set apart to be used only with the last pressures, when the low grade of oil is made. Let us compare this easy and rapid work, where nothing is lost, with the picking of grapes or the product of most of fruit trees, which necessitates a certain number of hands at a given time, and requires special care so as not to spoil part of it, while the fruit found on the ground is not marketable, if not entirely worthless.

"When the oil is made the residues, or mares, are used for fuel, manuring or feed for horses and cattle. There is thus not a farthing's worth of value in the product of the olive tree that is not turned to some use.

"The bitterness of the fruit of the olive, of its bark and leaves, offers by itself a certain amount of protection against the attacks of insects and animals, and when the tree is planted on hills, where it should be, far from the moist places which engineer most of the diseases of fruit trees, it has not to dread such terrible enemies as those that assail the vine, from the Oidium to the Phylloxera, which alone, within the last twenty years, has brought down the French wine production from 85,000,000 hectoliters (about 2,000,000,000 gallons) to 25,000,000 (about 625,000,000 gallons), and which crops out slowly and relentlessly among our California vineyards.

"During the excessively dry summers which are occasionally seen in parts of California, when all the other agricultural productions are affected and diminished in consequence, the olive tree, this king of the dry soils, where it vegetates best, will continue to be loaded with fruit just as in the seasons most favorable to other cultures.

"The spring frosts, so disastrous generally to valley land vineyards, seem to have no effect on the olive. The tree is often affected and even killed in the best oil regions of Europe by excessive cold spells, which are absolutely unknown in our parts of California, so that its culture, which offers great danger there and keeps it from being more developed, presents an unquestionable safety in Napa valley and such other sections where there is no danger of such extremes of cold or hot weather, both of which the olive tree fears to an equal degree.

"Finally, while an olive grove planted with one-year-old rooted cuttings pays, when five or six years old, quite as much as a vineyard of the same age; twice as much when from seven to eight years old, and increases from year to year its annual paying power to $300, $400 and $500 per acre and upwards, until, when about twelve to fifteen years old, the tree reaches its full-bearing capacity, on what basis shall we calculate then the cash value of such an orchard? Were I to mention between $1500 and $2000 per acre many people not fully acquainted with this culture would consider it a gross exaggeration. If such orchards are worth over $1000 per acre in Europe, where olive trees are liable to be frozen at frequent intervals, why should they not be worth more here on account of the absolute immunity of those trees against such danger? Do not also protective duties insure us better prices for our oil as they do for our wines? Should import duties ever be abolished on both products, which would suffer most, the oil that pays only 25 per cent on its value in the European markets, or the wine that pays 50 cents per gallon, which is more than double the value of the ordinary wines in France? We will thus see those prices of $1500 and $2000 per acre in California when the young olive orchards planted within the last few years shall have given the full measure of their worth. They will confirm by their development the careful demonstrations I have endeavored to make in this work.

The Olive.

The capabilities of Southern California as a fruit-raising state, have not been fully tested yet. Almost the first products that were tried were oranges and raisin grapes, and the success attained on these two has been mainly due to persistent effort and experiments on a large scale to bring them to their present perfection. These two fruits caught the fancy of the new comers and hence their popularity and the amount of time, money and skill lavished upon them. They are both noble products, attracting the eye and palate, and are firmly rooted in the affections of the people, perhaps too much so for the general good of the state, for to have it known abroad that the state can produce only two fruits to perfection is injurious to its welfare, when the fact is there are scores of other fruits and nuts that, had they the same care and attention, would make California equally noted in the world by their production.

Among the neglected fruits we find the olive. The tree is one of the most handsome that grows in the state, but the fruit is not tempting to the palate as picked from the tree, and requires skill and care to make it marketable. Oranges and grapes can be picked and put upon the table at once ready for consumption, while the olive must undergo a process of preparation either by pickling or compression into oil and in either case the taste of the majority of people is not educated up to its use in either form, hence it is neglected.

As a commercial fruit the olive takes its true place in the world. When properly prepared it can be shipped to market and consumed in any and all seasons. Its production and preparation requires skill and experience, but when that is attained, the owner of an olive grove can truly say, as the Italian proverb runs: "An olive plantation is a gold mine on the surface of the earth."

With the same care and attention the orange and grape has received, the olive would prove equally as profitable in this section. One great drawback has been the lack of knowledge upon the subject and the scarcity of works treating upon olive culture, covering all portions of the labor from preparing the soil to marketing the oil. This want has now been met by Adolph Flamant of Napa, in a book of nearly a hundred pages devoted to this one industry. This work is a very valuable addition to the limited number of publications bearing upon olive culture, and Mr. Flamant's experience in France, as well as in California, renders him particularly qualified as an authority.

The book treats in a plain and practical manner of the soils and situations suited to olive culture, with comparisons between California and the lands in which the olive has been cultivated for thousands of years; the methods of reproduction; the different varieties grown; the care of the tree from planting to maturity; the cost of an olive plantation; the diseases and insect enemies of the tree; the maceration of the berries and the manufacture of the oil, with its uses and commercial value, in short, everything that is necessary to know concerning the best practical methods of olive culture in California. We have no hesitation in saying that this is a very valuable book, and that a careful perusal will repay anyone interested in horticulture.

From [illegible] closing chapter of the book we [illegible] the following:

In the first place the hill, or mountain lands, dry and rocky, which appear to be the most unpropitious for the robust constitution of the olive tree, can be bought in California at prices ranging much below those necessary for the culture of other fruit trees or vines.

The cost of planting on such lands and care of the trees during the first years will hardly reach $5 per acre; the purchase of one year old rooted cuttings will not exceed from $10 to $15 per acre, and the annual care will be less than $5 per acre until the trees come to bearing, in four or five years after planting the rooted cutting.

The machinery and appliances for picking the olive and for making the oil are of extreme simplicity. Both operations can be done in a very short time and they are so easy that no farmer, with ordinary cleanliness and care, can fail in turning out as good a product as obtained anywhere else; while this is far from being the case in winemaking, which requires special knowledge, as well as long and tedious care before the product is in a satisfactory condition to be sold.

On an equal acreage, and when from 8 to 10 years old, the product of an olive grove will be worth several times that of a vineyard: and under the same volume the oil will be ten times more valuable than wine, so that it can be delivered in a more economical manner. While with a four horse team a farmer will deliver about 600 gallons of wine per trip, representing a maximum value of $100, he can, with the same team, deliver olive oil to a value of over $1,000. What an economy this represents.

The gathering of the olive crop, too, is a very easy and cheap work. The berries that have fallen to the ground are first picked, then the tree is shaken and the branches struck with long poles to cause the fall of the remaining fruit. The few of them that may be found a little moulded by a too long contact with the earth though good enough to make good oil, are generally set apart to be used only with the last pressures, when the lower grade of oil is made. Let us compare this easy and rapid work where nothing is lost, with the picking of grapes, or the product of most fruit trees, which necessitates a certain number of hands at a given time and requires special care, so as not to spoil part of it, while the fruit found on the ground is not marketable, if not entirely worthless.

When the oil is made, the residues or mares, are used for fuel, manuring, or feed for horses or cattle. There is thus, not a farthing's worth of value in the product of the olive tree that is not turned to some use.

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During the excessively dry summers which are occasionally seen in part of California, when all the other agricultural productions are effected and diminished in consequence, the olive tree the king of the dry soils, where it vegetates best, will continue to be loaded with fruit, just as in the seasons most favorable to other cultures.

Finally, while an olive grove planted with one year old rooted cuttings pays, when 5 or 6 years old, quite as much as a vineyard of the same age; twice as much when from seven to eight years old, and increases from year to year its annual paying power to $300, $400, $500 per acre, and upwards, until, when about twelve to fifteen years old, the tree reaches its full bearing capacity, on what basis shall we calculate then the cash value of such an orchard? Were I to mention between $1500, and $2000 per acre, many people fully acquainted with this culture consider it a gross exaggeration.

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THE OLIVE.

A Plantation of Olives a Gold Mine on the Face of the Earth.

8/18/87

The Profits of Growing the most Valuable of all Cultivated Trees—Adaptation to our Climate.

Visalia Delta

A Mr. Flamant has just issued a work on olive culture which is highly spoken of by such of the press as have been furnished a copy. For the benefit of our friends who own land in the hills we give the concluding portion of his work, and advise them to purchase the book:

In the first place the hill, or mountain lands, dry and rocky, which appear to be the most propitious for the robust constitution of the olive tree, can be bought in California at prices ranging much below those necessary for the culture of other fruit trees or vines.

The cost of planting on such lands and care of trees during the first years will hardly reach $5 per acre; the purchase of one-year-old rooted cuttings will not exceed from $10 to $15 per acre, and an annual care will be less than $5 per acre until the trees come to bearing, in four or five years after planting the rooted cutting.

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The gathering of olive berries can be done gradually from November until March. By allowing them to dry in the barn, weeks can elapse before extracting the oil from them, which will enable a farmer to attend meantime to more pressing work; but, if he so prefers, he can do it at once. Moreover, if he has no oil crusher and press, he can ship his olives in sacks or boxes to any distance at a moderate rate of transportation, considering the value of the product under a small volume, thus avoiding the misfortune of becoming the prey of local monopolies. How different it is with grapes! They are to be picked hastily when ripe; they must be pressed within a very short time; they cannot remain long, nor travel far without experiencing damage and loss; and if they are to be shipped to some distance to avoid the tyranny of monopolies, or because there is no wine cellar handy, the cost of freight, drayage, cooperage, short weight, added to the cost of picking and delivering, absorb a good part of the value of a product which sold last year at an average of $20 per ton, and which is most likely to sell much cheaper this coming season.

On an equal acreage, and when from eight to ten years old, the product of an olive grove will be worth several times that of a vineyard; and under the same volume the oil will be ten times more valuable than wine, so that it can be delivered in a more economical manner. While with a four-horse team a farmer will deliver about 600 gallons of wine per trip, representing a maximum value of $100, he can, with the same team, deliver olive oil to the value of over $1000. What an economy this represents.

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The spring frosts, so disastrous generally to valley land vineyards, seem to have no effect on the olive. The tree is often affected and even killed in the best oil regions of Europe by excessive cold spells, which are absolutely unknown in our parts of California, so that its culture, which offers great danger there, and keeps it from being more developed, presents an unquestionable safety in Napa valley and such other sections where there is no danger of such extremes of cold or hot weather, both of which the olive tree fears to an equal degree.

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By adding to what precedes the incredible longevity of the olive tree and

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the immense consumption that is enjoyed by its product in all the civilized parts of the world, it will be readily understood why Columelle, Parmentier, and so many other famous agriculturists of past and present generations have called it "The first of all trees," and why the Italians, whose oil production exceeds that of any other country, have popularized the proverb that we should never tire of repeating in California: *"An olive plantation is a gold mine on the face of the earth."*

THE OLIVE TREE.

The culture of the olive is a branch of fruit-growing industry which is yet in its infancy in Santa Barbara as well as on the Pacific coast, yet we believe that in a few years it will become one of the most important, as well as profitable fields of horticultural enterprise with us, as it is with many countries in the south of Europe, whose chief revenue is derived from the exports of olive oil and pickled olives. Santa Barbara's production within the past few months has just doubled in value, which alone speaks for its superiority over other oils. The San Joaquin valley *Resources*, in speaking of the matter, says: The olive tree is distinguished for its great longlivity and vitality. A tree in the garden of the Vatican at Rome is said to be a thousand years old. During the Greek revolution the Turks cut down the olive trees and burned the stumps, with the result that three years thereafter the shoots from the scarred stumps commenced to give a crop.

It has generally been supposed that the olive rather prefers a rocky and somewhat barren soil. In Europe it certainly flourishes in places a cactus would hardly grow, but Mayor Utt says it is a great mistake to presume that the olive can be grown on barren soil and without fertilizers. Use manure liberally and use it to an extreme degree, supplant the lack of irrigation. The olive is a voracious feeded, and will appropriate enough plant food during the months of winter moisture to carry it through the dry summer season, provided there is an abundant food supply ready for storage and assimilation. The Mission is generally recommended for oil and the European for pickling. The latter is preferable for propagation, as the small limbs will serve for cuttings, and and will root where a Mission cutting will fail. European olives ripen two months in advance of the Mission olives. Trees should be planted in an orchard and cuttings in a nursery. Plant [illegible] less than thirty-six feet apart, or you will regret it in after years. Remember in planting that the olive root is more sensitive to exposure than the orange. The olive is easily budded or grafted, as there is no trouble in obtaining varieties. Small, one-year-old trees can be bought for 25 cents or less each. The roots of trees should always be puddled before shipping, and great care taken against exposure. The business of propagating the trees should be left to the nurserymen, except in a case where a party cannot afford to buy trees.

When it comes to profit, olive-growers can show figures that should satisfy the most exacting. Major Utt has an olive orchard of twenty-five bearing trees, Planted in orchard seven years to include 1886; the product from ten of them last year was 750 gallons of olives. He sold the surpl[illegible] 40 cents per gallon, ca[illegible] furnis[illegible] or $12 per tree. Fifty g[illegible]s of average crop to the tree at twelve years from the planting of the orchard would be a low estimate and this amount would make six and a quarter gallons of [illegible]. Ellwood Cooper gets $10 a gallon fo[illegible] is oil. Increased production will l[illegible]r the wholesale price to $4 per gallon, or at the lowest $25 per tree, equals to $900 per acre. Allow one-half for expenses and interest on investment, and you have the net sum of $450 per acre as net profit. Mr. Loop has been offered 80 cents a gallon for all the pickled olives he can prepara for market.

Of the great future which waits the culture of the olive on this coast there can be no doubt. We are still in the experimental stage; in fact, olive culture stands about where the raisin industry did ten years ago.—Santa Barbara *Inde-*[illegible]

OLIVE CULTURE.

As the season for tree planting is approaching, we would again urge our farmers to set out olive cuttings. We don't believe there is any country better adapted to olive culture than Sonoma county. It grows from the cutting and after the second year requires but little attention. It will grow for centuries and bear fruit. It will thrive, too, on land that will hardly produce anything else, but, of course, the richer the land the more thrifty the tree will be. It will bear in this climate about as soon as the plum, about four years, and when in bearing no ordinary fruit tree will equal it as to the constant yield or profit. And there is another satisfaction about it, pure olive oil is in such demand all over the civilized world that there is no danger of a glut in the market. Then, again, the pickled olives are in demand everywhere. Again we urge our farmers to plant olive trees. It is a handsome tree for shade, and in a few years from time of planting, if you have a few acres of them, will make you rich. Commence with a few and increase as you grow older and wiser.—Petaluma *Courier*

OLIVE CULTURE.

The Climate Required. The Kind of Soil in Which the Olive Will Thrive, and the Quantity of Moisture it Requires.

[BY THE LATE HON. B. D. REDDING]

Humboldt in his work on the *Geographical Distribution of plants*, says that the olive (*Olea Europea*) requires a climate of a mean temperature for the year as warm as 57 degs. 17-100 Fahrenheit, and the mean of the coldest month not to be below 41 degs. 5-100. The area on the earth's surface with the isothermal of 55 degs. are comparatively very limited where the mean of the coldest month is but 16 degs. below the mean for the whole year. In this exceptional climate it flourishes, and gives subsistance and wealth to those who cultivate it. While the mean for the coldest month must not be below 41 degs. 5-100, yet it will live and bear eight degrees more than the orange.

Geo. P. Marsh, who has given much attention to the habits and requirements of this tree, says that when the thermometer falls to 14 degs. Fahrenheit, or 18 degs. below freezing, and remains at this point for any considerable period, the shoots are killed and the fruit of that season destroyed. Thus, so far as relates to climate, we have the conditions required for the successful cultivation of that tree which the Indians call "a mine on the surface of the earth." The mean temperature for the year must be as warm as 57 degs. 17-100. The mean temperature for the coldest month must be as warm as [illegible] degs. 5-100, and at no time must the thermometer fall and remain at 18 degs. below freezing.

A TABLE SHOWING MEAN TEMPERATURE IN OLIVE PRODUCING REGIONS.

For the purpose of comparing the temperatures of the above named places in California with those of regions in which the product of the olive is among the articles of the first agricultural and commercial importance, I have compiled from Blodgett's *Climatology* the mean annual and the mean winter temperatures, as also the mean temperature of the coldest month of the following prominent places in Italy, Spain, Portugal, France, Egypt and Palestine.

PLACES.	Mean of temperature for the year	Mean of temperature for the winter	Mean temperature of the coldest months.
Rome.....	60.05	46.07	45.00
Naples	50.03	49.06	47.04
Florence ..	59.02	43.02	41.02
Madrid....	28.03	45.02	43.02
Lisbon	61.04	52.05	51.04
Marseilles.	58.03	45.02	43.02
Algiers....	64.03	51.02	53.02
Jerusalem.	62.05	49.06	47.04
Alexandria	66.08	58.05	57.03

WHAT KIND OF SOIL THE OLIVE REQUIRES.

This tree will grow in almost any soil except that containing much moisture. Marsh states "that it prefers a light warm ground, but does not thrive in rich alluvial land, and grows well on hilly and rocky surfaces." Rernay says "that it thrives and is most prolific in dry calcareous schistous, sandy and rocky situations. The land must be naturally or artificially drained. Its great enemy is excess of moisture. It rejoices in the mechanical looseness of sandy, gravelly and stony soils, and in freedom from stagnant moisture." Brande states that it only grows well and yields large crops "in a warm and comparatively dry climate." Dr. Robinson says; "It delights in a stony soil, and thrives even on the sides and tops of rocky hills, where there is scarcely any earth; hence the expression in the Bible, "oil out of the flinty rock." Hillhouse, in his article on the tree in Michaux's *Sylva*, says "The olive accomodates itself to almost any variety of soil, but it shuns a redundancy of moisture, and prefers loose calcareous, fertile lands, mingled with stones, such as the territory of Attica and South of France. The quality of its fruit is essentially affected by that of the soil. It succeeds in good loam capable of bearing wheat, but in fat lands it yields oil of an inferior flavor, and becomes laden with a barren exuberance of leaves and branches. The temperature of the climate is a consideration of more importance than the nature of the soil." Downing, in writing of this tree in Southern Europe, says: "A few olive trees will serve for the support of an entire family who would starve on what could otherwise be raised on the same surface of soil, and dry crevices of rocks and almost otherwise barren soils in the deserts, when planted with this tree, become flourishing and valuable places of habitation.

ITS ADAPTABILITY TO THE DRY PLAINS OF THE INTERIOR OF THE STATE.

From this evidence it would seem that in the olive we have a tree that can be grown on our dry plains and naked hillsides. In the Eastern hemisphere its limits of profitable cultivation are as far north as the South of France, and as far

south as Cairo, in Egypt. Wherever on the coast, from San Diego to Monterey, and wherever in the interior of the State, within the limits of the temperature stated, there is an annual fall of rain sufficent to produce barley or wheat—on rocky hills or sandy plains, when once rooted, this tree will thrive and bear. For the valley, its extreme northern limit is at Redding, for at Fort Redding, but twelve miles distant and with one hundred and sixteen feet greater elevation, the mercury in the thermometer fell to 11 degs. in December, 1885, which would be fatal.

THE OLIVE LIMITS IN THE SACRAMENTO, SAN JOAQUIN AND TULARE BASIN.

If we imagine two lines starting from Redding, which has an elevation of five hundred and twenty-eight feet, one on the west side of the Sierra and the other on the east side of the Coast Range, gradually ascending as latitude is decreased until they meet at Fort Tejon, in the Tehachape mountains at an elevation of 3,240 feet, we would have the probable limits in the Sacramento valley and adjacent mountains below which the olive could be successfully cultivated.

ANTIQUITY OF THE OLIVE.

This tree when once planted, is planted practically forever. Some trees in Europe still bearing, from the record of the tax-roll, are known to be older than four hundred years. It stands neglect and abuse, but repays neglect by only bearing on alternate years. In the South of France by cultivation and pruning it bears every year. It can be propagated from cuttings of the branches of roots, from layers, from suckers, from the little knots or excrescences that form on the tree near the ground, called by the Italians *uovoli*, and from the seeds in the fruit. When the latter are used the pulp should be removed from the ripe olive, and the seeds soaked for twenty-four hours in strong lye, to soften them. They should be planted in a sheltered place, and the ground occasionally watered. Planted in this State in February, the young trees would make their appearance in July. The tree can be grafted or budded in every method used on the apple or pear.

CULTURE OF THE OLIVE TREE.

It commences bearing in six years but does not come to the limit of full fruitage for twenty-five or thirty years. The average product for each tree is stated at from ten to fifteen pounds of oil. When planted for an orchard, the trees are placed fifteen or twenty feet from each other. Pruning increases the product, and causes the tree to yield annually, as, like the vine, it bears fruit upon the wood of the preceding year. Cultivation of the grounds is not essential, but it increases the product. After the thousands of years that the olive has been cultivated, a few varieties have been selected for abundance of fruit and superiority in quality, as also for fineness of flavor in the oil produced. Where young trees are raised from the seeds, they are invariably budded or grafted from some of these well-known varieties, as the chances are very remote that from a thousand seedlings one would be found of equal value to those now cultivated.

THE OLIVE.

Some Practical Hints Upon Its Propagation.

Adolph Flamant. 10/15/87

The olive tree is reproduced in different ways: by the seed, by the simple cutting, by the ramified cutting, by suckers that shoot from the trunk, and by the woody excrescences which form on the bark of the upper roots on old

Let us begin with the reproduction by the seed.

It must be first understood that an olive tree so grown has to be grafted, as it would otherwise remain a wild tree, giving thus but a poor and small produce. On the other hand it is well known that through the medium of a seed tree is more vigorous, has a more resisting power, resists better cold weather, and is less delicate on the choice of soil than those grown from cutting. For all such reasons this is the most generally in use in the olive regions of Europe.

But when the olive tree is so robust by nature, so little scrupulous with regard to the choice of soil, enjoys such remarkable longevity, and has no excessive cold weather to fear in California, should it be raised by us from the seed instead of the cutting, when by the first mode we have to wait ten or twelve years for the product against four or five years by the second.

Moreover, grafting which becomes indispensable when the tree is raised from the seed, giving it thus additional vigor, can just as well, if so desired, be applied to the tree grown from the cutting without losing thereby the advantages derived from this last mode of reproduction.

Coutance, who pronounces himself in favor of the seed, tells us that the plant has to remain at least seven years in nursery, and that after being grafted it requires three more years before it begins to bear fruit.

Reynaud tells us also that he has seen in France, in the county of Ardeche, as also at Cannes and in the Hyera Islands, olive trees raised from seed; that they were ready to be grafted, but that this result had required seven years. He, however, adds that the reproduction of the tree by seed has been found so slow that it seems puerile to have recourse to it.

Amoureux affirms that this method is of an excessive slowness and of very little practical use.

Charles Etienne and Liebault concur in saying that it is time and money lost to employ this method.

In Elwood Cooper's treatise on olive culture we also find that when the tree is raised from seed it has to remain seven years in the nursery, but that when grown from the cutting it bears as early in Europe as it does in California.

Riondet explains to us how the young olive tree, raised from seed, develops always a long tap-root, which constitutes its principal and often its only support; and that when transplanting it to a permanent site, after a long stay in a nursery, the cutting of said tap-root, which then becomes indispensable, inflicts upon its system a serious injury from which it is likely to suffer for years.

It seems thus established that the olive tree grown from the seed—which is the method most generally followed in the regions of Europe where the severe winters experienced occasionally make it desirable to render the tree as hardy as possible—has to be kept about seven years in nursery, and that at its transplantation it will experience a severe check which will be the natural result of meddling with its tap-root, as also of cutting back its top.

Is it then at all surprising that a half generation should pass before the olive tree so produced reaches bearing. Many people who have not carefully studied olive culture seem to believe that this is an inevitable result. We shall see by further explanations that it is not.

Let us pass now to the consideration of the propagation of the olive by cuttings. We would state, in common with Coutance, Amoureux, Riondet Du Breuil, Reynaud and many others that a cutting coming from an olive tree that has been grafted, and of good variety, needs no grafting. This operation is, however, necessary when the cutting from a grafted tree is derived from a point below the place where grafting was effected.

These cuttings can be made like those of a vine or any other cutting, only with this difference that the olive tree being an evergreen, one or more sets of leaves should be left on.

It is difficult safely to cut the large truncheons, because, when taken from the tree or even when cut a little to freshen the butt end at plantation, there is danger of crushing the bark, which has the effect of imperiling their starting, and which, should they grow

rectly in [illegible] ...ent sites is to run the risk [illegible] ...great many, as has happe... ...several articles I could name. ...on the other hand, they are placed in nursery in preference to much smaller cuttings, their tap-root will be so developed, even only after a year of stay therein, that it will be necessary to cut it back when they are to be transplanted, which will reduce their ... chances of growth, and will at ...ast make them languid and sickly ... a year or two. But the smaller the cuttings are when placed in the nursery the less will be the chances at transplantation within a year, of disturbing their root system, which will necessarily be less developed.

These smaller cuttings, from six to eight inches long, are generally raised in boxes under glass, where they take very readily; or in open ground in nursery when from eight to twelve inches long; but there their growth is very precarious. When ready for transplantation within a year the whole root system can be taken with the soil adhering to it and placed in the ground without disturbing it, and especially without exposing it to the air.

I consider this last point of great importance, for it is well known that all evergreen trees, whose vegetation is nearly always active, are of a very difficult transplantation. The slightest exposure of their roots to the air render the starting in their new places very doubtful. Any one who has had occasion to transplant eucalyptus, laurels, orange trees, etc., must be acquainted with this fact.

In support of this theory I extract the following from a recent article of the Phœnix *Herald*, giving a few sensible hints on the setting out of an orange orchard:

"The greatest care must be exercised in transplanting the orange not to allow the small thread-like roots of the tree to become dry, for the moment they do so the tree is gone. The roots must be carefully dampened till the tree is safe in the ground. This is one of the most important items to be observed in transplanting."

The olive is just as delicate to handle as the orange tree, so that the older it is and the more developed its root system the danger it presents in transplantation, when even the most careful precautions will not always secure success.

The small trees, when one year old, will develop with astonishing vigor when planted in their permanent sites, their tap-roots will sink rapidly; they will stand, without suffering, drought and hot weather, and not more than one in two or three hundred will fail to grow. Not only had I occasion to verify this, but I have also observed that when so planted, without experiencing any amputation of their roots and branches, they will overtake in life and vigor before two or three years those which, planted older and larger, have had to undergo the mutilations which are rendered necessary by their greater age and a consequently more developed root system.

Facts About the Olive.

In six years from the time of planting cuttings, so Elwood Cooper informs us, an olive orchard will give a paying crop, and there will be a small yield for a year or two before the six years. An orchard increases in bearing capacity until a great age is attained. There is scarcely a limit to the life of the tree. There are specimens believed to be 2000 years old. The root system never wholly dies, and constantly sends up suckers that, in a state of nature, replaces the parent stem, should the latter decay. An olive orchard, once brought to bearing condition, will give a constantly increasing revenue during the lifetime of its owner, and remain a source of revenue for many generations.

The olive is a much hardier tree than the orange. It will stand ten or twelve more degrees of cold. It can be planted up to an elevation of 2000 feet or more, without the least danger of injury from cold, and the crop in this state seems to be entirely unaffected by frost. The blossoms appear about the first of May.

An olive orchard is much easier and much cheaper to establish than an orange orchard. Rooted olive cuttings one year old can be bought for 15 cents each, or thereabouts, while a first-class orange tree costs at least $1 50. The orange demands irrigation; the olive needs none.

OLIVE CULTURE.

Another Nursery being Established in Napa.

"The first of all trees" is receiving a good deal of attention in Napa county. To Mr. Adolphe Flamant credit must be given by our people for valuable lessons learned in connection with olive culture. He established an olive plantation of 6,000 trees near this city and supplemented this practical piece of work with a meaty little volume treating on the various branches of the olive industry. He went back to the beginning of creation and called on ancient Greece to show that "the sterile lands and stony hills delight to be covered with the hardy and perennial olive tree." To verify the statement he pointed to his own rocky hills and the vigorous trees they are growing. He has a nursery here and furnishes cuttings and advice whenever called upon.

This much by way of introducing another gentleman versed in olive culture to the community. Mr. J. A. Canfield, lately from the east, having recently purchased five acres of nicely situated land in Hartson's Addition to Napa, west of the Court House, has built thereon a glass covered building 15x36 feet in size for propagating the olive. The interior shows a line of boxing down the sides and one end, the height of which when filled with sand is that of an ordinary table. The boxing is twelve inches deep, perforated at the bottom with holes, and filled with fine San Joaquin sand. In this sand a number of hands were busy yesterday planting 30,000 cuttings just received from the nursery of W. A. Hayne, Jr., in Santa Barbara county. As soon as these cuttings are ready for transplanting they will be set out in nursery on ground prepared for them. Mr. Canfield has taken pains to secure the very choicest cuttings and is confident that the olive industry will prove one of the most popular and lucrative known to California horticulture. It makes possible the utilization of hillsides heretofore considered barren and promises rich returns to those who follow it.

Mr. Canfield will build a home for himself and family on the tract which is also to serve as a nursery and permanently settle here. We are glad to welcome him and to say there is room for more who would develop more fully our resources.

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Central California.

THE OLIVE IN CALIFORNIA.

A note in the Alameda county items of the *Alta*, recently says that three-year-old olive trees, transplanted two years ago into the orchard of Robert McGlashen, Livermore Valley, are this season bearing olives.

In Europe the minimum bearing age of the olive is seven years, and in some of the Mediterranean olive regions the tree is barren until ten and fifteen years old. In such circumstances the times of waiting for a crop is too large a section out of a man's life, and the planter of a new orchard is working for posterity indeed, since others must enjoy the fruit of the tree whose bloom he is not to see.

In California the olive partakes of the procreative precocity which inhers in our climate and physical conditions. But as far as vegetable life is concerned, this precocity is associated with longevity. The peach in this State will bloom within the year that it germinates in the stone, but the tree is practically immortal. We know peach orchards here that are thirty years old, and the trees bear annually with vigor and excellence undiminished. The rich earth and elements of the air stimulated by sunshine seem to furnish a store of inexhaustible material for the support of plant and tree life. Therefore, while the olive is precocious, there is no reason to doubt that it will reach the age of those trees in Palestine which have a record of twenty centuries.

The olive growing area of California is vast. The slopes of the coast range and foothills of the Sierras, as well as the minor valleys, all seem kindly to it.

From San Francisco we look over the bay upon the semi-circle of mountains which wall in Oakland. Their sides are bare except for occasional groves of eucalyptus and bay trees. But upon those mountains Joaquin Miller has planted the pioneer olive orchard of nearly two thousand trees. They have not been in the ground a year, nor a half a year, but they have blossomed and fruit is upon them. It would greatly interest an olive grower to visit Mr. Miller's trees on that bald mountain side and see the sprightly, thrifty growth they have made. They seem to foretell the time when the summits which over hang the bay will be crowded with olive groves, and the picturesque mountains will receive new beauties, wedded to a utility now unknown.

OLIVE CULTURE.

The Views of a California Expert.

New Varieties Growing in This State.

His Notes on the Growth and Behavior of Sixteen Varieties.

WASHINGTON, August 22.—The Department of Agriculture has issued a number of bulletins showing the record of experiments in agriculture at the different stations that have been established throughout the country. At the California station experiments have been conducted for some time on olive varieties. The following is a brief introduction by Director Hilgard of this station on an elaborate report by W. G. Klee, who has been managing the experiments. "The increasing prominence of olive culture in this State gives importance to all light that can be thrown upon the subject, the more so as the slow growth of the tree renders mistakes made in the selection of varieties both costly and difficult of rectification. It is, therefore the intention of the station to subject both the growing trees and the fruit and its products to the most thorough comparative observation and investigation as quickly as the material shall be obtainable. In the mean time the observations of Mr. Klee are of sufficient practical importance to justify their publication at the present time.

"Some have the impression that the oil of the kernel or pit forms a considerable proportion of the product, but the investigation of this point made by L. Paparelli upon the common olive of central Italy showed this proportion to be as one to thirty, while in the Mission olives, noted for the rarity of sound kernels, the proportion was found by A. D. Sommer of the university as 1 to 162. Hence, to the oil-maker as well as to the consumer of pickled fruit, the data given will be of some interest. The account of the observations made by Mr. Klee relates to the growth of a number of varieties of olives during several years.

"This is, of course, only the beginning of observations which will be continued for years to come. Nearly all the varieties enumerated are now growing at the four different experiment stations, namely, Berkeley, Paso Robles, Jackson and Tulare. Those at Berkeley were planted five years ago, while those at the other stations were set out only a year ago, and thus afford but few data of value. Observations of the varieties growing on the grounds of the California nursery at Niles and at the Fancher creek nursery, Fresno, were also made through the courtesy of their respective managers.

The tabular record gives data for sixteen varieties, their age at planting, whether cuttings or grafts, diameter of stem or crown, height and habit of growth and bearing at Berkeley and elsewhere. Notes of measurements of fruits, etc., are also given for thirteen varieties and notes on the growth and the general behavior for eleven varieties.

CALIFORNIA FIGS AND OLIVES

In the last SUNDAY CHRONICLE there was presented an interesting array of facts concerning the cultivation of the orange and the lemon in California. A complete summary was given of what had been accomplished since the first desultory experiments were made in the production of those fruits upon a commercial basis, and much that was new and interesting was brought out. In this issue sketches are given of the progress that has been made in the cultivation of the olive and the fig. Although the introduction of these fruits was coincident with that of the orange, not so much has been accomplished in the extension of their cultivation. Nevertheless a great deal of study and experiment has been devoted to both branches of horticulture, and conservative but far-seeing men are now of the opinion that in the olive and the fig California will ere long find a source of wealth second to none other. Remarkable success has attended the cultivation of both these fruits, and never in the history of fruit-growing on this coast has there been such a general interest taken therein or so extensive an area devoted for the first time to their production. For these reasons the present is an opportune time for presenting as briefly as possible a statement of the demonstrated facts in relation thereto, both for the information of those already partially familiar with the subject and for the know nothing of the great development going on here or at best have the most vague idea of it. For these the subjoined chapters will be found full of interest and worthy of more than passing notice.

THE OLIVE.

A Fruit Which Is Rapidly Becoming a General Favorite.

The olive, like the grape, has occupied a prominent place in the history of the human race from the earliest times. The Bible, as well as all other ancient history, is filled with references to the olive and its products, and it requires no great stretch of the imagination to believe that this tree was foremost among those which were given to mankind in the Garden of Eden at the creation, with the command from God: "Behold, I have given you every herb bearing seed which is upon the face of all the earth, and every tree in the which is the fruit of a tree yielding seed; to you it shall be for meat."

The supposition that the olive was one of the earliest and most favored fruits of the human race, and that its cultivation became widely extended is further attested by the fact that when, after the flood, Noah sent out the dove, in order to ascertain the situation of affairs outside, the bird brought back in its beak a freshly plucked olive leaf.

In this connection it is of interest to note that the olive has the honor of being one of the two fruits that are first noticed by name in the Bible, and that all through the annals of the prophets, as well as of the New Testament writers, frequent references are made to it. Next to the olive and the fig in this respect is the grape, and it is evident that, so far as this era is concerned, Noah was the pioneer in the cultivation of those fruits, just as he was of the vine.

From that period down to the present time the olive has never lost its hold on the affections of the people of those countries where it is at home. There are millions living to-day whose chief article of food, as of their forefathers for centuries, is the olive and olive oil. This fact can perhaps be more readily figures with reference to the area devoted to the cultivatihn of this tree. The shores of the Mediterranean have from the very earliest commencement been the center of the world's olive orchards. Spain is the leading country in this branch of horticulture, having the immense area of 3,000,000 acres devoted to it alone. Italy has about 2,300,000 acres and France about 350,000 acres. There are in Tunis, on the southern shores of the Mediterranean, over 4,000,000 olive trees. Algeria has 3,000,000, Syria has more millions of them than has ever been estimated, while in Greece, Turkey and Asia Minor the olive is more abundant than any other variety of fruit.

Besides this immense area of cultivated groves, there are vast numbers of wild trees, the fruit from which, while of inferior quality, is utilized to a large extent by the poorer classes of natives, whose almost sole dependence it is for food.

has at all ages been held is shown by the fact that even when conquering armies have despoiled cities and overthrown the fairest monuments of man's handiwork, they have frequently spared the olive groves, so that there are now actually in existence trees which are credibly supposed to date back to the commencement of or even prior to the Christian era.

The Greeks venerated the olive to such an extent that it was dedicated to their goddess Minerva, while under the Old Testament dispensation olive oil was highly esteemed and made to play an important part in the religious ceremonials of the temples. The Biblical history is full of allusions to the olive, and an idea of the important part played by that tree in those times can be gathered from the legend told by one of the prophets, in the Book of Judges, wherein the trees are alleged to have chosen a king to rule over them, and the choice fell upon the olive, which, however, refused the honor, saying: "Should I leave my fatness, wherewith by me they honor God and man, and go to be promoted over the trees?" In the early sacred writings not included in the Scriptures are many allusions to the olive, which has indeed been held in great veneration by all Christians because of the intimate connection of the famous Mount of Olives, at Jerusalem, with the life and death of the Savior.

Beginning with the twig brought to Noah by the dove as a token of the cessation of the divine wrath, the olive has at all times been regarded as the emblem of peace. It was in the most ancient times an object of adoration among the heathen, whose altars and temples were decorated with carved representations of the foliage and fruit of the tree, while the use of the olive branch as a token of friendly feeling is so old that its origin cannot be traced, and nothing is more common to this day than to speak of an antagonist as extending the olive branch, thereby signifying a willingness to abandon enmity for friendship.

The olive, in short, is surrounded with a halo of mystery and veneration such as pertains to no other fruit in the world.

But it is with the practical rather than the poetical or imaginative side of olive-growing that the people of California are most deeply interested, though it must be confessed that the study of the ancient history of the tree is one of great fascination. Leaving that branch of the subject, however, it is apparent to all who have kept track of the development of horticulture in California within the past ten years that the time is rapidly approaching when olive culture will be one of the principal and most lucrative industries in this State.

The Spaniards brought the olive with them from their native land and found that the soil and climate of Mexico were particulary adapted to the growth of the tree. Apparently it was those who had in charge the religious concerns of the new-comers who took the greatest interest in those experiments in horticulture and agriculture which have developed so marvelously in this portion of America, for no sooner had some new outpost of the church been established in the wilderness than at once orchards, vineyards and gardens were planted, which were the forerunners of a growth of which the old padres, farsighted and wise as they undoubtedly were, had not the slightest conception.

When the project of establishing a chain of missions extending along the entire length of the Pacific coast was first undertaken each of these missions was made the means of spreading the cultivation of the fruits and vegetables that were so dear to the hearts of the expatriated pioneers.

The first of the Lower California missions was established at Loreto in the latter part of the seventeenth century, and as soon as possible various fruits were planted, among which was the olive. This was in 1701. Soon thereafter other missions were established, and at all of them olives, vines, figs and other fruits were cultivated successfully.

Toward the latter part of the eighteenth century the missions in what is now called California were commenced, and here, too, fruit-growing kept pace with other improvements. At San Diego, San Luis Rey, San Juan Capistrano, San Gabriel, San Fernando, San Buenaventura, Santa Barbara, Santa Ynez, San Luis Obispo and elsewhere olive trees and other fruits were planted and flourished. The earliest visitors to the coast from other parts of the world wrote enthusiastically of the grapes, olives, figs and other fruits with which they were regaled at the missions.

San Diego was found to be particularly well adapted to the olive, and both at the mission of that name and at San Luis Rey, were large orchards; at the latter place several hundred acres were covered with olives, which have long since been destroyed. The olive orchard at San Diego was planted in 1769, and was undoubtedly the parent of all the others in the State. In 1899, when just 100 years old, Frank Kimball, the well known olive-grower of National City visited it, and found

over 300 trees still alive. They had been used in the worst manner possible for a long time, yet the earth was covered with a thick mass of the stones from the fruit that had for years gone to waste, but which demonstrated the extraordinary productiveness of the trees. From this grove were taken numerous cuttings which were utilized in the establishment of olive plantations in other localities.

The history of the olive groves at the other missions has been similar to that of San Diego. At Santa Barbara there was a large grove but it was suffered to fall into decay, and now but a few trees are left of what was once a fruitful orchard. A good work, however, was done by the plantation before it went to ruin, in furnishing cuttings for the now famous Cooper olive groves near by. After the secularization of the missions, the olive and other fruit trees were neglected and rapidly fell into decay, but it is a proof of the inherent tenacity and vigor of the olive, that it long survives after the other less hardy fruits have become but a memory.

Even now there are numerous gnarled, battered trunks remaining, which, in spite of years of maltreatment, still bear fruit from season to season as an evidence of what they would willingly do for man if afforded the slightest encouragement.

After the abandonment of the missions little was heard of the olive until the general interest taken in the various branches of fruit culture between 1860 and 1870. That period was signalized by the thorough inoculation of Californians with the belief that the gold mines were to occupy a secondary place to the farms, orchards and vineyards of the State, and in the discussion that ensued many opinions were hazarded as to those branches of horticulture and agriculture which were destined to prove the most lasting and profitable. The cultivation of the grape, orange and other fruits received a great stimulus at this time, while the olive was almost entirely neglected. Little was known about the proper methods of cultivation, or of extracting the oil and making pickles of the fruit, and as a natural consequence other industries concerning which there was no apparent mystery, received the larger share of attention.

There were a few persons, however, who had become interested in olive culture, largely from noting the results that had been achieved about the mission establishments, and among these were Elwood Cooper of Santa Barbara and the Kimball brothers of San Diego, to whom California owes the greater portion of its development in this branch.

In 1872 Mr. Cooper set out several thousand cuttings from the old trees at the Santa Barbara Mission. The locality chosen for the orchard was the mesa between the ocean and the Santa Ynez mountains, about seventeen miles west of Santa Barbara city, and a variety of soils was selected in order that a thorough test might be made in this respect, so as to avoid future mistakes. It may be mentioned at this point that the general testimony of long experience is that a light, well-drained soil is essential for the production of the best results. Damp soil is especially to be avoided, while, as with vines, the better flavored fruit and oil are produced on light soil without a superabundance of moisture. There are on the Cooper property olive trees thriving equally well in black adobe, in deep bottom lands, in sandy soil, in stony and adobe hillsides and in table lands with a clay subsoil.

Mr. Cooper had traveled and read extensively and was thoroughly posted upon all the particulars which are essential to success in olive culture. Under his intelligent care there was never a moment apparently when there was any well-founded apprehension as to the result. In the fourth year from the planting of his first trees a small crop of fruit was produced, from which oil of a high quality was made. At seven years of age a careful test was made of the product of the entire plantation, and it was found to average 122 pounds of fruit to each tree. From 10½ to 12½ pounds were required to make a single gallon of oil. Each tree at seven years from the cutting thus produced ten bottles of oil, which were sold at $1 a bottle, though since then the price has been exactly doubled, so great has been the demand. Mr. Cooper's first orchard was set out at the rate of about 100 trees to the acre, which would thus give a product of $1000 gross from an acre at the first figures mentioned, or $2000 by those since established. These are the actual figures given by the largest olive-grower in the State as the result of his personal experience, and ought to be enough to convince any one of the possibilities that are inherent in the olive tree.

No one will maintain that olives planted under all sorts of conditions and subjected to all sorts of methods of treatment will yield so large a return as this. It must be remembered that the Cooper orchard is in a very favorable location, and that it has been cared for in the best possible manner, and has had the benefit of all the study and experience that can be brought to bear upon it. Besides, it is of course evident that with the increase in supply no such prices can be maintained for any length of time as those quoted. But even granting that the oil should some time in the future be sold for as little as 50 cents a bottle (and that is hardly possible), and that the average olive grove should not bear so quickly and so largely, still it must be apparent that the industry cannot help being highly profitable under any circumstances.

When it is remembered that the supply of olive oil, though amounting to hundreds of millions of gallons annually, is not nearly equal to the demand, and that as a consequence millions of gallons of cotton-seed and other oils are used as adulterants, it can readily be seen that there is slight prospect that prices will ever become so low as the lowest figures mentioned. If California oil should be produced in such quantities that the price realized by Mr. Cooper were reduced 50 per cent, the consumption in the arts as well as for food would increase so rapidly that a lower limit would hardly be reached. At present olive oil is scarcely used by the Americans as food, while pickled olives are eaten only as a relish by a few. But when the superiority of olive oil over the imported or fraudulent butters and lards that are so freely used is better understood, as it one day will be, then instead of the small quantity of oil now used there will be a demand for a hundred fold more, and the owners of olive groves in California will reap the reward to which they are justly entitled and for which they are now preparing.

Scarcely less profitable than the production of oil is the conversion of the olive into an article of food by pickling, as it is erroneously called. The olive in its natural state, it is almost unnecessary to explain, is so bitter and acrid as to be unpleasant to the palate. The pickling process consists in the removal of that taste by the application of lye. In order to gratify the tasto of those who regard the olive simply as a condiment to give a filip to the jaded palate, it is customary to gather the fruit while green, and then put it through the pickling and leaching process. The native to the manner born, who uses olives as a staple article of food, very sensibly waits until the fruit is mature before preparing it for use. When fully ripe much of the acridity of the green fruit is gone. The olives are then pickled, and in this condition have a most delightfully aro-

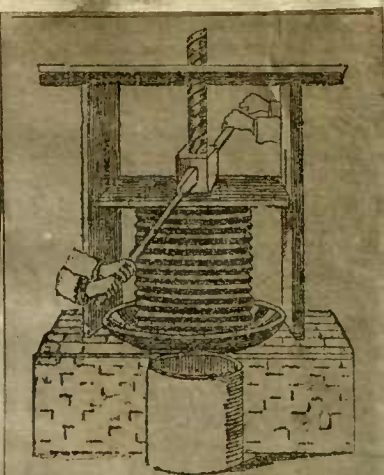
An olive tree.

matic and nutty flavor, and may be consumed in large quantities.

The ordinary green pickled olive requires considerable education of the taste before it is thoroughly appreciated, but not so with the ripe fruit. In all the olive growing countries of Europe the natives preserve the best of health and follow the most laborious occupations upon a diet composed at times exclusively of bread and ripe olives. From actual experience the writer can testify that a most satisfactory repast can be made from these two articles, and that olives so prepared can be consumed in large quantities daily without palling upon the taste, and at the same time with the most beneficial influence upon the health. A fair profit can be realized from the production of pickled olives, the price in California averaging about 50 cents a gallon. At twenty years of age olive trees in this State have produced 150 and 200 gallons each, though that is a high estimate. Yet with a much lower production the profit cannot fail to be satisfactory, while with a more general understanding of the delicious character of the ripe fruit, its consumption can be largely increased.

Coincident with the experiments so successfully made by Mr. Cooper at Santa Barbara, large plantations of olives were made at National City, San Diego county, by the Kimballs, who are widely known for their connection with the development of olive culture on this coast. The old Mission trees afforded the foundation for these orchards, and under the same amount of care equally favorable results have been obtained at National City in the production of oil and pickled olives, which have brought most satisfactory prices.

The success of these experiments in Santa Barbara and San Diego counties has been such that the planting of orchards on a large scale has been undertaken all over the State. Because the original mission orchards, as well as those of later date which have been mentioned here, were all grown within the influence of the ocean moisture, and therefore without the aid of irrigation, or at best with only slight assistance in that shape, the idea was long prevalent that the olive would only thrive near the coast, and that it was useless to attempt its cultivation in the interior. This has now been proved to be entirely erroneous. While the olive thrives near the coast and without irrigation, so also does it reach perfection in the interior, where artificial moisture must be depended upon. It is indeed one of the few fruits which may be said to be generally adapted to the whole of California. No essential difference can be seen in the olive of San Diego and of Shasta; of Sonoma and Monterey, and of the lower slopes of the Sierra Nevada mountains. In nearly



Olive oil press.

every county of the State, except those located almost entirely in the upper Sierra, the olive is now being successfully grown.

During the last five years there has been an especial impetus given to olive culture, and the demand for young trees and cuttings has at times been greater than the supply. Thousands of acres of orchard have been planted in Santa Barbara, San Luis Obispo, Monterey, Placer, Butte and other counties. The fact that soil which was not particularly adapted to other fruit would produce olives of excellent quality in large quantity has made this a favorite in the foothills and in places where there were natural difficulties in the way of the successful cultivation of many varieties of fruit, and as a consequence the area now devoted to olive culture is very considerable. No accurate information has ever been collated upon the subject, and even those who have made the cultivation of the olive a specialty are entirely at sea as to the probable area of the olive groves of the State. It is, however, probably well within bounds to state that by the close of the present season there will be at least 30,000 acres in existence, of which, of course, but a very small proportion is in bearing.

Coincident with the great interest taken in the cultivation of the olive, there has arisen a large amount of discussion as to the respective merits of the several varieties of the fruit that have been introduced here. Mr. Cooper and other pioneer growers have achieved their success from the cultivation of the mission olive alone, and therefore are not disposed to concede superiority to any other. The fact that oil from the mission olive finds a ready sale at from $10 to $12 a gallon and that the demand vastly exceeds the supply, while the imported oil does not bring more than half as much, is cited as at least illustrating most favorably the estimation in which our product is held. When better results shall have been secured from other varieties, then the defenders of the mission fruit will doubtless be willing to make concessions, but not until then.

The principal competitor of the mission variety is the Picholine, for which various points of excellence are claimed. One of these is its early maturity by comparison with the mission, but tests made side by side do not sustain the claim, and it is more than probable that locality is a large factor in determining the time of maturity. This idea is supported by the well-known fact that there is from six weeks to two months' difference in the date of ripening of the same varieties of other fruits in various parts of the State. Many other varieties besides those named here have been introduced, but these combine the bulk of the large orchards at present in existence.

Like every other fruit, the olive has its enemies, and those who engage in

its cultivation must expect to be called upon to combat them. The worst of these, in fact about the only one which has caused much trouble so far, is the black scale. The correct remedies for this evil, however, are easily ascertainable, and by diligence in their application the trees may be preserved from loss. Happily, the pest confines its ravages largely if not exclusively to the region that is subjected to the influence of the fogs and moisture of the ocean, so that those whose orchards are situated in the interior valleys have little to fear on this account.

A short description of the methods of preparing the oil and the pickled fruit may be of interest to those who are not posted upon the subject. For oil-making the fruit is gathered when ripe, which in this State is in November or December. It is then spread out for a week or so in order to allow the superfluous moisture to be evaporated, and when well wrinkled it is crushed in a mill formed of a stone or other vat in which a wheel made of stone is revolved by horse or steam power. It is considered essential in Italy that these implements shall be of stone, but that custom is not adhered to here. When crushed the paste is put into sacks made of coarse material, and a dozen or more of the full sacks are subjected to pressure at the same time in a screw or other press. The result of the first

Macerating olives.

pressing, which is made with a gentle force, is called the virgin oil and is the most valuable. After this has been secured, the paste is mixed with hot water and another pressing is secured. A third pressure follows, which produces an oil of a very low quality and useful only as a lubricant and for similar purposes.

The oil is clarified either by being allowed to stand in tanks for a month or more, or by being strained directly after pressure in vessels which have a layer of cotton batting at the bottom which catches all the impurities. The greatest cleanliness must be observed in all the operations in order to preserve the flavor of the oil. The berries will give from 25 to 50 per cent of their weight in oil, dependent largely upon the time of picking. Early gathering gives a smaller amount but a better quality, while late gathering acts in the opposite manner.

In pickling olives the fruit is first soaked in a bath made of potash, sometimes a little quicklime being added. This must be kept up till the flesh is saturated with the lye to the pit, and will take from six hours to a day, according to the strength of the solution. The olives are then put into fresh water, which is changed frequently, until all traces of the lye are removed. They are then put into brine, which should not be too strong, and bottled in that liquid for use. Considerable care must be exercised and the changes made at the right time in order to produce a palatable article.

It may be remarked in conclusion that the olive thrives side by side with the orange, and that it may be grown successfully wherever the temperature does not reach for any extended period less than 15 deg. above zero.

THE FIG.

What California Has Done in the Cultivation of This Fruit.

From the earliest time the fig has played an important part in the domestic economy of the people who inhabited the countries that border upon the Mediterranean. Sacred and profane history alike are replete with reference to it, and the fig trees of Greece, Syria, Turkey, Italy and other countries are guarded as carefully prosperity and even the very existence itself of the people in a large measure depends. The fig was one of the fruits that was supplied by the Creator to the parents of the human race in the Garden of Eden, and it is the first fruit that is mentioned by name in the Bible. It was from the leaves of the fig that Adam and Eve made garments for themselves just prior to receiving the primal curse of mankind from God. It is reasonable to suppose that the fruit of the tree was a favorite with the unfortunate pair, and their liking for it has descended to the present day. No one who has had the good fortune to consume the fruit when freshly gathered need be told how enticing it is, nor how difficult it is to refrain from overindulgence.

Like the olive, the fig was first introduced to this continent by the Spanish conquerors of Mexico, and its cultivation was extended wherever the new-comers obtained a foothold. The founders of the missions on the Pacific coast planted this fruit side by side with the grape, olive, orange and vine, and found that in every respect the soil and climate were admirably adapted to its production in large quantity and of excellent quality. Being easily propagated by cuttings there was little difficulty in carrying the fig to all parts of the State. From the early plantings of the missions, which, by the way, consisted of but a single variety, have sprung the thousands of mature fig trees of the black or blue variety that are to be found from one end of the State to the other.

For many years this was the only kind of fig cultivated in the State, and no attempt was made to introduce any other varieties. But in what may be called the great fruit-growing "boom" of 1869-70 the fig came in for its share of attention, and the introduction of varieties more nearly approaching the so-called Smyrna fig of commerce was agitated. As one of the immediate results of that agitation some cuttings of

A fifteen-year-old fig tree.

the white Adriatic fig were imported and planted at Knights' Ferry, Stanislaus county, and it is claimed that from these have been derived the thousands of trees of this variety which are now in successful cultivation in all parts of the State. At present the white Adriatic trees at the place mentioned are the largest and most productive in the State. They are now twenty-seven years old and are ten to twelve feet in circumference and upward of sixty feet in height. The fruit is dried and finds a ready market at from 10 to 15 cents a pound, each tree producing as high as $100 worth annually, besides affording a large amount of cuttings, which sell for good prices.

In the same locality is a grove of the common black fig trees. These are also claimed to be the largest in the State, and yield immense crops, which are dried and sold for 5 to 8 cents a pound. The crops are larger than those from the white Adriatic, which makes up for the difference in price and affords a profit very nearly as large.

The white Adriatic has been cultivated in all parts of the State, with the result that it has been demonstrated that the foothills produce a far better quality of fruit than can be grown on the plains. Thorough tests have been made upon this point, and it is now definitely known that from trees of identically the same variety, planted in different localities, the fruit grown in the foothills is so superior as to have been taken for another variety altogether.

Many attempts have been made to procure what is called the genuine Smyrna fig, but so far without success. Some years ago a large importation was made of cuttings which were claimed to be the desired variety, but, while thousands of trees have been propagated therefrom, the results have been unsatisfactory.

The white Adriatic of the foothills, when carefully dried and prepared for market, is the nearest approach to the Smyrna fig that has yet been produced here. It commands a good price in the market and in all respects seems to be a desirable tree to cultivate.

Attempts have been made to reproduce the Smyrna fig by planting the seeds of the imported fruit, but the results so far secured are far from satisfactory. The fig, like most other fruits, does not come true to seed, and while there is a possibility of securing some good varieties, just as with other seeds, the probability is the other way. The trees that have so far been produced from seed have failed to mature their fruit for some reason or other.

An important point in connection with the culture of the fig is the question of the necessity of what is known as caprification. In Smyrna, where the choicest figs are produced, this custom has been practiced from time immemorial. About the middle of June the fig commences to mature, and at this time the fruit of the wil

Drying figs.

Capri fig is gathered, made into festoons and strung upon the cultivated trees. It is claimed that there is an insect in the wild or male fruit which at once visits the cultivated or female fruit, and in so doing conveys the pollen from one to the other, thereby impregnating the cultivated fruit and causing it to mature in perfection, instead of blighting and falling to the ground as would otherwise be the case.

This practice has been made the subject of much investigation, and by some scientific men has been denounced as of no value. On the other hand other investigators of equal intelligence incline to the belief that it is essential, and many facts are cited in proof.

There are two plain and undisputed facts bearing upon the subject which will not be contradicted, and from which the non-scientific mined may possibly be enabled to draw a correct conclusion.

In Smyrna caprification has been practiced for ages, having been handed down from father to son from the earliest times. The trees so treated produce an abundance of the choicest fruit which sells for the highest price. The fruit of the trees not so treated blights and falls to the ground.

In California there has never been any attempt at introducing the insect which is claimed to be essential to the production of mature fruit. Although many thousands of cuttings which were solemnly attested to have been taken from the genuine Smyrna trees have been imported into this State and have attained maturity, except in a few fugitive cases they have never ripened their fruit. Persons who have cultivated these cuttings upon a large scale report that the trees set heavily with fruit, but that it only grows to a certain stage, when from some cause not apparent it blights and falls to the ground.

Furthermore, where efforts have been made to produce trees from the seed of the Smyrna fig, the same tendency to blight has been encountered from the very commencement.

In a single instance it is claimed that the genuine Smyrna fig of the importation referred to has matured fruit of fine quality. On the other hand, it has been shown that the fruit produced in that case is identical with the white Adriatic of the foothills, and in no particular can a difference be traced between either the tree or the fruit, although it is freely acknowledged that it is superior to the same variety grown on the plains.

The advocates of caprification point to these facts and claim that until practical experience in California demonstrates that they are mistaken they are at least justified in believing in the utility of a practice that has obtained among the producers of the choicest figs for many hundreds if not thousands of years.

Like the olive, the fig is adapted to a very wide range of soil and climate. It will not successfully withstand so low a degree of temperature as the olive, but in respect to variety of soil and extent of locality the two fruits named have many common characteristics. Figs are grown in both moist and dry soils, and both with and without irrigation. The fruit produced in excessively moist localities is not equal to that grown elsewhere, while, as has been stated, the figs of the foothills are of the choicest description. At a proper elevation in that region the temperature at nighttime does not vary so widely from that of the day as elsewhere, and it is this happy mean that is most favorable to the production of figs of choice quality.

The fig needs an adequate supply of moisture, and in this respect is more exacting than the olive. After the tree matures, however, cultivation is frequently abandoned altogether, and the earth beneath the tree either remains packed and smooth, or a growth of grass is allowed to spring up.

Owing to the great size which the fig attains, it is best to plant them in or hard form at a greater distance apart than almost any other fruit. The intervening spaces may be planted with vines, or various crops may be raised thereon until such time as the extending branches of the tree shall make it impracticable.

The fig grows rapidly from cuttings, and bears fruit at a reasonably early age. Cuttings planted one year will frequently produce fruit the following season, though of course there is danger of damage from too great precocity. Two crops are always produced, and sometimes three, each season, this being not the least of the valuable features of this fruit. The earliest figs in California are produced on the borders of the Colorado desert, where they ripen early in May, and as a result are sold for very high prices without being dried.

The largest bearing fig orchard, exclusive of the common blue variety, is located in Fresno county. These are of the white Adriatic, and great success has been met in the production of choice fruit, which finds a ready market both here and at the East at high prices. The first carload of dried figs ever shipped from California was sent East from Fresno during the past season, and dealers there pronounce them of excellent quality, and predict a great future for this branch of horticulture.

It is evident, from the enormous productiveness of the fig in California, that the fruit can be cured and marketed at a comparatively low price and still return a good profit to the producer. From what has already been achieved in this direction many now regard fig culture as certain to take a front rank here, and look forward to the time when we shall compete successfully in all the markets of the world with the choicest products of the oldest fig growing countries.

Besides the white Adriatic and the common blue fig, there are a number of other varieties in cultivation in California. Among these is the brown Turkey, which is large and very choice, and is the earliest ripening fig that finds its way to the market. The Brunswick or Smyrna fig is a yellowish fruit which has been largely sold as the genuine Smyrna.

The brown and the white Ischia, the Grosse Marseillaise and the Marseillaise, the San Pedro and the Pacific White, are other varieties which have been cultivated to a greater or less extent, and which possess various qualities which commend themselves to a wide range of tastes.

No effort has ever been made to secure facts with relation to the area devoted to fig culture. Of late there has been a great deal of interest taken in the subject, and many new orchards have been planted in all parts of the State. An estimate that would prove anything like correct cannot be hazarded, although there are several thousand acres now in cultivation, and the area is being very largely extended.

As a final encouragement to those who are considering the matter of embarking in fig growing, it may be stated that this fruit is practically without insect enemies of any kind. Many trees are still growing thriftily in various localities which have been subjected to all sorts of neglect, without harming them in the least. The fig is exceedingly tenacious of life, and will successfully withstand a much greater amount of neglect than almost any other fruit.

HOW TO PICKLE OLIVES.

New Era 11/1/93

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At our request the Hon. Dr. Cockburn, M. P., has kindly supplied the following receipt. Dr. Cockburn has given a good deal of attention to preserving olives, which he thinks should form a regular article of diet in a climate such as ours:

Pick the olives carefully by hand; those with the slightest bruise should be rejected, as they will not keep.

Prepare a lye by adding 3 lbs, of dry sifted wood ashes and 6 ozs. of quicklime to one gallon of rain water. The ashes, lime and water to be boiled together for half an hour in an enamelled pan, and when cool empty the whole over the olives, which have previously been placed in an earthenware or wooden vessel. Cover with a cloth and place in the shade; bright light destroyes the color.

The berries should remain in the lye till completely free from the acrid taste peculiar to the olive. This requires a period of about 40 hours, more or less, according to the degree of maturity of the berry. It is in determining this period that the only diffculty in preserving olives presents itself. If not left long enough the acrid taste conceals the nutty flavor, and if too long the olive will not keep.

In removing from the lye a wooden spoon should be used. After thorough washing place in water and again cover with a cloth. Change the water thrice a day for three days. The berries are now ready for bottling in brine.

The brine is prepared by pouring a gallon of boiling water over 1½ lb of salt (sufficient strength just to float an egg). This is, when cold, poured over the olives, which have been previously placed in the bottles.

The bottles should be well corked and secured from air with wax or bladder. The best way is to depress the cork slightly below the rim of the bottle and fill up the depression with a teaspoonful of melted beeswax or paraffin.

Oil From Dried Olives.

The following is taken from a late number of the Ventura Free Press: Col. Emil Bloch, who has charge of the MacMillan place in the Ojai, brought to the Free Press office Saturday some very fine olives grown this year, of which he has forty acres in prime condition. He also produced samples of some extra fine olive oil which he obtained by crushing olives which were over two years of age. Expert judges pronounce this about the finest article in the olive oil market, and Col. Bloch says it is worth a great many more dollars per gallon than he can possibly obtain for it. To show us what he had to work upon, he brought along a quantity of the dried olives and to all appearances they were all shriveled up and apparently good for nothing, but by proper treatment they have produced the very finest olive oil.

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Joaquin Miller p. 56

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Cotton Oil as Olive Oil p. 23

Olive in Berkeley p. 15

Barrels. p. 42

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