



19005 Coast Highway One, Jenner, CA 95450 ■ 707.847.3437 ■ info@fortross.org ■ www.fortross.org

---

Title: **On the Agriculture of Upper California**

Author(s): **E.L.Chernykh**

Published by: University Press, Moscow

i

Source: Fort Ross Conservancy Library

URL: [www.fortross.org](http://www.fortross.org)

Fort Ross Conservancy (FRC) asks that you acknowledge FRC as the source of the content; if you use material from FRC online, we request that you link directly to the URL provided. If you use the content offline, we ask that you credit the source as follows: "Courtesy of Fort Ross Conservancy, [www.fortross.org](http://www.fortross.org)."

Fort Ross Conservancy, a 501(c)(3) and California State Park cooperating association, connects people to the history and beauty of Fort Ross and Salt Point State Parks.

© Fort Ross Conservancy, 19005 Coast Highway One, Jenner, CA 95450, 707-847-3437

p. 234 -

On the agriculture of Upper California  
by E.L. Chernykh (ЧЕРНЫХ)

(Explanatory footnote by the editor: This interesting article was sent in to the Imperial Society for Rural Economy in Moscow by the corresponding member Mr. E.L. Chernykh who had received his basic education at the Moscow Agricultural School. He (now) honors this Society by (contributing) his knowledge of agriculture. Having been engaged in agriculture at (Fort) Ross during 10 years of service with the Russo-American Company, he has delivered to the Society several articles on California agriculture which were published in the 20th decade issue of the Journal of Rural Economy)

“On the north-western coast of America, between the cape of St. Luke and the prt of San Francisco, lies the blessed land, called California. It is divided into the Upper or New and the Lower or Old. The Upper California is the area between the ports of San Diego and San Francisco, and the Lower California the area between the port of San Diego and the cape of St. Luke. (San Lucas 28)

Having the honor of serving in the colonies of the Russo-American Company, namely in settlement Ross, I had become acquainted with the climate of the Upper California and with the economy of its inhabitants. In order to understand better the nature of agricultural work in the Upper California, it is necessary to learn the seasons of the year. The entire year here can be divided into the rainy and the rainless; the first is called winter, and the second summer. Rains begin in October and last until April; the first rain usually occurs in September, and the last in May. In April, May, and even in June occur passing rains but this happens seldom; the rainy season can be reckoned, as stated above, from October to April inclusive.

After the first rains, there begins to appear green (vegetation), but the growth is slow; the reason being, in addition to the low sun, excessive moisture, as well as strong and fairly cold northwestern winds. In February, all wild grasses begin noticeably to grow and some blossom; while trees are budding. The greatest and the most varied number of flowers occurs in April and May. During the last days of May, wild grasses start to turn yellow and the soil dries out; in June most vegetation is already yellow. July, August, and September present an appearance similar to our winter: all springs and grasses dry up (from heat) including marshlands. The land hardens and cracks, particularly black soil and clay. On the hills and in open places the soil dries out faster and deeper than in the valleys and low places not open to the wind and better able to retain moisture.

White frost occurs from time to time from November to the middle of April, and sometimes later.

There are two predominant winds: northwestern and southern; the former is the most usual and blows almost constantly from May to October, always bringing on clear weather; from time to time there occur prolonged rainy south winds. During the winter, south-western and south-eastern winds are strong and always bring on bad weather, but during the summer they are weak and produce fog. South winds during the winter blow with frequent most powerful gusts. Eastern and western winds blow very seldom, sometimes only for a few hours, but with the greatest force. North-eastern wind comes from the land, mostly in the fall in September and October, and it is always

very warm, up to 20 degrees (Reaumur scale). In a few hours, this wind dries out not only the soil but also old, weathered buildings, and things made of wood. During this wind, the inhabitants suffer from cough and, not infrequently, from chest pains. Western wind, blowing directly from the ocean, brings on heavy black clouds with rain, and sometimes with thunder and hail; it blows mostly in November, usually when the south wind changes into north-western. Thunder occurs seldom. Here is a summary of thermometer observations (readings) made partly by myself personally, and partly under my supervision in 1837, 1838, 1839, and 1840. In 1937, the observations were Fahrenheit and converted into Reaumur scale, but the remaining years, on Reaumur scale.

TABLE

Remarks: (to accompany the summary)

1/The thermometer (Reaumur) was hung in the shade on the wooden wall, facing north and was open to all winds, especially the prevailing NW. The disparity between the annual average temperature for 1837 and those for the other years arose from the different hours at which the observations were made.

2/The observations were made at settlement Ross, at the immediate seashore. The difference between temperature at seashore and that away from the sea was very significant: during the winter, when at Ross in the morning it would read 3-4 degrees R, at Rancho Chernykh, located some 15 verst inland, there would be white frost with 1 - 1 1/2 degrees below zero R. The farther inland, the colder; in the summer the reverse is true - away from the ocean it is warmer. For example, when at Ross the temperature is plus 18° R, at Rancho Chernykh it is up to 22 degrees R and so forth. At the seashore, white frost occurs very seldom, in November and December on clear mornings, while away from the sea white frosts occur practically every clear and quiet morning. During rains, one can see the snow on the far away mountains, and then white frost becomes heavier

3/The highest temperature was as follows: in 1837 in July and August; in 1838 on November 26 at 2 p.m., with warm NW wind, it was 22 degrees R in the shade; in 1839 on June 29 at 2 p.m. it was 19 degrees R in the shade; in 1840 on July 21 at 2 p.m. it was 18 degrees R in the shade. The lowest temperature was as follows: in 1837 November mornings; in 1838 in January and February at 6 a.m., plus 2 degrees R; in 1839 on January 19 in the morning, plus 3 degrees R; in 1840 in February mornings it was plus 2 degrees R.

4/The number of clear and cloudy days shows also (corresponds to) the number of days with NW and sometimes NE winds; with S winds days are seldom clear, mostly overcast, fog and rain. However, ~~often~~ prolonged southern winds not infrequently bring rain and fog from NW. Although not being certain regarding the correctness of the barometer, I nevertheless attach hereto a summary of barometric observations for 1838, 1839, and 1840. The difference between the highest and the lowest barometric readings in 1838 and 1839 was .9" and in 1840, .7" The barometer was hung in the living room, which was never heated; the customary temperature in the room during the summer was 11-12 degrees at noon. In the summer, it was mostly colder in the room than outside, in the open air: the room faced north and the rays of the sun never penetrated the room.

Having acquainted themselves with the temperat e of Upper California, we can now turn to the economy of the inhabitants, Spanish creoles. All the missions and ranches in California are situated on the sea coast and in the bays, especially the bay of San Francisco. The sea coast is mountains , frequently dissected by small but fertile valleys which are watered by clear springs. In the valleys and along the banks of the springs the soil is deep black earth, <sup>and</sup> silt, occasionally mixed with clay. The banks of rivers and streams are considered the most fertile. The soil on the mountains consists mostly of small stones (gravel) and clay. The large local valleys, during the rainy season, are covered with water which forms lakes, and these dry up when the rains end. Along the sea coast, there are few valleys suitable for agriculture.

In the mountains, in the gulleys, and sometimes on mountain tops, one sees huge trees: pines, firs, bay trees, oaks, madrone trees, etc. In general, California is not heavily forested, and Lower California, it is asserted, has no trees. Upper California, in some areas, has good forests. Vast, deep forests extend to the north of Bodega bay.

Of all the agricultural implements, only the plow is used here while the harrow is replaced with oak or madrone branches. The plow is archaic, extremely primitive: a curved small tree is selected (for the purpose) - one end serves as the handle, and the other end is attached to an iron wedge (share) measuring 8-12 inches in length and about 3-4 inches in width at the top, while the lower end is a sharp peak. This plow is attached to the harness and yoke which is secured to the horns of two oxen. Plowing and harrowing here is done with oxen although there are many horses; this must be attributed to custom and the simplicity of the ox harness rather than to better efficiency. While plowing, the plowman holds the handle of the plow with his left hand, and uses his right hand for urging the oxen. Usually, two oxen are harnessed to the plow, but when breaking virgin soil, four or six oxen are used. The design of the plow shows that it does not turn over the soil but tears it. However, this plow cuts the soil pretty deeply - from 4 inches to 8 inches and more.

Bread grains raised in California are, as follows: wheat, barley, peas, corn, beans, gorbanzo beans. Vegetables are potatoes, watermelons, pumpkins, melons, as well as pepper, green onions, garlic, tomatoes, and a few cabbages. In the past, under the control of the missions, there was cultivation of carrots, beets, and other vegetables, but now these are scarce. There are no cucumbers.

The plants which are raised here can be classified into two groups: those capable to survive frost, and those not able to stand low temperature. The former include wheat, barley, oats, beans, gorbanzo beans; the latter comprise Mexican beans, corn, watermelons, pumpkins, melons, onions. Potatoes belong to both categories. Mexican beans (frijoles) are the most sensitive to frost.

In November, with the first rains, farmers begin to plow soil for the plants that can stand frost. In order to have fresh bread early, usually barley is planted first.

For wheat and barley, the old land is plowed twice, but virgin land is plowed several times. The plowed soil is seeded at once; the seed is plowed in and then covered up by tree branches (harrow). Californians never allow freshly plowed land to remain unfinished for fear of evaporation of soil moisture.

~~Beans~~ <sup>PEAS</sup> and gorbanzo beans <sup>(SHEEP PEAS)</sup> are planted in rows. Land for <sup>PEAS</sup> beans is plowed deeply and thoroughly several times over; afterwardstrenches are made (furrows) in the cultivated soil some two feet apart from each other. The plow is

The plow is followed by the sower who drops 2-3 <sup>PEAS</sup> beans into the furrow every two feet. In order to plant (space) <sup>PEAS</sup> beans accurately, the sower drops the <sup>PEAS</sup> beans with each short step, but (when) planting gorbanzo beans, the distance is about two steps. The larger the distance between planted gorbanzo beans, the more plentiful is the harvest.

I had not seen gorbanzo in Russia; in appearance, the stem looks like a fern and has spurs on both sides which contain utricles with seeds. Gorbanzo is very tasty and well liked in California. The sower, throwing the <sup>PEAS</sup> beans into the furrow, simultaneously very skillfully and rapidly pushes the soil over them with his right foot.

Some farmers, immediately after sowing, harrow the land instead of using their feet to cover up the beans. Others, however, having covered up the <sup>PEAS</sup> beans while sowing, do not harrow until weeds make their appearance and until it is necessary to heap up the soil to the plants. Peas are planted in the winter, at the same time as wheat, and in the spring (together) with corn in order to have them, fresh at any time. Spring-planted peas are more tender and sweeter than winter peas.

The sowing of plants which tolerate frost usually continues until March 1, after which farmers begin to prepare the soil for plants that do not stand frost - corn, frijoles, watermelons, etc. Planting of these takes place from April till June 6, especially if late rains occur. Not infrequently frosts come in May, and then the planted frijoles are almost surely are killed, and the planting is done over again. I have experienced (that) light frost does not harm corn even though the leaves turn yellow.

[Corn (maize), second to meat, constitutes the most typical food of Californians. For corn, the soil is plowed thoroughly several times, then the surface is levelled with heavy branches of oak or palm. If the soil has many solid large lumps, they are dealt with in this fashion: very heavy branches are dragged over the plowed soil so that the hard lumps are forced into the ground; each such lump absorbs the moisture of the soil and gradually softens and crumbles.] It must be understood that such lumps can be forced down (into the soil) only if soil has been well prepared and, most importantly, deeply plowed. After levelling the surface of soil for corn, shallow furrows, about 3", are plowed, some two steps apart from each other; then in each furrow, about the same distance apart, 2-4 corn seeds are planted together, so that, if a half of planting fails to grow, still another one half will remain.

[If the soil for corn is dry, the seed corn is soaked in water before planting, otherwise corn is planted dry. When corn comes up and grows about 6" tall, the worst of the plants are pulled out, only the healthiest, most reliable plants, two in each place, are left (in the soil).] At the same time, on both sides of the corn stalk appear from the ground offshoots, called here "baby corn". If only one corn stalk stands (remains) in the ground, then one or two of the baby corn is left to grow, otherwise all baby corn is removed (pulled out). In general, the fewer stalks are left together, and the larger is the distance between them, the richer is the harvest and the larger are the grains. The root of corn does not grow deeply into the ground, but spreads out; for that reason large space is allowed between the plants.

[After this operation, consisting of destroying the excess plants, the soil around corn stalks is loosened up and heaped around the plants. Some farmers use hand tools for the purpose if the area is not very large, while others plow between the rows of corn and use the plow to heap the soil

around the stalks 1. the planted area is large. After this, corn grows noticeably faster. The soil is heaped up against the stalks for the second time when the plants begin to flower. In this case, good farmers first rake away the top dry soil, then put fresh moist below-surface soil around the plants and place the dry soil on top. This action serves as watering.

Sometimes one notices that some stalks of corn are yellowish, sickly, and growing poorly on good soil; this can be helped by removing dry soil from the plant and heap<sup>ing</sup> up against it fresh, moist soil from under the surface; two days later one can not recognize the sick plant: it turns green and alive.

[Watering (irrigation) in corn is used only on sandy and rocky land; on all other ground, irrigation is replaced by deep plowing. In California, deep plowing is the primary requirement of well prepared soil. During the winter when sometimes heavy rains continue several weeks without a break, deep plowing safeguards the soil from washouts which would be unavoidable on shallowly plowed soils. In the summer, when constantly clear weather is only occasionally interrupted by sea fogs, with temperatures of 12-25 degrees Reaumur, deeply plowed soil serves as the store of moisture during 4-5 months without rain.] Deeply plowed soil is remarkably capable of retaining moisture: in May, June, July, and August all wild grasses dry up; unprepared land dries to the depth of 2-2½ feet. But just dig up some deeply plowed ground, and it will surprise you to see that dry soil is only 1-2 inches deep from the surface. When dew falls on such surface and moistens it, it combines with the moisture contained in the soil, and thus replaces irrigation (watering). It is difficult to believe, unless you experience it, how greatly beneficial deep plowing is. Farmers always try to plant and seed those plants, which can not stand frosts, after the rainy season so that after the planting often no rainfall occurs (that is the desire of the farmers) because, following rain, the soil surface dries and hardens. I repeat that watering (irrigation) here is used seldom despite the fact that there is no rain during five months, which is to say that annual drought lasts five months; thorough preparation of the ground and particularly deep plowing here take place of irrigation.

Soil around corn stalks is loosened and heaped up around them only twice, but occasionally three times if the soil is poorly prepared. In a hot summer, corn here ripens in August; in a cold, foggy summer it ripens in September so that rains catch it still in the field, as for example in 1839. The maturity (ripeness) of corn (cobs) is easily judged by anyone engaged in raising it, so that it is unnecessary to discuss that.

On one stalk of corn there are sometimes up to six cobs, but usually 2-4. When corn is ready (ripe), the cobs are broken off but the stalk itself is left standing in the field, not being put to any use; sometimes corn stalks are used for (building) wigwams; the pith contained in the corn stalk is very sweet and is a favorite tidbit of ~~Indians~~ children and Indians; corn straw is readily eaten by cattle; it rots slowly, particularly the roots.

[The harvested corn cobs are dried in the sun; for this purpose they are either hung on poles and tied together with the husks which cover the grains; or simply laid out on level ground. Later, for lack of storage barns, corn cobs are put away in the attic, first removing the above mentioned husks. When dry, if intended for sale, the cobs are threshed with sticks; for domestic use corn is kept on the cob.] For seed corn, the lower half of the cob is preferred. Seed corn is separated from the cob by hand in order to avoid damage, which is done easily when corn is completely ripe

and well dried.

\* (These husks or leaves are widely used in California; cut in large square pieces they serve as wrappers for cut tobacco for smoking. It is asserted that these "papelites" are better for smoking than paper. Ed.)

Frijole. This name is given in California to all beans, but the yellow beans are cultivated predominantly. They constitute the favorite food of Californians. After preparing the ground properly, the farmer plows shallow furrows, about 2-4 feet apart; then two or three grains are put in each spot, about 3 1/2 feet from each other in the furrow. The sower, throwing the the spots being grains covers them up with loose soil, using his foot. Some time later before frijoles sprout but weeds start growing, the soil is harrowed. During the growing season, the soil between the rows of frijoles is harrowed and heaped up against the plants. This has an important influence on the harvest.

When frijoles grow from the ground, they spread long (covered with pods) branches in all directions; these branches cover <sup>the</sup> the ground and keep it in shade despite the fact that frijoles are planted far apart. The roots go deeply into the soil, and therefore the ground plowed deeply.

should be.

The main inconvenience of cultivating frijoles is the harvest: the pods ripen not at the same time; some of them are ready while others are just developing. If planting is not large, the pods are harvested whenever ripe and ~~the~~ the green ones remain until ready. If, however, the planted area is large, then harvest is delayed until most pods are matured at which time all frijole plants are pulled by the root and left in the field to dry. Afterwards, all of them are taken to the threshing ground.

Potatoes are planted in small quantities; mostly, each farmer plants only for his own use. In most cases, the red potatoes are cultivated which yield more and larger than the white potatoes, although red potatoes are said to be less tasty than the latter. Potatoes do excellently; I often saw here round red potato some 6 inches in diameter, and it was not any special kind but the ordinary red.

plowed

In prepared ground potatoes are planted either in plowed furrows or in holes made with a spade. Furrows and holes, in which potatoes are planted, are spaced some 5-7 feet apart. For planting potatoes are cut in two, and both halves are put in the same spot. When potato plants are in flower, the greens are cut off 6-8 inches from the ground, and the soil is heaped up against the plants. Potatoes do not get any special care; the main thing is to have plenty of loose soil around the roots.

Watermelons, melons, pumpkins. For these plants the ground is prepared most thoroughly, removing all roots and lumps; then shallow furrows are made some 2-3 steps apart, and about the same distance apart: 3-5 water-mellon and mellon seeds are planted together. For pumpkins, the distances are larger: 3-4 steps, and 2-4 seeds are planted in the same spot. When the young plants appear, only two of the best are left in the ground while the rest are pulled out. During the growing season, the plants are watched lest they be smothered by weeds, and to keep the soil around the roots loose and moist. Nothing else is done.

Watermelions and melons here grow extremely large but the former do not have the same (good) taste as our European ones. I had an opportunity to receive some seeds from Astrakhan: the first year crop of watermelons was excellent; the second year, worse; and the third year they have changed so that could not be told from the native watermelons.

Bulbous onions and cayenne peppers are widely used. First, the seedlings are started in January and February after the full moon\*, later when frosts are not expected, the seedlings are planted out in the ground where they will produce harvest.

\*(Editor's note: With the Californians, the moon ~~the moon~~ plays an important role, especially for planting onions, watermelons, pumpkins, melons, potatoes, etc. It is claimed that onions planted during the new moon would never have bulbs, as compared with onions planted during the full moon or afterwards; many of plants set out and trees grafted at the new moon will die and grafts will do poorly, and so forth. Similarly, the gelding of bulls, stallions, roosters, etc. is done always after the full moon)

When onion seedlings are set out, the roots are torn off about one inch from the bulb; the feather (the green part) is also torn off about one half of the length, and planting is shallow. Shallow planted onions produce larger heads, assuming, of course, that the soil is porous and well irrigated. Onions belong to (the kind of) plants which require frequent watering; after setting out (transplanting) they recover rapidly. During the growing period, the work consists of weeding, irrigating and loosening the soil around the roots. Sandy loam is considered best for onions for the ease of irrigation. When the heads (bulbs) are completely developed, the feathers fall off by themselves; at this time the soil is tamped down, so that the roots can bring sap only to the heads. I have fairly often seen onion heads measuring about 5 inches in diameter.

The length of ripening of bread plants is practically the same as with our Russian plants. The earliest of all bread plants is barley - about June 20 to July 1; wheat and peas - July 10 to 20; gorbanzo beans - in August; water melons, melons, pumpkins, onions, cayenne pepper - the very end of August and later, generally depending on the degree of warmth during the preceding months.

Reaping is done with sickles; for easier thrashing only the ears are usually cut off the bread plants. The straw remains in the field and is burned or used by cattle. The harvested ears are carted to the thrashing ground in large clumsy wagons; these wagons are called here "carrets", the wheels being nothing but crosscuts of large whole logs.

Thrashing is done with horses. For this purpose, thrashing grounds are made of two kinds: earth and stone\*

\*(Editor's note: wooden thrashing grounds seem to be in use only at Ross) For earthen ground a smooth level place is selected on clay soil; it is surrounded by fence, and during the winter cattle is herded there so that the surface is tramped down and leveled. When rains end and weather becomes hot, such a place on clay soil gets as hard as rock. For a stone thrashing ground, a level place is likewise selected; the floor and the walls are made of brick or flat stones. The diameter of thrashing grounds depends on the amount of bread plants and the number of horses, varying from 56 to 84 feet. A tall pole is sometimes placed in the center of the ground. Into the ground, so constructed, the harvested plants are brought and either are scattered over the entire ground some 4-5 feet high, or are put up in the shape of a haystack in the center, around the pole, leaving between the sides of the stack and the walls of the ground a small space perhaps 10 feet for the horses to run in. Having laid down the bread plants in such manner, (the farmers) drive into the enclosure from 50 to 180 horses, depending upon the size (of the area).

If the harvest is scattered over the whole ground, the horses sink into the plants until the plants are tramped down; for an hour or hour and a half are driven with long whips in order to keep them in constant motion, knocking the grain out of the plant heads. Then the horses are herded out while the plants are turned over and the horses again driven in, and so on. When it is observed that the grain is separated from the straw, the top layer is carefully removed and thrown away. The entire lot of the harvested plan



is thus turned over several times and the horses driven in and out until all the plants on the ground are pretty well shredded. By sifting the shreds, the clean grain is obtained. The poor animals, jumping around in the crowded enclosure get injured, pregnant mares often abort and sometimes die.

Under this method of thrashing, in order to finish 1,000 sheaves per day, it is necessary to use 100-200 horses and 20-25 Indians who take turns to drive the horses. The Indians hop around in the area with the horses and keep repeating in a plaintive refrain two words: Evva, camya; evva, camya!

The second method of thrashing is preferable to the first. The stacked up (around the pole) bread plants is gradually lowered to the ground by a man who is seated on the top of the stack; it is thus easier for the horses to thrash out the thinner layers. It is claimed that by this method 8-10 men and 150 horses can produce over 1,000 pud of ~~grain~~ wheat grain per day. (one pud, or 40 Russian pounds, equals to 36.11 British pounds). In this case, it is unnecessary to keep turning the plants over as in the former method, and thus it is not needed to have so many men.

Despite the inadequacy of thrashing grain with horses, the method deserves attention because of its speed, particularly for thrashing hard wheat grown in California.

The above described thrashing grounds are to be found only at missions and in well to do households handling large harvests. The poorer farmers have small thrashing grounds in which they work the grain using domesticated saddle horses

For thrashing (the farmers) always use droves of mares which are kept grazing separately and are practically never used for saddle; their <sup>entire</sup> use is restricted to thrashing.

Grain, thrashed by horses, contains many impurities, and many grains are damaged.

The volume of planting (bread plants) is generally insignificant. Each rancher plants mostly for his own consumption unless he has in mind a profitable sale.

It is also difficult to determine accurately the volume of harvest. No Californian will declare his true harvest: if he is selling bread (grain), he complains of poor harvest, and if he is not selling, then he exaggerates the harvest out of vanity. In spite of my earnest desire, I have been unable up to now to obtain any information regarding planting and harvesting of various grains in Upper California during the last recent years. Instead, I take the liberty to abstract from the "Travels of V.M. Golovnin" the information about the planting and harvesting in 1818 of various grains in Upper California\*

\*("Travels Around the World in the Naval Sloop 'Kamchatka' in 1817, 1818, and 1819 by Navy Captain Golovnin", part I; addenda p. XVIII, table B) It may be seen from this tabulation that wheat harvest is about 14½ fold; barley, 13½ fold; maize, 149 fold; beans, 21 fold; peas, 29 fold; oats, 29 fold.

The highest wheat harvest was 50 fold in Santa Cruz, and 49 fold in San Jose. The highest harvest of barley was 33 fold in Mission Purissima; maize 466 fold in Santa Cruz; peas 400 fold in Santa Cruz; beans 104 fold in San Antonio, 100 fold in Mission Santa Inez; oats 45 fold in Mission San Francisco.

Missions San Jose <sup>AND</sup> Santa Cruz even now are considered the most fertile. Such was the harvest twent two years ago when the Indians worked, so to speak, under the club forr the Missioners. Now, however, after the downfall of the Missions' power, each Californian owns the land assigned to him, and works it for himself; and therefore harvests should be more plentiful than before. (The Spanish Californians call themselves Rasones, or Hombre de rason i.e. reasonable men, while the wild Indians are called gentiles).

In fact, now one frequently hear of wheat harvest 60-100 fold, and maize

VOLUME OF PLANTING AND HARVEST IN 1878

IONS

	WHEAT		BARLEY		MAIZE		BEANS		SMALL BEANS		PEAS		OATS
	FANECA	℄	FANECA	℄	FANECA	℄	FANECA	℄	FANECA	℄	FANECA	℄	FANECA
Sown	250		134		6		7						
San Diego Harvest	2,800		1,800		600		68						
"	361		201		10		3	9	6				4
San Luis	1,500		2,000		800		60		30				12
"	150		3		12		4	3	3½		11		3
San Juan	2,296		16		1,663		55	1	5	3	3	4	10
"	280		4		26		5		2		2		
San Gabriel	110		40		6,500		310		1		2		2
"	200				3	6	3		1	6			
San Fernando	4,000				400		60		41				
"	200		90		8		5		6		1		
Buenaventura	3,800		230		1,200		50				30		
"	144		40		9		3		5		1		1
Santa Barbara	5,098		534		540		50		2		12		29
"	60		4		3		4				1		
Santa Inez	1,200		60		300		160				100		
"	130				2		4		9		1		2
San Luis	1,060				100		100		3		19		27
"	123		18		8		5		6		6		10
Marissima	2,500		600		1,000		120		4		500		540
"	95		18			9	1						
San Miguel	1,650		200		127		5						
"	181		6		1	4		9				6	
San Antonio	1,890		22		162		19				52		6
"	100		12		3		5		4			6	6
Atledad	100		290		400		24		6		36		110
"	61		61		2		7				8		10
San Carlos	642		900		8		70				120		238
"	60		1		2		2		2		9		4
San Juan Bautista	1,600		14		200		4		9		13		
"	14				1	6		6					
Santa Cruz	700				700		200						
"	205		12		5		3		4		2		3
Santa Clara	3,450		150		800		170		3		130		190
"	61		3		2		2				1		2
San Jose	3,000		107		170		78				16		76
"	210		180			6	3		6		3		9
San Francisco	2,800		1,500		20		24		6		100		400
Total sown	2,875		787		105	7	69	3	5	8	43	7	55
" harvest	42,089		10,533		15,690		1,627	1	104	9	1,133	4	1,640

Et note: Fanega, a Spanish measure of wheat equal to our 3 pud and 20 pounds. Fanega contains 12 celemines)

harvest of 100-500 fold. It is understood of course that such harvest happens in a good year and for good farmers. The usual wheat harvest can be safely estimated between 10 fold and 70 fold. The good farmers here are the old settlers Spaniards who immigrated from Europe and from Mexico. The latest generation pays little attention to agriculture.

[The primary cause of low harvests in Upper California is rot which annually damages wheat, and grass hoppers which devour from time to time wheat frijoles, and other grains still standing in the field. In July and August, Indians burning straw in the field occasionally set fire destroying not only the planted wheat but also all wild plants so that animals find no feed for themselves. Such accidental fires occur every year. It also happens that on rich soils wheat overgrows, ~~and~~ falls over and begins to rot; however, this occurs seldom because there is no rain during and after the ripening of the grain.

How many grains are planted to a given area of land? This question can not be answered satisfactorily by any local farmer. It should be noted that grains here are planted far apart from each other so that when the ground is covered with growing wheat, one can walk through the field without stepping on the plants. It may be estimated that one desiatina (2.7 acres) takes not more than 4-6 pud of seed wheat. Some farmers plant wheat by hand in furrows made by plow, and produce the best harvest. One is naturally curious to know by what system California farmers produce plentiful harvests. Should you ask a Californian about it, he will fail to understand the question: these fortunate people have not yet come to the proper time to discuss the systems of agriculture. May be their distant ~~descendants~~ descendants will be able to answer the posed question?

[In California the very same land is planted until the weeds take over, and still the harvest is always excellent. When the weeds become too strong, the land is used for grazing if another piece of land is available (for planting). If not, the weed infested field is used for crops requiring frequent plowing between the rows: maize, frijoles, peas, gorbanzo beans, etc. Weeds among these plants are destroyed: during the summer the soil is plowed several times and heaped up against the plants. This is somewhat like crop rotation.

It is said that in California the very same piece of land is planted several years in a row: not two or three years and then fallow, no, the same land is planted 5-10 years and longer, the very same wheat, and yet they always get excellent harvest unless something unusual happens harmful for vegetation. Furthermore, the field is never fertilized.

One would think that there was hardly enough time (between harvests) for humus\*to develop in the blacksoil to yield so many harvests.

\*( the author's note: the lectures of Prof. S.H.Pavlov, vol.II, pp.13 on)

But this can be easily explained: one should only recall that, at the local annual temperature, humus forms in the blacksoil without interruption through the year. Therefore, the local blacksoil serves as an inexhaustible store of food for plants. This is what happens in fact.

[The main sales of wheat from California up to the present went to our American colonies which bought annually 3-4 thousands fonegas of wheat; the remaining wheat the local farmers convert into flour and sell it to the American merchants who ship it to Lower California where the shortage of water heat, and frequent droughts are unfavorable for agriculture.]

[Mexico, having become independent, has permitted anybody and everybody to settle in California on granted land; it was required only to accept a subject of the Mexican Republic and to become a Catholic. The latter requirement, however, is now less important (receives less attention). This freedom of settlement attracted here many Americans, Irish, some Germans

and Frenchmen. Each settler is given some land, <sup>LEAGUES</sup> two leagues long and one league wide. (One league equals 1,986 3/4 Russian sajen. One sajen is seven feet.) He who has money can obtain more land. This land is called a rancho. Each rancho owner (ranchero) has the right to use the land for any profitable purpose: bread grains and other plants, fruit trees, various farm animals.

As the number of ranchos increased, it became possible to obtain bread otherwise than from the missionaries, <sup>which</sup> and led to declining prices on bread. It is unlikely that the volume of planting increased with the number of ranchos; on the contrary, the total volume must have declined. The missions which used to plant (to sow) 100-300 fanegas, now sow next to nothing because all Indians, who were proclaimed free men, left the missions and are now engaged in ~~maintaining themselves~~ horse thieving: they drive ~~many~~ droves of horses away from the "reasonable men" and plunder.

[The increasing number of ranchos destroyed only the monopoly of the missionaries, reviving trade in bread and bringing benefits to all inhabitants of the country. Formerly, when bread was sown and sold almost entirely by the missionaries alone, wheat sold for 3-4 Spanish piastres per fanega, later on for 2 piastres, and during the recent years, namely since 1838, the price constantly changed and finally stood at 1 1/2 piastres per fanega.]

At this price, many ranchos, especially those better off, refused to sow bread for sale. To be sure, 1 1/2 piastres per fanega of wheat, i.e. 2 roubles per pud, is a pretty high price, judging by plentiful harvests, but the handling of bread, that is reaping and thrashing, costs very much because of the shortage of men. Indians can be induced voluntarily to work for high pay, one piastre per day (5 roubles), and despite all that, the Indian will run away on account of the least displeasure or urging.

It happens often that the owner, having lost hope to find workers for harvest, would take off whatever bread he needs for himself and leave the rest in the field. Often the ranchero would offer you a field full of excellent wheat to harvest if you would give one half to him.

[Orchard keeping in California is used on a small scale. Small orchards of fruit-bearing trees and vineyards are found only in the missions. When the orchards were owned by the missionaries, they were kept in good order; but now, under administrators (managers), everything is gone wild and, in places, destroyed. When private persons have orchards and vineyards, they are so insignificant as to deserve no attention.]

The fruits which grow to considerable size are: apples, pears, peaches, apricotes, quince, plums, etc. In general, fruits are coarse. Blue grapes are cultivated and yield good harvest and good taste. Vine slips (clippings) are stuck into the ground, and some of them bear fruit in 3-4 years. Local grapes make good wine, but in small quantities and does not keep well.

Wild grapes are found in large volume along the banks of rivers and streams; they (vines) climb up the trees to considerable height.

In this year, 1841, the local produce prices were, as follows:

	Plaster	Reals
1 fanega of wheat	1	4
1 " barley		
1 " frijoles	2	4
1 " maize	2	
1 " peas	2	
1 " gorbanza	2	4
1 aroba* wheat flour (28 Russian pounds)	1 $\frac{1}{2}$ -2	4
1 " butter (from cow milk)	12	4
1 " dried meat	-	4-6
1 " lard, pork	1	4
1 " monteka (beef suet)	2	
1 " soap, California - made	112-114	
1 " onions	2	
1 " apples	2	
1 steer, large (12-20 pud)		
1 hide, cattle, raw	2	
1 " " , tanned	6, 8	
1 " , roebuck, raw	1	
1 " , goat, raw		4
1 horse, common	8-10	
1 " " , hire per day	1	
1 hog, large	6- 8	
1 hen		4
1 ram	2	
12 eggs		2
1 gallon Calif. grape wine	3	

Prices on local products change very seldom because of (little change in) quality and variety, as well as demand. If one should buy the above mentioned things through barter, then the prices are considerably cheaper, especially if bought on the ranches.

[Because of population scarcity, there are up to now no ranches inland. Fear of Indian attacks forces the Californians to settle close to each other. In 1839, the first attempt was made to establish settlement on the Sacramento river which falls into San Francisco Bay. Sutter, a Swiss retired captain of the French service, together with several hired Hawaiians and Americans, settled on the above named river, the location being known as New Helvetia. It seems that the settlement has been established according to the wishes of Hudson (Bay) Company of which active exploring parties constantly move around in all directions to the south of the Columbia River, and now (they) have frequent contacts with Sutter.

[It is regrettable that this blessed country, California, raising happy-go-lucky people, is so sparsely populated. Lack of authority existing here under the guise of republic, and unreasonably high prices on all goods, due to high tariffs, frightens any prudent man away from deciding to settle here. Yet in spite of everything, many poor Irish, English, and Americans have found their fortune in California, and many, many more unfortunates will will find their happiness here also.

Member of the Society, E. Chernykh

1841, 12 January  
 Rancho Chernykh  
 Russian American Company  
 in Upper California

1837	AVERAGE TEMPERATURE			RAINY DAYS	CLOUDY	FOG	PARTLY CLOUDY	FAIR	THUNDER	HAIL	
	7 A.M.	2 P.M.	6 P.M.								
January	6.3	9.4	7.3	10	12	4	5	1	-	-	
February	6.2	10.0	6.5	4	4	8	12	1	1	1	
March	7.9	12.1	8.5	6	3	10	12	-	-	-	
April	8.7	13.0	9.3	4	3	10	13	-	-	-	
May	11.7	15.0	11.1	3	8	7	13	-	-	-	
June	12.7	14.2	10.8	1	5	4	20	-	-	-	
July	13.3	15.1	11.7	0	6	5	20	-	-	-	
August	13.1	15.9	11.6	0	4	2	25	-	-	-	
September	10.5	13.5	10.1	2	8	3	17	1	-	-	
October	8.8	11.5	8.8	4	3	4	20	-	-	-	
November	5.3	9.4	6.2	4	3	10	13	-	-	-	
December	6.2	9.4	7.1	18	5	5	3	1	-	-	
9.2 12.3 8.8				56	64	72	173	4	1	-	-
Annual temperature 10.2											

TEMPERATURE IN  
REAUMUR DEGREES

1838	AVERAGE TEMPERATURE			RAINY DAYS	CLOUDY	FOG	PARTLY CLOUDY	FAIR	THUNDER	HAIL	
	7 A.M.	2 P.M.	6 P.M.								
January	4.64	9.70	5.51	4	3	3	21	1	1	1	
February	5.64	9.34	7.14	6	2	11	9	-	-	-	
March	6.09	10.67	6.83	7	7	3	14	-	-	-	
April	7.60	11.13	7.46	9	4	5	12	1	1	1	
May	7.93	12.58	7.96	2	12	4	13	-	-	-	
June	8.96	13.96	9.10	1	11	5	13	-	1	1	
July	9.22	13.51	9.51	0	15	7	9	-	-	-	
August	8.77	13.87	9.87	0	11	2	18	-	-	-	
September	8.90	13.43	9.66	1	14	5	10	1	-	-	
October	8.16	13.74	8.90	1	5	3	22	-	-	-	
November	8.03	11.73	8.53	6	2	10	12	-	-	-	
December	5.67	9.87	6.38	12	5	7	7	-	-	-	
7.46 11.81 8.07				49	91	65	160	3	3	3	3
Annual temperature 9.11											

1839	AVERAGE TEMPERATURE			RAINY DAYS	CLOUDY	FOG	PARTLY CLOUDY	FAIR	THUNDER	HAIL	
	7 A.M.	2 P.M.	6 P.M.								
January	6.09	10.80	7.29	0	7	11	13	-	-	-	
February	7.21	11.57	8.17	2	3	9	4	-	-	-	
March	7.22	11.00	8.00	8	7	10	6	1	-	-	
April	7.00	10.90	7.93	10	6	8	6	-	1	-	
May	9.22	12.09	9.58	2	8	12	9	-	-	-	
June	10.43	13.76	10.58	0	8	13	9	-	-	-	
July	10.25	13.35	10.38	0	14	11	6	-	-	-	
August	11.03	14.38	11.12	0	3	21	7	1	-	-	
Sept.	8.50	12.93	8.76	1	5	21	3	-	-	-	
Oct.	7.45	11.83	8.29	6	2	17	6	-	-	-	
November	6.10	10.66	6.86	1	2	21	6	-	-	-	
December	7.12	10.38	7.80	13	8	10	0	1	-	-	
8.13 11.97 8.73				43	73	164	85	3	1	1	1
Annual temperature 9.61											

1840	AVERAGE TEMPERATURE			RAINY DAYS	CLOUDY	FOG	PARTLY CLOUDY	FAIR	THUNDER	HAIL	
	7 A.M.	2 P.M.	6 P.M.								
January	4.16	9.12	4.58	11	1	16	3	1	-	-	
February	3.03	9.41	4.56	8	4	16	1	1	2	2	
March	4.38	8.90	6.09	7	4	17	3	-	1	1	
April	6.36	10.93	6.86	2	2	10	16	-	1	1	
May	9.77	14.22	10.29	1	1	17	12	-	-	-	
June	10.53	14.20	10.16	0	6	19	5	-	-	-	
July	10.93	14.90	10.54	0	13	8	10	-	-	-	
August	10.32	13.35	10.22	0	12	13	6	-	-	-	
Sept.	10.10	14.06	10.46	0	4	19	7	-	-	-	
Oct.	8.93	12.51	9.09	1	4	19	7	-	-	-	
Nov.	9.86	12.60	9.56	8	1	16	5	-	-	-	
December	6.83	10.42	7.51	2	4	17	8	-	-	-	
7.93 12.05 8.32				40	56	187	83	2	4	4	4
Annual temperature 9.43											