



# SAN JOAQUIN HISTORIAN

PUBLISHED QUARTERLY BY THE SAN JOAQUIN COUNTY HISTORICAL SOCIETY

Volume IV, New Series

Winter 1990

Number 4

## Water in San Joaquin County Part I

### A Historical Perspective

by Warren D. Noteware

Everything that lives requires water to survive. That's why all the early civilizations developed around rivers, lakes, and streams, and that's why almost of the cities in the world are located close to abundant fresh water. An exception to this is the urban development in Southern California, where there is not a single stream south of the Tehachapi Mountains that flows year-round, and wells pumping from their groundwater are inadequate for such a large population. The people who live in Los Angeles, Orange County, San Diego, and San Francisco are now almost totally dependent on water brought in from hundreds of miles away, and the creation of the great cities of Southern California and the Bay Area has been possible only because we have developed the capability of transporting water over long distances efficiently and economically.

The third dry year in succession has made those of us who live in California keenly aware of the value of water. We're reminded on a daily basis how

dependent we are on this precious resource. The only thing that emphasizes our close relationship with water even more than a drought is a flood — and San Joaquin County has had its share of floods also. If you lived here in December 1955 and April 1958, you remember the most damaging floods our county has experienced, although according to the Sacramento District Corps of Engineers the legendary floods of 1861-1862 are judged to have been the largest in peak flow.

Our area is blessed with so many waterways that no place in this county is very far from water. Our rivers, sloughs, creeks, and canals are shown in Figure 1. To test your knowledge of local geography, see how many you can identify without referring to the key.

### Prehistoric Conditions

Thanks to the work of our beloved Medora Johnson, who was instrumental in founding the San Joaquin County Historical Museum and who was a recognized authority on Indian history,

we have a good understanding of what life was like here in prehistoric times.

The earliest inhabitants of this area are known to have been here 4,000 years ago — and some archaeologists have found remains indicating they could have come as early as 10,000 years ago. There were two distinct groups: The Plains Miwuks from the Calaveras River north, and the Yokuts from the Calaveras River south. Although their language and many of their customs were very different from each other, their lifestyles were quite similar. The lives of both were closely related to the surface water of the area. There were Indian villages and camps situated on high ground near streams and rivers, with trails between the villages and to the ocean and to the mountains. Some anthropologists have estimated that for a time this area of California was perhaps the most densely populated region in North America. Through strict birth control measures, Indians controlled their populations so that there would always be enough natural resources and food to sustain them without endangering future generations. Here in this area, where food and water were plentiful and the climate was favorable, the early indigenous people made the most of their habitat and were able to maintain a population several times California's average.

The lowland of the San Joaquin Delta was subject to tidal and seasonal inundation and supported a luxuriant swamp vegetation of coarse grasses and tules. The Indians ate the tender shoots of the tules, and in addition used them for rafts, huts, mats, and garments. There were wild grapevines, abundant fish (which the Indians were able to spear), migratory ducks and geese (which they usually caught with nets), and many aquatic plants.

In the Eastern part of the county, there was an abundance of material for food, clothing, and shelter. The dense oak forests provided acorns, and along the streams were many different kinds of seeds, berries, and bulbs. And thanks to the rivers and streams, meat was also plentiful. There were thousands of tule

elk, antelope, deer, bears, and many small animals such as beavers, otters, raccoons, minks, badgers, squirrels, and rabbits. And to round out their diet, the Indians could get additional protein from food sources we have never learned to appreciate: snakes, lizards, grasshoppers, crickets, and worms. They used native herbs for medicine, and collected many different plants along the waterways for ceremonial events. These people utilized everything they could and wasted nothing. They were California's first environmentalists.

### **Pioneer Days**

If they came in the spring, the first white settlers to arrive in this area thought they had found San Francisco Bay because almost the entire area west of Stockton was under water, due to heavy runoff from the Sierra snowpack. Yet there were years when there was very little snowfall and most of the rivers were virtually dry by late summer.

Most of the time there was enough water in the San Joaquin River, so boats could come from San Francisco at least as far as Stockton. Our county's other

© 1990

San Joaquin County  
Historical Society, Inc.  
P.O. Box 21, Lodi, California 95241

Robert W. Clottu, Editor

The San Joaquin County Historical Society, a non-profit corporation, meets the fourth Monday monthly except July, August and December. Membership includes subscriptions to *The San Joaquin Historian* and the newsletter, *News and Notes*. Non-members may purchase individual copies from the Society. The Society directs the operation of the San Joaquin County Historical Museum.

San Joaquin County  
Historical Museum  
Michael W. Bennett, Director

Micke Grove Park  
11793 N. Micke Grove Road, Lodi  
P.O. Box 21, Lodi, California 95241  
Phone (209) 368-9154 or 463-4119

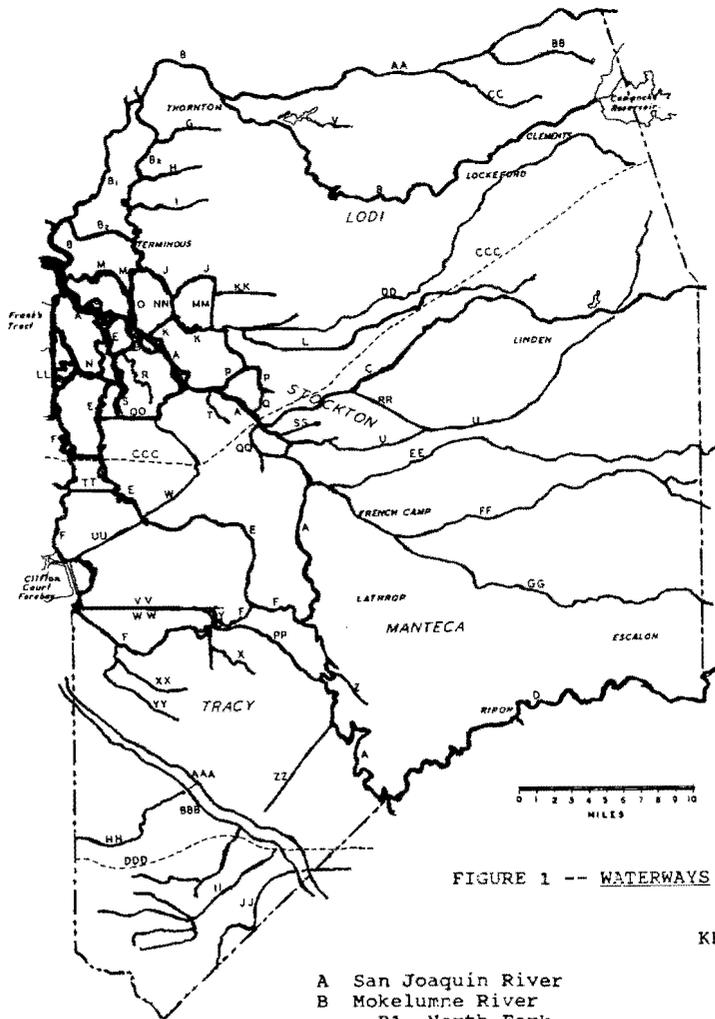


FIGURE 1 -- WATERWAYS IN SAN JOAQUIN COUNTY

KEY

- |    |                          |     |                          |
|----|--------------------------|-----|--------------------------|
| A  | San Joaquin River        | AA  | Dry Creek                |
| B  | Mokelumne River          | BB  | Goose Creek              |
| B1 | North Fork               | CC  | Coyote Creek             |
| B2 | South Fork               | DD  | Bear Creek               |
| C  | Calaveras River          | EE  | Duck Creek               |
| D  | Stanislaus River         | FF  | Littlejohns Creek        |
| E  | Middle River             | GG  | Lone Tree Creek          |
| F  | Old River                | HH  | Corral Hollow Creek      |
| G  | Beaver Slough            | II  | Lone Tree Creek          |
| H  | Hog Slough               | JJ  | Hospital Creek           |
| I  | Sycamore Slough          | KK  | Telephone Cut            |
| J  | White Slough             | LL  | Holland Cut              |
| K  | Disappointment Slough    | MM  | Bishop Cut               |
| L  | Mosher Slough            | NN  | Honker Cut               |
| M  | Potato Slough            | OO  | Empire Cut               |
| N  | Connection Slough        | PP  | Paradise Cut             |
| O  | Little Connection Slough | QQ  | Burns Cutoff             |
| P  | Fourteen Mile Slough     | RR  | Diverting Canal          |
| Q  | Ten Mile Slough          | SS  | Smith's Canal            |
| R  | Whiskey Slough           | TT  | Woodward Canal           |
| S  | Latham Slough            | UU  | Victoria Canal           |
| T  | Black Slough             | VV  | Grant Line Canal         |
| U  | Mormon Slough            | WW  | Fabian & Bell Canal      |
| V  | Jahant Slough            | XX  | Lower Main Canal         |
| W  | Trapper Slough           | YY  | Upper Main Canal         |
| X  | Tom Paine Slough         | ZZ  | Banta-Carbona Lift Canal |
| Y  | Salmon Slough            | AAA | Delta-Mendota Canal      |
| Z  | Walthall Slough          | BBB | California Aqueduct      |
|    |                          | CCC | Mokelumne Aqueduct       |
|    |                          | DDD | Hetch Hetchy Aqueduct    |

major rivers: the Calaveras, the Mokelumne, and the Stanislaus, were more fickle because of less dependable flows due to smaller tributary areas, but were still important transportation arteries. These waterways made Stockton a key destination for those who were traveling to and from the Mother Lode. Rod Homer likes to point out in his Heritage Tours that the main roads leading into Stockton aim directly at the port, indicating that the Port of Stockton was the focal point for travelers heading in almost any direction.

So from the earliest days water has been the lifeblood of the communities of this region — for sustaining life, for transporting people and produce, for promoting industries such as boat building, and for developing some of the world's most productive farmland. Our proximity to water influenced even the early architecture of the area; in Stockton's older homes you can see many steps leading to the main floor level which is well above the street, so when floods came the main part of the house would remain high and dry. Residents could come and go by boat until the flood waters receded.

During the time that the Spanish Flag and the Mexican Flag flew over California, prior to statehood in 1848, there was not much attempt to modify the natural environment of this area. It was a haven for trappers because of the abundance of beavers, otters, and mink. Even then Stockton was "Someplace Special" thanks to the value of the wild animals that were here.

It wasn't long after the Gold Rush of 1849 that the expanding population made some very significant changes. One of the first modifications made to the water courses in the Mother Lode came with the advent of hydraulic mining — blasting the ore-bearing streambeds with high pressure nozzles to separate the gold from the soil and gravel. The rivers of San Joaquin County suffered enormous damage from the vast amounts of debris that were swept down from hydraulic mining upstream, and thus began the first controversy

over water quality for downstream users. Even after an 1884 federal injunction stopped these operations, silt continued to alter the navigable channels and hinder shipping activity.

The miners, the trappers, and the early settlers obviously had little concern for their natural environment. Too bad they didn't learn more about ecology from the Indians!

### **The Delta**

A delta is formed when two rivers flow together in a flat, level terrain. The delta of California's great Central Valley at the confluence of the Sacramento River and the San Joaquin River includes portions of Sacramento, San Joaquin, Contra Costa, Solano and Yolo Counties. The northern portion is generally referred to as the Sacramento Delta, and the southern portion is referred to as the San Joaquin Delta. In this article, some reference will be made to the San Joaquin Delta, and sometimes, when the Sacramento County portion is included, it is referred to simply as "the Delta".

The earliest concern in the Delta was how to contain the water in the many rivers and sloughs and drain it out of the fertile land in between them. For countless centuries this area had been a tule bog, and season after season the tule roots had grown and decayed, building up deeper and deeper layers of peat soil. This rich organic soil had a fibrous texture and was light, easy to work, and very productive. No place in the Delta is very far from water, so although crops such as corn which required summer rainfall had not been grown by the Indians, irrigation made possible bountiful stands of corn and a wide variety of other crops.

Many Chinese laborers came to California during the 1860s and 1870s, primarily to work in the mines and on the railroads. These Chinese coolies gradually became available for other activities, and hundreds of them were put to work throughout the Delta, building up levees by hand, using only shovels and wheelbarrows. But the narrow, frail berms (known as "shoestring levees") built this way were no match for the

heavy winter and spring runoffs from the Sierras. Year after year the farms flooded, and time after time they were pumped out and the levees were rebuilt by the coolies and the farmers. Eventually the levees were broadened and heightened with the use of four-horse teams and Fresno scrapers. There is a Fresno on display at the San Joaquin County Museum, so you can visualize how much work it was to move the thousands of cubic yards it took to reinforce the levees. In spite of all this effort, the rivers would still break through. Peat has no structural value and is not a good material for levees. Sometimes an extremely high tide caused the water to overtop a levee, and as soon as this happened the levee disintegrated. Occasionally a ground squirrel or muskrat or beaver would dig into the soft peat and start a flood, but the early Delta landowners were a persistent lot, and if a flood wiped out a year's efforts, they could always look forward to next year. In fact, farmers often found that floods were beneficial to leach out accumulated salts and were nurturing to the soil by introducing fresh nutrients, so the better crops produced in a year following a flood could partially offset the damage done.

In 1861 the California legislature authorized the Reclamation District Act, allowing landowners to form Reclamation Districts and assess themselves to provide funds for improving and maintaining their levees and for sustaining the constant drainage that is necessary.

Following the completion of the Panama Canal, shortly before World War I, help arrived in the form of the huge floating dredges which had been used in the construction of the canal. They made use of clamshells like the one on display at the San Joaquin County Museum. Now it was possible for the Reclamation Districts to build up their levees using silt from the riverbeds that had washed down from the mountains. Unlike peat, the silt could be firmly compacted and would sustain roads on top of the levees.

Although the threat of flooding has

been greatly reduced by the multi-purpose dams that have been constructed and by massive levee projects which continue to the present time, flooding is always a concern to those who live in the Delta area. Of course, most floods occur during the winters of the wettest years, but they can happen any time. For example, the great flood of 1971 which inundated Brannan and Andrus Islands and the town of Isleton (in Sacramento County) occurred on June 21. Ironically, this flood was caused by a bulldozer working to reinforce the Mokelumne River levee in preparation for the following winter.

Consolidation of the peat soil and wind erosion have caused the interior of many of the Delta islands to drop significantly, and constant monitoring of the surface elevations proves that much of the land which used to be only three to five feet below sea level is now fifteen to twenty feet lower, and it is continuing to subside at a fairly rapid rate. As the land gets lower, the levees must restrain a greater head of water against them, and as the rivers and sloughs are dredged deeper to obtain material to build up the levees, the levees become taller with less support at their bases on the water side. Many of them are still built upon a peat foundation which could be expected to fail in the event of a major earthquake.

So the future of the Delta will involve an ongoing struggle to maintain its viability. The value of the land for agriculture can become less than the cost of maintaining the levees, and as future floods occur more and more islands will probably become inland lakes like Frank's Tract in Contra Costa County. However, the value of many islands in the San Joaquin Delta includes much more than the worth of the farmland — such things as highways, communities, boat harbors, resorts, and natural gas. In addition, sixty percent of the water that is transported in the state passes through the channels of the Delta, so the federal and state governments have a great deal at stake, and have historically contributed to maintenance of the levees. Their con-

tinued support will be essential in the future.

### The California Perspective

We can't consider the importance of water to San Joaquin County without an understanding of the entire California water picture and how our area fits into it.

California is a unique state. Within its confines almost every imaginable geographic and climatic zone exists. Our state has vast mountain ranges, sprawling deserts, miles of coastline, and major urban centers.

Time Magazine once noted, "California has everything — usually in the wrong place." This is certainly true where water is concerned, inasmuch as seventy-five percent of California's water originates north of us, and seventy-five percent of the water users live south of us. Almost all of our rain and snow falls in the winter and spring, while peak demand is in the hot summer months. To correct the problem of distribution, major water sources and transportation facilities have been built

in California, and San Joaquin County is at the heart of two major projects, the State Water project (SWP) and the federal Central Valley Project (CVP). The SWP and the CVP transfer fresh water supplies from northern sources through the Sacramento and the San Joaquin Deltas, to southern and coastal locales. As was previously noted, about sixty percent of all diversions stem from this area.

Figures 2, 3, and 4 show some important numbers. (In discussing rainfall, water use, etc., engineers use the measure of acre-feet. An acre-foot is the amount of water it takes to cover an acre one foot deep, about 326,000 gallons. This is approximately the amount of water a typical family uses every year. Water used for irrigated agriculture varies from less than two acre-feet per acre per year to over five acre-feet per acre per year, depending on crops grown, irrigation method, climate, soil type, leaching of salts, and other factors.)

Dr. B.J. Miller, a consulting engineer and prominent water authority in

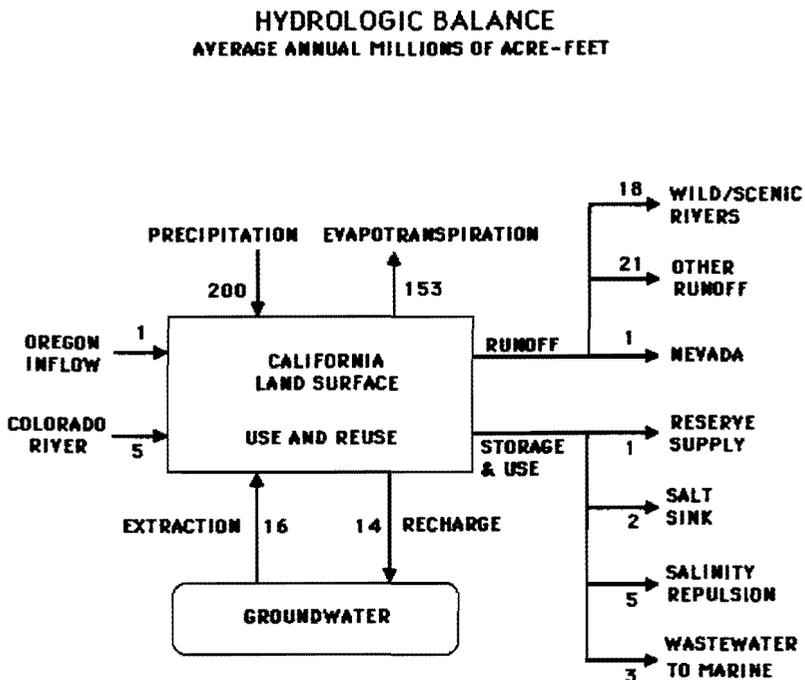


Figure 2 - California's Hydrologic Balance  
Courtesy B.J. Miller

**IMPORTANT NUMBERS  
1985**

<b>TOTAL GROSS USE</b>	<b>40 MAF/YR</b>
<b>REUSE (MOSTLY UNINTENTIONAL)</b>	<b>6 MAF/YR</b>
<b>NET USE</b>	<b>34 MAF/YR</b>
<b>AGRICULTURAL USE</b>	<b>80%</b>
<b>URBAN USE</b>	<b>16%</b>
<b>IRRIGATED ACRES</b>	<b>9 MILLION</b>
<b>RESERVOIR CAPACITY</b>	<b>43 MAF</b>
<b>GROUNDWATER USE</b>	<b>16 MAF/YR</b>
<b>GROUNDWATER OVERDRAFT</b>	<b>2 MAF/YR</b>

*Figure 3 - Water Use in California  
Courtesy B.J. Miller, 1990*

Berkeley, California, who teaches a popular course in Water Management at the University Extension, has compiled the data shown in Figures 1 and 2. In an average year, around 200 million acre-feet (maf) of rain and snow falls in this state. However, bear in mind that a **typical** year is rarely an **average** year. In fact, the average annual variation from the average rainfall is 35 percent. This means that in Stockton, for instance, where the average rainfall is 13.5 inches per year it is more likely to be 9 inches or 18 inches than 13.5. Back to statewide numbers: to the 200 maf on the "supply side" of what is known as the Hydrologic Balance, add one maf from Oregon inflow, five maf from the Colorado River, and 16 maf pumped from our groundwater aquifers, which are water-bearing strata existing under about forty percent of the state. These aquifers have generally been valuable sources of excellent water.

On the "demand" side of the Hydrologic Balance, again using an average year, 153 maf are returned to the atmosphere through evaporation and evapotranspiration, which is the way growing plants give off moisture into the air. Another 14 maf returns to the soil, recharging the aquifers and helping to make up for the 16 maf that we pump out. The remainder is mostly runoff that goes out to the Pacific Ocean through the Delta and through other rivers, such as the Trinity River and the Eel River along California's

North Coast. This runoff, which averages about 40 maf, varies greatly because of fluctuations in seasonal rainfall and the snowpack in the Sierra Nevada Mountains. In 1977 the total runoff was 15 maf, of which 2.5 went through the Delta; in 1983 it was 135 maf, with 65 passing through the Delta.

The average "developed" supply of water in California, water that is available for agricultural and urban uses, is about 40 maf per year, of which 80 percent is used on California's nine million irrigated acres. Sixteen percent is used for domestic purposes. A reservoir capacity of some 43 million acre feet has been created behind numerous dams throughout the state.

These numbers are important for an understanding of the problems associated with providing water for all the competing needs of the nearly 30 million people in California. It's obvious that if some years the outflow of the Delta can be 25 times as much as other years (varying between 2.5 and 65 million acre feet), very judicious management of this precious resource is an urgent priority.

**Water Development**

The development of California's water distribution system is a story of vision, persistence, technical expertise — and controversy! After studying reports prepared by the State Department of Water Resources, one realizes that to have made that 40 million acre-

feet available to the many competing factors in the short time that California has been a state represents an achievement that has not been equalled in any other time or place, and most of it has occurred within the lifetime of many of us.

A comprehensive State Water Plan was completed in 1930, which called for major transfers of Northern California water to central and southern parts of the state. In 1940 the Contra Costa Canal, the first of the federal Central Valley Projects, was completed, and the use of Delta channels to convey water for export began.

Shasta Dam and Reservoir, the key feature of the CVP, was completed in 1944, providing water during naturally low periods. If it were not for this project and others like it, the current drought would have far more serious consequences, and the overdraft of our groundwater would have been much greater.

In 1951 the State Water Project was

authorized by the California legislature. That same year diversions from the Delta began for the CVP's Delta-Mendota Canal.

The State Department of Water Resources initiated the Interagency Delta Committee in 1961, consisting of the Department of Water Resources, the U.S. Bureau of Reclamation, and the Army Corps of Engineers to find solutions to the problems of the Delta. In 1965 the Committee issued a comprehensive report containing a variety of proposals designed to offset adverse effects of increasing diversions of water from the Delta. The proposal included a plan for a Peripheral Canal.

The proposed Peripheral Canal has had a contentious history. After it was first proposed, an agreement was reached between the Department of Water Resources and the Department of Transportation to provide borrow for Interstate 5 from the canal's alignment. That is the reason for those long, deep ravines adjacent to the highway as it

## URBAN USE

### Components

#### Industrial

#### Public agencies and institutions

#### Residential (about 2/3 of urban use, or 10% of total use)

Cooking	2%
Faucets	3%
Dishwashing	3%
Laundry	8%
Bath/shower	16%
Toilet	22%
Exterior	46%

Adapted from DWR Bulletin 198-84, 1984

Figure 4 - Urban Water Use  
Courtesy B.J. Miller

passes through Sacramento and San Joaquin counties. In 1973 the Department of Fish and Game submitted a 10-year study which concluded a Peripheral Canal was the most desirable plan for the area's fish and wildlife. In 1980 Senate Bill 200 was passed by the Legislature and signed by Governor Brown, authorizing construction of the canal, but that same year the anti-canal group submitted 850,000 signatures for a referendum. An election was set for June, 1982, and voters defeated Proposition 9, the Peripheral Canal package, by a 3-2 margin. Northern Californians voted 9-1 against SB 200 and Southern Californians voted 3-2 for the bill. More than six million dollars were spent by supporters and opponents during the campaign.

During the period of controversy concerning the Peripheral Canal, other projects were moving ahead. Construction of the Clifton Court Forebay northwest of Tracy was begun in 1967, and that same year initial diversions began into the California Aqueduct of the State Water Project.

The State Water Resources Control Board, which is the state agency charged with administering water rights and establishing water quality standards, adopted its first Delta Water Rights decision in 1971, setting water quality standards that must be met by both the CVP and the SWP. In 1978 these standards were revised and strengthened in the Board's "Decision 1485" which was a landmark decision affecting not only the Delta, but all the water users who depend on diversions through the Delta.

Many of the problems caused by water transfer in the Sacramento-San Joaquin Delta remain unsolved. Alternatives to the Peripheral Canal have been studied since its defeat. Attention has been focused on a through-Delta facility utilizing natural Delta channels and reconstructed levees.

Meantime, studies continue but nothing of significance is being done on a statewide basis. Every proposal to help some area of California would have a negative effect on some other area or

some segment of the population. There is very little agreement on anything, except that **something** must be done to solve the problems of groundwater overdraft, declining fishery, poor water quality in many of our major rivers, and maintaining adequate supplies to sustain urban growth without sacrificing our state's vast agricultural production. Finding solutions to these problems is further complicated by the growing environmental ethic and the lack of funds available for new massive construction projects.

This article has presented an overview of San Joaquin County's growth as it relates to water, from the time of the Indians until the present. In the next "San Joaquin Historian" we'll discuss current issues in greater detail as we look at our county's water concerns from a more contemporary perspective.

---

### **Warren D. Noteware**

*was born in Stockton and has lived in that city throughout his entire life. He graduated from Stanford with a Bachelor of Science degree in Civil Engineering and served in the U.S. Navy during WW II. Mr. Noteware farmed 1500 acres on Brannon Island from 1956 to 1970 and operated an Engineering Business between 1970 and 1982.*



*Gov. Jerry Brown appointed Mr. Noteware to the California Water Resources Board in 1982 and Gov. Deukmejian appointed him to the California Energy Commission in 1985.*

---

# The Successful Housekeeper

**The Successful [sic] Housekeeper** is the name of a 608-page leatherbound book given to Mrs. Joyce Anderson of Stockton by Helen Bush DeLotty. The book was originally the property of Helen's paternal grandmother who brought it to California in a wagon train during the 1840s. The author is unknown.

## Here is a Sampling of the Recipes

### Breaded Eggs

Boil hard and cut in round, thick slices; pepper and salt and dip each in beaten raw egg, then in fine bread crumbs or powdered cracker crumbs and fry in butter, hissing hot. Drain off every drop of grease and serve hot.

### To Keep Tomatoes Whole

Fill a large stone jar with ripe tomatoes, then add a few whole cloves and a little sugar; cover them well with one-half cold vinegar and half water; place a piece of flannel over the jar well down in the vinegar, then tie down with paper. In this way tomatoes can be kept a year. Should mildew collect on the flannel it will not hurt them in the least.

### Hen's Nest

Make blanc mange, pour into egg shells and set to cool; when cold, break the egg shells, place in glass dish, cut strips of lemon peel and let boil in syrup of sugar and water till tender, and sprinkle on the egg shapes, and make a custard and pour over the nest.

### Dandelions

Cut off the leaves, pick over carefully, wash thoroughly, put into boiling water and boil till tender. When done drain in a colander, season with butter, salt and pepper; or they may be boiled with salt pork or corned beef, omitting the butter. They are good from early spring until they blossom.

### Honey Comb Pudding

Three cups flour, one cup beef suet, one cup milk, one cup molasses, one cup raisens, currants or whortleberries in season, one teaspoonful soda, a little

salt. Boil or steam three hours - sauce.

### To Pot Butter For Winter Use

Mix a Large spoonful of salt, a table-spoonful of powdered white sugar and one of saltpetre. Work this quantity into six pounds of fresh made butter; put the butter into a stone pot, that is thoroughly cleansed. When you have finished putting down your butter, cover it with a layer of salt, and let it remain covered until cold weather.

### Lime Water

One of the most useful agents of household economy, if rightly understood, is lime water. Its mode of preparation is as follows: Put a stone of fresh, unslaked lime about the size of a half-peck measure into a large stone jar or unpainted pail, and pour over it slowly and carefully (so as not to slacken too rapidly), a teakettle full (four gallons) of hot water, and stir thoroughly; let it settle, and then stir again two or three times in twenty four hours. The bottle carefully, all that can be poured off in a clear and limpid state.

USES - it is often sold by druggists as a remedy for children's summer complaints, a teaspoonful being a dose in a cup of milk, and when diarrhoea is caused by acidity of the stomach, it is an excellent remedy, and when put into milk gives no unpleasant taste, but rather improves the flavor.

When put into milk that might curdle when heated, it will prevent its so doing, and can then be used for puddings and pies. A little stirred into cream or milk after a hot day or night will prevent its turning when used for tea or coffee.

It is unequalled in cleansing bottles or small milk vessels, or babies' nursing bottles, as it sweetens and purifies without leaving an unpleasant odor or flavor.

A cupful, or even more, mixed in the sponge of bread or cakes made overnight will prevent it from souring.

## **Chronological Index for Volume IV - San Joaquin Historian**

(The index for each volume year is presented each December.)

### **Volume IV New Series Spring 1990 Number 1**

Serving Agriculture from the Air; The Story of Precissi Flying Service as told by John Precissi

Gaspare Indelicato said, "Let's Make Wine"

Delicato Vineyards from the beginning.

Lee Miller, Almond Huller

by Evelyn Prouty.

### **Volume IV New Series Summer 1990 Number 2**

A Brief Review of Medicine in Lodi for the past 80 Years

by Clarence M. Leary, M.D.

Aspects of the Geological History of San Joaquin County

by Norma Lillis.

### **Volume IV New Series Fall 1990 Number 3**

San Joaquin General Hospital, a Historical Review

by Dr. Erwin H. Roeser.

140 Years of Locke Ranch Farming

by R.W. Clottu.

Captain Charles M. Weber's Cabin

Researched and written by Olive Davis.

The Succesful Housekeeper [sic] - Preface of a leather bound book brought to California during the 1840s.

### **Volume IV New Series Winter 1990 Number 4**

Water in San Joaquin County Part I

A Historical Perspective

by Warren D. Noteware.

The Succesful Housekeeper [sic]

Receipe Samples

Chronological Index for Volume IV - San Joaquin Historian.

*Funding for the printing of this quarterly issue was provided by....*



### **Editorial Comment**

We welcome Julia Gillespie as Associate Editor of **The Historian**. Julie has a rich background in History and English and brings new energy for our publication. We are looking forward to seeing these benefits in the next issue. Thanks, Julie, for volunteering your time and talents.

**San Joaquin County  
Historical Society**  
P.O. Box 21  
Lodi, CA 95241

Non-Profit  
Organization  
POSTAGE  
PAID  
Permit No. 48  
Lodi, CA 95241