

rectly south, emptying into Suisun Bay, thence through the bays of San Pablo, San Francisco and the Golden Gate to the ocean. The total length is four hundred and sixty-five miles, and is navigable for three hundred and ten miles—to Red Bluff—at all seasons of the year. The tide rises in it to Sacramento City, seventy miles above its mouth, and to that point it is navigable for vessels drawing seven feet of water. The towns of Rio Vista, Sacramento, Knights Landing, Colusa, Princeton, Tohama and Red Bluff are on its banks.

The San Joaquin is a sister river, rising in the southern portion of the Sierra, and flowing north, drains the southern half of the great valley of California, joins the Sacramento at the point where both enter the bay. The total length is two hundred and seventy-five miles, and in time of high water, is navigable for one hundred and fifty miles from its mouth. Vessels drawing five feet of water ascends it to Stockton, a distance of one hundred and twenty-five miles, by water, from San Francisco. The water of these rivers was once clear and sparkling, but the washings of the gold placers have discolored it and filled the beds with gravel and sediment from the mines.

Pitt River is the principal tributary of the upper Sacramento, being larger than the stream bearing the name. One of its branches, Fall River, rises in Mount Shasta and flows eastward; other branches have their sources in the great northern plateau of the Sierra, and after a course of near two hundred miles, join the Sacramento near the town of Shasta. This stream courses through several important mountain valleys and a region of superb forests. These resources are receiving increased attention since the subjugation of hostile Indians who disputed their development, and this long neglected section is advancing in importance.

McCloud River bears the happy distinction of being one of the clearest, prettiest, and most romantic of the many beautiful mountain streams of the State. The lofty Mount Shasta furnishes its source, and tumbling with many grand cascades, and sparkling through rocky cañons and leafy vales for a course of some eighty or ninety miles to the south, it empties into Pitt River, a few miles above its junction with the Sacramento. This is a favorite fishing stream, and has been selected by the U. S. Commissioners superintending the propagation of fish, as the principal scene of their operations in this State.

Feather River, the Rio de las Plumas of former days, is the largest tributary of the Sacramento, draining the Sierra between the latitudes of 36° 10' and 40° 30', and is formed of numerous forks and branches. The principal of these is the North Fork, which rises on the southern slope of Lassen's Peak, and becomes a rapid stream of one hundred yards in breadth as it flows through the valley of Big Meadows. Rush, Indian, and Spanish creeks, and East Branch, flowing through beautiful mountain valleys, and past rich mining camps, join the North Fork from the east, and Cherry Creek and West Branch enter it from the west, all considerable streams. The Middle Fork rises in Beckworth Valley, a plain apparently of the great plateau east of the Nevada range, and cutting through the mountains flows southwestward, joining the North Fork four or five miles before entering the valley. The South Fork and Nelson Creek are smaller streams and branches of the Middle Fork.

The Yuba is an important stream, and drains a large area of the Sierra. This too, has its North, South and Middle Forks, with many branches to each, all of which have become celebrated from the richness of the gold diggings in their beds, bars and neighboring hills. The Yuba enters the Feather at Marysville, whence the latter is navigable for light draught steamers to its junction with the Sacramento, forty miles distant. Bear River is the most southern branch of Feather. In the mountains it is quite an important stream, but in the dry season it disappears in the valley before reaching the main river.

The American joins the Sacramento by the city of the same name, and is one of the most important of its branches. This river will ever be connected with the history of the State, as it was on its banks that gold was discovered in 1848, which dates an era in the commerce of the world. The nomenclature of the mountain branches is the same as usually adopted by the gold hunters, being designated as forks. These have their source in many beautiful crystal lakes, high up among the eternal snows, which, by simple engineering, could be turned into capacious reservoirs, thus reserving the floods of winter for use in the fields and cities of the plains below. The Rubicon, Pilot, Hangtown and Silver Creeks are names of streams entering the American.

The branches of the Sacramento entering it are the Clear, Cottonwood, Elder, Thoms, Stoney, Cache and Putah creeks. These all have their sources in the Coast Range and after running through many lovely valleys in the mountains, these considerable and ever-running streams debouch upon the great plain of the Sacramento, and in seasons of drought seldom reach the main river.

The system of the San Joaquin is the counterpart of the Sacramento with the exception that no stream flows from the Coast Range to water the western portion of the broad valley. Flowing from the Sierra Nevada are the Cosumne, Dry Creek, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Cowchilla and Fresno, all noted for the gold mines of the section of their drainage. The Merced is the river of Yosemite, and, as are the Tuolumne and Stanislaus navigable for a short distance from their mouths.

The southern portion of the great valley of California embraces Tulare, Buena Vista, Kern and other lakes, which receive Kings, Kaweah, White and Kern rivers, all large streams, having their sources among the lofty peaks of the most elevated portion of the Sierra Nevada.

East of the range and north of the streams previously mentioned, and partly within the State, are Walker, Carson, Truckee and Susan rivers, with their numerous branches flowing eastward to lakes in the great basin. These, before reaching the valley, are strong and beautiful streams, affording water-power or for irrigating the bordering land. The first two empty into large lakes of the same name, the Truckee into Pyramid Lake, all in the State of Nevada, and the Susan into Honey Lake.

#### VALLEYS.

The many mountains of California naturally have their corresponding valleys, and these are, in greater part, as fertile and lovely as the others are towering and grand. The massive chains and lofty peaks inspire the beholder with awe, but the quiet, sun-bathed valleys give impressions of peace, prosperity and comfort. The system may be regarded as peculiar to California, a more marked distinction being made between mountain and valley in this than in any other State of the Union. Precipitous acclivities are on the one hand, and broad plains or expanded meadows on the other. Everywhere the soil contains elements of great fertility, and with the aid of abundant water vegetation is prolific. Soils of every character are found; drifting sands; arenaceous loam; reddish gravel and the deep clayey adobe. All are productive under irrigation, but under the dependence of rains, great sections pass as sterile deserts when the uncertain season or the capricious elements fail to supply the fruitifying element. When, therefore, the area of the valleys is considered and the amount of arable land contained in them is estimated, the present condition is disregarded, for that which is now apparently a barren desert may, under different circumstances, or at another season, become a luxuriant garden.

There are two classes of valleys—the small park-like basins in the mountains, and the lower valleys near the sea or bordering on the great rivers. The great valley of the Colorado, in which may be placed the larger portion of San Diego and San Bernardino counties, is an inhospitable desert, and although it may be possessed of minerals and a soil rich in the elements of fertility, its climate renders it valueless for present purposes. Within this region are several distinctive valleys, as the Mohave Valley, bordering the Colorado, the Coahuilla and New River Valley, the Valley of the Mohave, on the river of that name, and