

MALARIA OUTBREAK, YOLO COUNTY, 1937
By John O. Raffety, M.D., Health Officer

An explosive outbreak of malaria occurred during July and August of this year in the vicinity of the Federal Camp for migrating agricultural workers near Winters in Yolo County, California. The camp is located about 3 miles east of Winters and is on a tract of approximately 10 acres lying between the Davis-Winters highway on the north and Putah Creek on the south, which forms the boundary line between Yolo and Solano Counties. The camp has 168 platforms for tents. This camp is Federally owned.

In May the migratory workers rushed to the pea harvest in the areas along the Sacramento River south of Sacramento near Clarksburg, Rio Vista and Walnut Grove. This group brought in 2 cases of smallpox, chickenpox, whooping cough and left an epidemic of measles totaling over 90 known cases in eastern Yolo County.

The pea harvest was soon over, however, and the migrants moved into the Federal Camp near Winters. The population of the camp grew from 111 the first week of May to 613 the first week in June, reaching a maximum of 747 persons the week ending June 24. Frequent visits were made to this camp by me representing the County Health Department, along with other doctors, to prevent any communicable disease. Many were vaccinated.

In July the migrants began to spread out from the camp so that by the last week of July, there were 398 in camp and by August 12, 2 weeks later, only 216 were left. Out of this remaining group we found 49 cases of malaria in the camp itself, 47 of whom gave histories of onset between July 1 and September 7 and 12 cases occurred within a radius of 3 or 4 miles of the camp. Undoubtedly, many cases moved out before discovered. Just recently we received a report from the State Department of two cases in southern California who were in this area all summer and became ill September 6, shortly after leaving.

The first case reported was a girl, age 16 in a family of 8, who had been working about a mile from the camp across Putah Creek in Solano County. Her

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family had left Lansing, Michigan last January and migrated through Missouri, Kansas, New Mexico, Arizona to Bakersfield, then to Sacramento and on June 12, arrived at the ranch near the camp. She became ill about June 24, went to the hospital on July 8 and was reported July 13. This, however, did not augur an epidemic.

However, with the advice of the Agricultural Workers Health and Medical Association, these migrants were beginning to seek medical care from local doctors rather than treat themselves. On August 1st, one of the local doctors called and said he heard rumors of chills and fever in the Migratory Camp and wondered what was going on. A tent to tent survey was immediately started. Two cases were found having teeth chattering chills and many gave typical histories of having had chills and fever every other day which continued until they went to the drug store and bought some "Glover's Chill Tonic" or "666" which was "awful bitter" but gave relief. So whenever they felt a chill coming on, they would drink some of the "bitter stuff".

The case revealing the earliest onset was a man who said he began having "genuine Southern chills" about May 24 while working along the Sacramento River near Rio Vista in Solano County. He stated he had 3 chills two days apart, then he bought some chill tonic which he took for 3 days then moved to the Migratory Camp near Winters on June 1st. This case might be said to be the one introducing malaria into the camp but others in camp gave histories of having had chills almost every summer before leaving the dust bowl. The drug store reported they sold more chill remedies than usual this summer but that they always have sold quite a bit. Perhaps the fact that a large group of people were sleeping in tents without screening is responsible. At any rate, when the outbreak was unearthed the first week in August, something had to be done. But what? Breeding places within a half mile radius of the camp had been eliminated early in the spring or oiled periodically. Yet every evening, hundreds of male and female Anopheles were found in the camp. There are 22,000 acres of rice in Yolo County. Some of the fields were within 3/4

mile of the camp. And practically every dipper brought up Anopheles larvae and adults swarmed out when the rice was pushed away to dip water. Spraying the rice fields from airplanes was mentioned but the donor of funds was not mentioned.

Mosquito netting and fly spray were dispensed by the camp manager but as expected, the people would not use them effectively. Each day there were new cases. Then cases began to be reported further away from the camp and it appeared that malaria would spread all over the county. I wrote to Dr. Winchester, Health Officer of Wayne County, Georgia, who had advocated the use of atrabrine and plasmochin in conjunction with mosquito abatement.

I asked the State Department of Health whether or not atrabrine could be obtained by the Agricultural Workers Health and Medical Association. Forthwith came a thousand $1\frac{1}{2}$ grain tablets of atrabrine for the Agricultural Workers Health and Medical Association and a nurse from the State Department of Health. As a preventative measure, almost 2,500 tablets of atrabrine was dispensed in therapeutic doses for 5 days to all but one person in the camp on August 27, September 1 and September 6. The camp population dwindled down to 82 at present, the rice fields were drained for the harvest. Singularly enough, no cases have occurred to my knowledge in the camp since September 2 but a few cases in the territory surrounding the camp continue to be reported. The problem is not settled.

May I close by saying that I greatly appreciate the good cooperation of all who have given aid and advice in attempting to cope with this situation.