ILLUSTRATIONS FOR A SERIES OF SCIENTIFIC PUBLICATIONS

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PROJECT

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF ARTS

AT THE

SACRAMENTO STATE COLLEGE

Approved:
Chairman
Advisory Committee
Date June 1951
LIST OF NATURAL HISTORY SERIES PUBLICATIONS

FIGURE

Bookplate For Mary Glide Goethe Memorial Fund

1. Mother Lode Gold Mining Stores by C. M. Goethe

2. Check list of the birds of Sacramento and vicinity by William Kirsher

3. Check list of the wild plants, Sacramento Area by Thomas F. Wittsche

4. Nature notes from California State Redwood Parks by John B. Allard, illustrated by Julie K. Howard

5. Key to the lepidopterous larvae found in stored foods in California, by George T. Okumura
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I offer my hearty thanks to my associates and colleagues and my instructor, Dr. Hubert C. Jenkins, for the opportunity of renewing my interest and appreciation for the plants, birds, and creatures in our environment. I am deeply grateful to Dr. Jenkins for the stimulus and courage which he so unstintingly gave to all who worked with him on these publications. He created the possibility and stimulated the concepts of each project with characteristic realism. He brought the challenge to me as an artist to keep my work realistically related to life and the understanding of everyone.
ILLUSTRATIONS FOR A SERIES OF SCIENTIFIC PUBLICATIONS

Purpose of the Project. The purpose of this series of scientific publications was to gather and organize, in a professional manner, educational materials to guide learning and growth, cultivate widespread interests, and encourage intellectual curiosity in the world of which we are a part. We have the makings of a great education in what is known today about our culture, man and his behavior, and his relation to the plant and animal life in his environment.

The writing of these publications was done by the fusion of the cooperative efforts of students of diverse capabilities. Each had his chosen professional area of specialization. All the knowledge and skills were integrated into a unity of knowledge and material for the use of the layman, the student, or the professional educator. Even though each publication in the series is a distinct product of its own author, it has had the benefit of group planning and criticism of other authors and experts in their specific fields. Such a cooperative group scheme can go far toward providing a definite educational need. It is hoped that the present completed publications will help meet those needs.

Importance and value of educational publications. Education means different things to different people. The goal of education is to make of every individual a mature and balanced person - to learn to use theirselves, their hands, their brains, their eyes, their hearts, and to become "aware" and to grow. The wholeness of
the individual as a spiritual, thoughtful, and feeling being has been lost sight of in a chaotic materialistic society. But a person without faith in himself and mankind; without wholesome interests and occupations, dependent upon others and canned amusements for his satisfactions; who is easily swayed by slogans and afraid of being a non-conformist and cannot endure to be alone; who knows no purpose for his existence beyond money and material things - he is not an educated person.

Democracy functions not only in our political lives but in our personal lives as well. Education for democracy should build faith, initiative, ingenuity, and desire of such strength that it would inspire people to change society until it produces the opportunities for the security of every living creature.

Science has made humanity aware of the universe. Life is a state of awareness which education makes a continuous process. With education a science, and teaching an art, one may conclude that those who have merged their efforts in bringing out these publications are a Science-Teacher-Artist Group.

Procedures. To help in the understanding and appreciation of the plant and animal world so that the young and the old may capture the vision of creative life and grow in feeling, thinking, and expressing, is the aim of the artist's personal contributions to these publications. What better way than by picture or illustration can one "articulate" in a universal language? The power of a picture is taken for granted - it is an accepted familiar part of
our every day living. Through the eye we attract the mind. A picture is like a mighty voice that reaches millions of people for millions of people. In spite of the use of photography, the need for the artist to make pictures to specifications has been an established fact. Of great importance are the educational books which have been undergoing great transitions. In most cases it has been found that the pictures have been coming back into text books in such great numbers that many contain more pictures than text.

The artist tried to share the authors' excitement and interests in each particular case and worked very closely with them so that the essence of their feelings could be interpreted to others through the illustrations. Although the medium was limited to pen and ink and scratch board in black and white, the challenge it added to the task made it that more exciting. In the case of the *Wild Plants* publication, the artist made very careful full water color paintings of all the specimens picked in the fields. From these paintings, black and white renderings are to be developed. In doing the birds, mammals, snakes, etc., if the subject was not available in actual life, the artist had to resort to the preserved specimens available for use at the Science Annex. In some cases, photographs, scientific drawings, slides, and specimens were used to find the perfect picture that would pass the professional scrutiny of experts. There were times when the artist had to go to the actual area in question to work from nature. This was
the case in working on the Redwood State Parks publication.

Flowers, trees, and mammals, as well as amphibians, all varied in different degrees in size or coloring when found short or long distances apart.

Time and time again the need for an artist's interpretation of factually accurate pictures overwhelmed the group as they searched for reference to explain a point for the drawings. Photographs were meagre, inaccurate, out of focus at the crucial point, or it was not of the recognized common variety needed by the author. Scientific drawings were usually done as copies from the same photographs mentioned above, or were coldly inadequate to explain a view needed. At no time could the artist permit invention, improvisation, impulse, wit or fancy to guide the finished drawings. Here, one was dealing with specific objects which were to be interpreted through the scientist's keen eyes for popular consumption and understanding. It had to be done in a language that could be universal and yet scientifically correct or accurate and esthetically satisfying. It was a matter of pointing up those characteristics which would make the finished drawing a unique representation of not only the scientist's point of view but the artist's understanding of it within the limitations of the medium of expression. To make others see clearly what the group had to tell them was what they found the artist's drawings could do better than all the photographs at their disposal.

Justification and conclusion. It seems very clear that this series of publications can serve a basic need. The group
thinks the ideas herein will be meaningful to others, and they are happy to share them with the many people reached by this popular method of communication. They hope these pages and illustrations will bring to many the spiritual value and warm companionship of new and old interests and that they will serve to increase appreciation and understanding toward democratization of the arts and sciences.
Sacramento State College Publications

NATURAL HISTORY SERIES
NUMBER 1
(Second Printing)

SEPT. 15, 1950

MOTHER LODE
GOLD MINING STORIES
by C. M. GOETHE

For distribution by: Associated Students, Sacramento State College
Sacramento 18, California
Price 25 cents.
SACRAMENTO STATE COLLEGE PUBLICATIONS

NATURAL HISTORY SERIES

NUMBER 1
(Second Printing)

SEPT. 15, 1950

Natural History

Hubert O. Jenkins, Editor and Director of the Survey and Professor of Biological Sciences, Sacramento State College.

This series of publications is issued as a means of placing before the public, the results of research conducted by students and others into the Natural History of the Sacramento area. Popular as well as technical material will be presented. Papers are given serial numbers and no attempt is made to bring out issues at any regular times.

All revenue derived from sale of papers will be turned back into an enlarged publication fund. Persons interested, are invited to add to this fund, through purchase of publications or by donation. To initiate the series, a generous gift has been received from Mr. C. M. Goethe.

PUBLICATIONS COMPLETED

1. Mother Lode Gold Mining Stories, by C. M. Goethe
   16 pp. illus. 1 map. 25 cents
   A series of stories told of the 1850s of placer-mining stage. Human inquisitiveness prompted finding out whence came the water-polished pebbles called nuggets. Some partly were quartz. It was an easy transition from unproductive surface placers to handsomely paying quartz mining.

POKERVILLE*

WHAT'S IN A NAME? In POKERVILLE'S, memories of a Methodist revival. Repentance and sanctification were followed by a shift from its gambling name to a religious symbol. POKERVILLE once was the hilarious designation of the town now called PLYMOUTH. We can imagine the descendants of the Pilgrim Folk pausing at their golden harps to rejoice when their "PLYMOUTH" replaced such a Satanic appellation as "POKERVILLE."

* See inside back cover for map.

Excerpts from "What's in a Name". Copyrighted, 1919 by C. M. Goethe. (Reproduced by permission.)

MOTHER LODE GOLD MINING STORIES

by C. M. GOETHE

QUartz MINE'S DUMP SKYLINE SEEN THRU POKERVILLE HOIST

"The skypilot arrived at POKERVILLE via Sacramento stage." This was in the 1850s or placer-mining stage. Human inquisitiveness prompted finding out whence came the water-polished pebbles called nuggets. Some partly were quartz. It was an easy transition from unproductive surface placers to handsomely paying quartz mining.
POKERVILLE'S name is an acknowledgment of the almost instinctive attraction, to some humans, of games of chance. Its selection came via that manifestation of pure democracy, the Miners' Meeting. Under the law of Cause-and-Effect, however, other events followed: Reuben Merrill had admitted parentage of more than a half dozen back in Connecticut. In his cups he bewailed the loss, at gaming, of gold nuggets that, on the morrow, should have bought a Wells-Fargo draft to the wife in Hartford. Others of the miners were sore at what they maintained was flagrant cheating at cards. Then Pierre Dubois, whose Gallic imagination stimulated most of POKERVILLE's pranks, and who had a "poker face," suggested importing a revivalist. "This camp does need a cleanup," said blackeyed French Pete. A committee was appointed. Soon POKERVILLE's gambling fraternity were aware of grumblings about certain recent losses. What was more ominous, there was snickering about a Methodist revival.

The skypilot arrived at POKERVILLE via the Sacramento stage. A reception committee, armed to the teeth to protect him, was on hand. He needed no protection, however. Six feet six, he weighed 246 pounds with not an ounce of fat. His cheery greeting was, “Anyone want a wrestling match before we start the meetings?”

The gamblers had spies on the edge of the crowd. These promptly but pessimistically reported that whatever public opinion was neutral quickly and respectfully had crystallized in favor of this giant preacher.

The card sharks, the saloon keepers went into a huddle. Business prospects looked worse than a Black Friday. Into the room came Sinaloa Sal. She ran POKERVILLE's one fandango house. She also didn't like the looks of the weather. Tex Montgomery gallantly offered her his chair. Tex never did forget his manners. "Got any ideas, Sal?—we ain't." "Just one," said the painted Mexican girl. "But I think she work alright." Sal detailed her proposed strategy. The group roared. Now the smiles were on their side. Sinaloa Sal had taken the precaution to pledge them to secrecy. So nothing was evident except an instinctive attraction, to some humans. of games of chance. This Briton never was liked. His monocle was enough to put them outside the pale. No one was sorry when he was shot. In fact, the congregation melted as if "Fire" had been shouted.

Commercialized Vice didn't wait for the wrath to come. Sinaloa Sal's lantern lighted the way as she and Tex Montgomery led a dejected dozen down the dusty DRYTOWN road. Meantime the gathering at the campfire resolved itself into a Miners' Meeting. It then selected a Vigilante Committee. POKERVILLE next was voted out, PLUMOUTH sanctimoniously voted in. All this required time-consuming debate. After adjournment, a half hour was spent finding a rope for the Vigilantes. Finally the diggers discovered POKERVILLE had no need for the hempen cord.

SUTTER CREEK

WHAT'S IN A NAME? In SUTTER CREEK's, the tragedy of Captain John A. Sutter's life. Overwhelmed by the Gold Rush, his wealth scattered by overpopulation, he turned despairingly to goldseeking, to huck the unprofitable operations today still grimly bears the name of SUTTER CREEK.

Gold WAS all around him. It WAS up VOLCANO-way. It WAS north at DRYTOWN. It WAS south at JACKSON and MOKELEUMNE HILL. It WAS beneath him in millions in MOTHER LODE'S quartz. He simply couldn't adjust himself to the changed environment.

SUTTER CREEK's raconteur was respected landlord Nixon of the old Sutter Creek Hotel. Pioneer Nixon used to tell of a fur hunter's return, in the 1840's, from trapping for Bible-Toting Jedediah Smith's Fur Company. He had been away from civilization three years. There had been no money out-west. His wages were paid in coonskins, valuable for coonskin caps. Arriving at a trading post en route home, he wearily threw down his pack of furs. Then he pulled loose a coonskin, threw it on the bar, called on all present to "name their poison." As he started to leave, the barkeep called "Hold on. You forgot your change." The dispenser of whiskey went out to the fur house. He tugged back TWO bales of squirrel pelts. These the trapper spurned, "How can I 'tote' them in addition to this load of coonskins?"

DONKEYVILLE

WHAT'S IN A NAME? DONKEYVILLE'S was not totemic. DONKEYVILLE's fame came not because of long, flapping ears, not from the braying by a quadruped. Braying, perhaps, but by a biped. DONKEYVILLE was struck by a middle-aged Englishman, one George Haddon. His years were against him, as the miners were all young. Then, too, he WAS English, and the War of 1812 was less than 40 years behind. Moreover, his offensive London accent was intensified by repeated expressions of contempt, such as "Silly old ass, silly old ass." (Long "a," if you please.) The first miners' meeting there as a joke voted to name the camp in his (dis)-honor. They would not give him the satisfaction of his British "ass.' THAT promptly was Americanized into "donkey." So DONKEYVILLE was christened.

This Briton never was liked. His monocle was enough to put him outside the pale. No one was sorry when he was shot. In fact,
he had been elected Assessor because taxes were not particularly popular. Haddon died in a duel. It happened over, not a donkey, but pigs. Jack Fletcher, Georgia-born, had abandoned gold mining by 1854. He was farming a bit of hill-country meadow. It was some miles from DONKEYVILLE. Haddon was assessing. "What live stock?" he asked Fletcher. "Oh, a cow, and two sows and pigs."

Fletcher unfortunately lisped. Haddon was none too discrim­
atory. He was eager, also, to turn in values supporting his salary as assessor. Fletcher's tax bill assessed 2,000 pigs. Infuriated, he sought out the assessor. "Think I run a hog ranch?" "You said two thousand pigs!" "NO, I THaid Two-THows—and pigTH."

Followed a quarrel. Hair-trigger Fletcher challenged. Haddon proudly accepted. The duel occurred next dawn. Thus, the old '49er told an eager boy. DONKEYVILLE lost its "DONKEY."

THE METHODIST CHURCH IN IONE

BEDBUG


— 4 —

today is almost forgotten. The romantic, petticoated sex in Gold Mining days, however, eagerly devoured the weekly installments of such literature.

Virginia Lee was a maiden of 16 when handsome Reginald Randolph left a certain Virginia Tidewater plantation for the California mines. At a tearful parting, she promised to "wait forever." The other lover, John West, far less adventuresome, remained in the Old Dominion, a persistent suitor. Virginia's pretty nose remained convincingly tilted until a letter arrived. Reggy had made a stake. Would she take steamer for San Francisco, so they could be married? Unfortunately that letter was dated "BEDBUG, CALIFORNIA MINES. JANUARY 12TH, 18—."

That one word "BEDBUG" was earthquake, war, conflagra­
tion, plague, all telescoped into its six letters. A Virginian, how­ever, does not break a promise. She had said "I'll wait forever." She refused for weeks even to see John West. Meantime a letter was speeding by Pony Express to Reggy. "Do you expect me to spend the rest of my day at BEDBUG?" Reggy was a born orator. He had, too, the spur of love. He called a miner's meeting. He pleaded forcefully that the need of jocular appellations was past. A self-respecting community should adopt a civilized name. He knew, from her letters, his ladylove had been reading Bulwer-Lytton's novel. She had written repeatedly of its heroine. "I propose IONE, a name world-renowned in current fiction," declaimed Randolph from the digger-pine stump beside the Sacramento turnpike. There was a shout of approval. His next epistle read "IONE, CALIFORNIA, MARCH 23RD, 18—."

Bill Ferguson spun the yarn about BEDBUG and IONE while he was resting and I was cooking our evening meal over the camp­fire. Pocket miners' meals at that time were often of jerked beef. Ferguson had "prospected" from British Columbia's Frazier River down range to Mojave, then across Arizona, New Mexico and South­west Texas, finally 'way down the Sierra Madre to Zacatecas, Guana­juanto, San Luis Potosi. He always insisted that a man could cross from San Gorgonio Pass to Tucson and could live entirely on the country if he knew how. It was necessary, however, to be versed in Indian lore. He further said that our "jerky" stew was based on something before the days of the old Texas longhorns. He had seen Indians sun-drying antelope "jerky," even bighorn "jerky."

There was something significant about the empire-builders that made California into the Pacific Ocean anchor of a United States that now had become truly trancontinental. These men, as a somewhat stable government displaced the Vigilantes, erected school and church. Photo shows the old church at Ione, formerly BEDBUG. This dates almost back to the time of the romance described in our text.

JESUS MARIA

WHAT'S IN A NAME? In JESUS MARIA'S, unsuspected pro­fanity. The name of these Diggin's is not as adoring, as devotional, as spiritual as one might expect. Its story begins in Mexico.
JESUS MARIA GULCH was "struck" by Mexicans. They had been working on 12-hour shifts in San Luis Potosi's silver mines. Their daily wage was 17 cents gold. News filtered thru to San Luis Potosi of what was happening up beyond San Diego Mission in Alta, California. Was it not worth the hardship of a three months' hike across the Chihuahua, the Sonora, the Colorado Deserts? Once there, even a peon, under the favor of Our Lady of Guadalupe, could gain, in one week, what represented the labor of one's best 20 years. And then, "Mejico once more, and a lifetime of pulque, mezc-al, aquadiente, tequila!"

Thus, as if by magic carpet, there arrived up the Mokelumne numerous peones. From Aguacalientes they came and from Zacatecas. Came also miners who had high-graded at Guanajuanto. * En route, they picked up Chihuahua and Sonora peones. The latter had fought Yaqui brigands. These took possession of the pinelined canyon still called "Arroyo de Jesus Maria."... 

One evening at Mok Hill, Uncle Zach was smoking, while I pored over a Mother Lode map. Almost parallel ran two gulches: Whiskey Slide and Jesus Maria. I remarked: "The Christ-child and the Madonna! How devoted are the warm Latins compared with us frigid Saxons!" Uncle Zach's cheeks grew ominously purple: "Greaser cuss-words, lad! How little you know of human nature!!" There followed a lecture mottled with picturesque profanity that was illuminating! Thus was learned: "Jesus Maria" is cognate with "Cheese it. The cops are coming."

* See this author's "Manuelito of the Red Serape." It is a tale of peon "high-grading" he saw at Guanajuato, Mexico.

SLUMGULLION

WHAT'S IN A NAME? In Slumgullion's, another Safety Valve. The Stanislaus mines were hotbeds of what the miners called "Mountain Fever." Some suspect that one reason Bible-Toting Jedediah Smith took only two men with him on his return from his first expedition was not wounds. His men had been sorely battered in the Arizona battle in which he left half his men dead. Many weeks had elapsed, however, when he finally started. His men were sick of, not wounds, but "mountain" fever.

In this writer's boyhood, gaunt, haggard miners continually arrived at Sacramento. He would hear whispered "Another mountain fever case." It is therefore evident that this remarkably rich, but highly unsanitary diggin's was christened "SLUMGULLION" after its miners amused themselves by discussing the most shocking and outrageous epithets they could devise.

Then a Mexican found a nugget, remarkably shaped like an oversized melon seed. Several miners' wives by that time had arrived at Slumgullion. Men were gallant in those days. They listened with respect to feminine murmuring about such grotesque names as Bedbug, Delirium Tremens, Pokerville, Slumgullion. A Manhattan-born bride saw Jose Perez' melon seed, sculptured by Mother Nature in — not bronze — but gold! She asked:--
remembers, marvel of marvels, that the dwindling population of LIARS’ FLAT supported neither store nor saloon. Perhaps it was that the Petronova woman’s bitters were, after all, doctored whiskey and gin. Perhaps there was a bit of worship of the old Dragon God in the drinks. Perhaps old Olga really WAS a witch! Quien sabe?

COLUMBIA

WHAT’S IN A NAME? In COLUMBIA’S, enuf history, and so much romance that COLUMBIA has been erected into a State Park as the historical gem of the Mother Lode. It thus has been started toward becoming the Williamsburg of California. Under the able leadership of Dr. James E. McConnell, the COLUMBIA Historical Park Association has made commencement of preservation of its remarkable assets. It was essential, of course, for COLUMBIA to have a real beginning for such a goal. COLUMBIA HAS history. From Bancroft’s to Dean Rockwell Hunt’s, the histories are full of Columbian history and romance.

The basis of COLUMBIA’S standing was, of course, the fabulous richness of its gold deposits. The whole Mother Lode is world-famous as a gigantic fissure into which was imprisoned the liquids and gases that solidified into the precious metal. Of all the Mother Lode’s far-flung miles, however, it would be difficult to name a spot where, for some unknown reason, the concentration of gold was as heavy at at COLUMBIA. Old-time pocket-miners, trekking the hills with their burros from British Columbia’s Frazier River to the silver quarries of San Luis Potosi, would yarn at campfire of COLUMBIA’S extravagant wealth. “Remember when the miner’s meeting limited claims to 10 by 10 feet?” (Today they’re 1,500 feet along the ledge.) Then another prospector would rejoin: “Yep. And do you recollect when Tallahassee took $10,000 out of his claim in one week?”

CONVERSE BASIN

WHAT’S IN A NAME? CONVERSE BASIN’S includes ’49er for valley, flat, meadow. It also has a sad story: the loss of California’s very finest grove of Sequoia gigantea. The tale is not a pleasing one. The Converse “outfit” moved into that “Basin” under the urge to supply the Gold Rush’s lumber needs.

The miners’ first “buildings” were tents. These, again and again, were made from the sails of a vessel abandoned by the crew—and, also perhaps, by the captain. These were the victims of gold fever: “Why spend a lifetime back in the States accumulating a competence when miners make $500 to the pan!” After a heavy storm, a stroll thru the chaparral might show gleaming a rain-washed nugget worth $5,000.

In California, however, the winter rains, followed by six months of rainless summer, caused tents to rot. Lumber was needed. Few, however, were willing to ax down trees for log cabins. Thus came the beginning of California’s lumbering.

CONVERSE BASIN had the world’s heaviest stand of giant Sequoia. Nothing today equals it. Hence, when timbering, why not

GROWING REDWOODS . . . OR GRAPE STAKES

To complete the Grand Plan of the Save the Redwoods League, it is said some thirty-odd parks remain to be purchased. Otherwise, these will be fed to the sawmills. The recreational values thereof are high . . . the educational possibilities under Ranger-Naturalists and a chain of museums are, in these days of dependence upon research, immeasurable.
take the best? The great redwoods were felled, blunderingly. About 80% of the average tree cracked. The remainder was sawn, hauled out, sold. That CONVERSE BASIN Lumber Co., they tell one, made no profit.

San Joaquin Valley children, panting in summer heat for the next hundred generations, will be similarly bankrupt. To replace CONVERSE BASIN will take the time since Nebuchadnezzar saw the handwriting on the wall.

PINCHEMTIGHT

A ROW OF STONES, ONCE PINCHEMTIGHT

The site of PINCHEMTIGHT is now utilized in growing poultry. On the author's last visit he was told that the line of stones to left, also right, of the turkeys was a part of the foundation of the building where presumably the Swedish Barkeep took excessive toll of the miner's gold dust.

WHAT'S IN A NAME? In PINCHEMTIGHT'S, a reminder that, though the 1850s never dreamed of a World War, they, too, protested a high cost of living. Of PINCHEMTIGHT, nothing now remains but a row or two of foundation stones. Even the farm-house beyond the bridge toward JAWHAWK is modern. In writer's boyhood, Bangor Bill seemed as miserly as he must have been when scheming to hire Ole Johnson. His family feared him. He was not a lovely character. Following story of the naming of PINCHEMTIGHT is condensed from this author's "Sierran Cabin ... From Skyscraper":—

Bangor Bill, calculating, steel-eyed, flaxen-bearded Yankee, opened a general merchandise store. He was skinny, avaricious, short. His "pinch" of gold dust for "two fingers of rot-gut" contributed little to this miser's happiness. When, therefore, one day giant Ole Johnson drifted in, storekeep' Bill almost danced with joy. Ole had a thumb, forefinger like the great lobster pickers of Bangor's native Maine. He beckoned the Swede out into the manzanita. Ole, however, wanted to mine, not barkeep. Bangor, determined to hook his fish, offered Ole a partnership. Within a week, bibulous miners admonished: "Pinch-'em-tight, Ole." That giant's thumb and forefinger dug into gold dust chamois skins like a modern river dredger's clamsHELL bucket. . . . A miners' meeting was called a fortnight later. Some hotheads suggested nearby HANGTOWN'S name was sufficient. Sturdy blue oaks were numerous. Carolina Calhoun, however, dominated with his oratory. Born leader, he counselled moderation: "Gentlemen, we are law-abiding. We want no corpse, even Pinchem-tight's, swaying in the gentle zephyrs under yon oak. Let's let him live to suffer, day by day, his perfidy. Let Bangor Bill corode beside him. All shout 'Aye' who favor punishing both villains by naming our beloved city 'PINCHEMTIGHT.'" Rollicking "ayes" echoed so loudly in that Webber Creek Canyon camp, there was heard not one "no."

YANKEE JIM'S

VIGILANTES LYNCHED MAN BECAUSE OF YANK ACCENT—CAUGHT REAL HIGHWAYMAN LATER

WHAT'S IN A NAME? In YANKEE JIM'S a ghastly blunder. Extraction of its riches depended upon grilling muscular work, even in 110° August temperature. Miners did not joyfully contemplate a summer's work departing via a "Road Agent." Yankee Jim was as successful a stage robber as Black Bart the Po-8, or Joaquin Murietta. He limited his operations, however, to the FOREST HILL Divide, across the North Fork from his Cave. The miners became so exasperated at his continued successes, they swore if ever they caught him, they would hang him first and try him afterward. The only clue they had was his accent. One day a man with this accent wandered into the Last Chance Saloon on the edge of the Diggins. The astounded bartender left his glasses and whiskey barrel, stepped out the back door. In a jiffy the Vigilantes appeared in the front entrance. The Yank soon was kicking helplessly from a rope swung over the branch of the big Kellogg oak.

The stage robberies, however, continued. It then dawned upon YANKEE JIM'S Vigilantes they had lynched an innocent. The real Yankee Jim was winged by a Wells Fargo messenger a month later and hung. The corpses were buried in one wide grave with an equally wide headstone. One hand thereon pointed to Yankee Jim—one to the
In the inscription read: “Here lies the body of Yankee Jim. We made a mistake, and the joke’s on him.”

YANKEE JIM'S was a rich camp. $150,000,000 is what U. S. Geologist Lindgren estimated was mined in a few square miles in the Colfax Quadrangle: TODD'S VALLEY, $5,000,000; DARDANELLES, $2,000,000; MAYFLOWER, $5,000,000; GOLD RUN, $2,000,000; YOU BET, not including RED DOG, $3,000,000; DUTCH FLAT, $2,000,000; YANKEE JIM'S, $5,000,000.

YANKEE JIM'S WELL

Yankee Jim, for whom this ghost town was named, is famed in a Gold Belt legend. He is variously depicted as a lone highwayman, a lucky alcoholic, a horse-thief. He was hanged by Vigilantes in those days when murder was less a crime than stealing a man’s mount. The YANKEE JIM diggings poured, in the Civil War, millions into U.S.A.'s treasury.

“Hydraulicking” the YANKEE JIM channel tore down a mountain to be melted for the sluice box. Shining against the black sand was the yellow gold that hastened Appomattox... Here is a riverbed atop a mountain.

“ONE CAMP WAS NAMED BOOTJACK”

The bootjack’s “V” was cut so as to help remove the boot.

MONUMENT (NEAR FORBESTOWN) TO BLACK BART, THE Po-8

The Chinese laundry marks that led up to Black Bart's final arrest stimulate memories of another yarn about Chinese ideographs. Same was connected with the Chinese Minister at Washington. This diplomat was guest at dinner at a certain exclusive club at the National Capital. Across the table from him, a noted beauty asked him to autograph her menu card. When he did so, others pressed for similar mementoes. After he had left, they noticed his signature was different on each card. An interpreter was called. The beauty’s “autograph” read “Really pretty, but I think she uses a rat to build up her coiffure.” Another was “If I was so stout, I would decline 12-course dinner invitations.” Again, “This woman asks foolish questions about China.”
MARSHALL'S CABIN NEAR COLOMA

Marshall's Cabin is in a charming hill country. It is in the Transition Life Zone of the Sierras. This has as “markers” yellow pine, cedar, sequoia. All make interesting forest. . . . The cabin is, of course, in the basin of Bible-Toter Jedediah Smith's Americans' River. He had vision as to California anchoring U. S. A. at the Pacific. Little did he dream the settlement which should have taken decades was, before a quarter-century had passed, to be by Marshall's discovery, telescoped into years.

CALIFORNIA'S OLDEST COURTHOUSE, DOUBLE SPRINGS

Same now is a “museum.” Its slabs, thru which the sky is visible, are said to be of camphor wood from China.

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CHECK LIST OF THE

BIRDS OF SACRAMENTO

AND VICINITY

By WILLIAM KIRSHER

PRICE 5 CENTS
BIRDS OF SACRAMENTO AND VICINITY

These are the birds that might be found during the course of a year within 35 miles of Sacramento, California.

This is not a definitive list. Most of the information comes from Grinnell and Miller's "Distribution of the Birds of California." Since there has been comparatively little study of birds in this particular area, it has been necessary in some cases to estimate the occurrence and status of species by reference to their known existence in similar habitats elsewhere.

This list is published as an aid to those who are engaged in a more comprehensive study of the birds of Sacramento. Persons obtaining reliable information that might amend these data are requested to communicate with one of the sponsors; namely, The Sacramento Audubon Society or The Science Division of the Sacramento State College.

Acknowledgements for assistance are made to Arnold Lane, James S. Stinson, D. Bruce Swinehart, Jr., and Robert Hewitt, students of the Sacramento State College, and to Dr. Hubert O. Jenkins. Cover design by Julie K. Howard.

Notes:

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Sacramento State College Publications
Natural History Series No. 2
March 30, 1951

HUBERT O. JENKINS, Professor of Life Sciences, Editor

This series of publications is issued as a means of placing before the public, the results of research conducted by students and others into the Natural History of the Sacramento area. Popular as well as technical material will be presented. Papers are given serial numbers and no attempt is made to bring out issues at any regular times.

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PUBLICATIONS COMPLETED

1. Mother Lode Gold Mining Stories, by C. M. Goethe. 16 pp. Illus. 1 map 25 cents
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2. Check List of the Birds of Sacramento and Vicinity, by William Kirsher. 5 cents

PUBLICATIONS IN PREPARATION

Handbooks on the Birds, Mammals, Fish, Reptiles, Amphibians, Insects and Plants of the Sacramento area. Biological Studies of the Sacramento and American Rivers.

For distribution by The Treasurer, Associated Students, Sacramento State College, Sacramento, Calif.
| Date: R: resident; SV: summer visitor; WV: winter visitor; M: migrant. The black line shows the months during which the bird is likely to be found in this area. Names are arranged according to A.O.U. checklist. |
|---|---|
| **Birds** | **Observers** | **Locality** |
| Grebe, Western | WV | **March** | **April** | **May** | **June** | **July** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec** |
| Pied-billed | WV | | | | | | | | | | | |
| Pelican, White | WV | | | | | | | | | | | |
| Cormorant, Double-crested | R | | | | | | | | | | | |
| Heron, Great Blue | R | | | | | | | | | | | |
| Egret, American | R | | | | | | | | | | | |
| Sandpiper, Least | M | | | | | | | | | | | |
| Sandpiper, Red-backed | M | | | | | | | | | | | |
| Crow, Long-billed | M | | | | | | | | | | | |
| Stilt, Black-necked | SV | | | | | | | | | | | |
| Avocet | SV | | | | | | | | | | | |
| Phalarope, Northern | SV | | | | | | | | | | | |
| Guil, Ring-billed | WV | | | | | | | | | | | |
| Tern, Black | SV | | | | | | | | | | | |
| Pigeon, Band-tailed | R | | | | | | | | | | | |
| Dove, Mourning | R | | | | | | | | | | | |
| Cuckoo, Yellow-billed | SV | | | | | | | | | | | |
| Road Runner | R | | | | | | | | | | | |
| Owls, Barn | SV | | | | | | | | | | | |
| Screech | Sty | | | | | | | | | | | |
| Flicker | R | | | | | | | | | | | |
| Woodpecker, California | R | | | | | | | | | | | |
| Lewis | R | | | | | | | | | | | |
| Spotted, Red-breasted | WV | | | | | | | | | | | |
| Woodpecker, Hairy | WV | | | | | | | | | | | |
| Hummingbird, Black-chinned | M | | | | | | | | | | | |
| White-throated | R | | | | | | | | | | | |
| Sage-grouse | WV | | | | | | | | | | | |
| Canvas-back | WV | | | | | | | | | | | |
| Redhead | R | | | | | | | | | | | |
| Ring-necked | WV | | | | | | | | | | | |
| Lesser Scaup | WV | | | | | | | | | | | |
| Golden-eye, American | WV | | | | | | | | | | | |
| Duck, Buffel-head | WV | | | | | | | | | | | |
| Ruddy | R | | | | | | | | | | | |
| Megapode, American | WV | | | | | | | | | | | |
| Dowitcher | WV | | | | | | | | | | | |
| Nuttall | R | | | | | | | | | | | |
| Kincaid | SV | | | | | | | | | | | |
| Flycatcher, Ash-throated | SV | | | | | | | | | | | |
| Phoebe, Black | R | | | | | | | | | | | |
| Say | WV | | | | | | | | | | | |
| Flycatcher, Western | SV | | | | | | | | | | | |
| Trail | SV | | | | | | | | | | | |
| Olive-sided | M | | | | | | | | | | | |
| Pewee, Wood | SV | | | | | | | | | | | |
| Lark, Horned | R | | | | | | | | | | | |
| Swallow, Violet-green | SV | | | | | | | | | | | |
| Tree | SV | | | | | | | | | | | |
| Bank | SV | | | | | | | | | | | |
| Rough-winged | SV | | | | | | | | | | | |
| Barn | SV | | | | | | | | | | | |
| Cliff | SV | | | | | | | | | | | |
| Martin, Purple | SV | | | | | | | | | | | |
| Jay, Stellar | WV | | | | | | | | | | | |
| California | R | | | | | | | | | | | |
| Magpie, Yellow-billed | R | | | | | | | | | | | |
| Raven | R | | | | | | | | | | | |
| Crow | R | | | | | | | | | | | |
| Tiltmouse, Plain | R | | | | | | | | | | | |
| Kestrel | R | | | | | | | | | | | |
| Nuthatch, White-breasted | R | | | | | | | | | | | |
| Creeper, Brown | WV | | | | | | | | | | | |
| Wren-th | SV | | | | | | | | | | | |
| Wren, House | SV | | | | | | | | | | | |
| Winter | WV | | | | | | | | | | | |
| Bewick | R | | | | | | | | | | | |
| Marsh Wren | WV | | | | | | | | | | | |
| Mockingbird | R | | | | | | | | | | | |
| Thrasher, California | R | | | | | | | | | | | |
| Bobolink | R | | | | | | | | | | | |
| Thrush, Varied | WV | | | | | | | | | | | |
| Ruffed Grouse | SV | | | | | | | | | | | |
| Bluebird, Western | R | | | | | | | | | | | |
| Mountain | WV | | | | | | | | | | | |
| Solitaire, Townsend | WV | | | | | | | | | | | |
| Cassin's, Blue-gray | WV | | | | | | | | | | | |
| Kinglet, Ruby-crowned | WV | | | | | | | | | | | |
| Golden-crowned | WV | | | | | | | | | | | |
| Pipit | WV | | | | | | | | | | | |
| Waxwing, Bohemian | WV | | | | | | | | | | | |
| Cedar | WV | | | | | | | | | | | |
| Phainopepla | R | | | | | | | | | | | |
| Shrike, California | R | | | | | | | | | | | |
| Vireo, Hutton | R | | | | | | | | | | | |
| Black | M | | | | | | | | | | | |
| Sialia | SV | | | | | | | | | | | |
| Warbling | SV | | | | | | | | | | | |
| Warbler, Orange-crowned | M | | | | | | | | | | | |
| Galah | SV | | | | | | | | | | | |
| Yellow | SV | | | | | | | | | | | |
| Martin | WV | | | | | | | | | | | |
| Audubon | WV | | | | | | | | | | | |
| Black-throated Gray | SV | | | | | | | | | | | |
| Townsend | M | | | | | | | | | | | |
| Hermit | M | | | | | | | | | | | |
| Toler | M | | | | | | | | | | | |
| Yellow-throat | R | | | | | | | | | | | |
| Chat | SV | | | | | | | | | | | |
| Warbler, Pileated | SV | | | | | | | | | | | |
| Mejiwa | WV | | | | | | | | | | | |
| Blackbird, Yellow-headed | R | | | | | | | | | | | |
| Red-winged | R | | | | | | | | | | | |
| Tricolored | R | | | | | | | | | | | |
| Oriole, Bullock | SV | | | | | | | | | | | |
| Blackbird, Brewer | WV | | | | | | | | | | | |
| Cowbird | WV | | | | | | | | | | | |
| Towhee, Spotted | R | | | | | | | | | | | |
| Brown | WV | | | | | | | | | | | |
| Sparrow, Savannah | WV | | | | | | | | | | | |
| Grasshopper | R | | | | | | | | | | | |
| Lark | R | | | | | | | | | | | |
| Belf | R | | | | | | | | | | | |
| Rufous-crowned | R | | | | | | | | | | | |
| Junco, Slate-colored | WV | | | | | | | | | | | |
| Oregon | WV | | | | | | | | | | | |
| Sparrow, Chipping | SV | | | | | | | | | | | |
| White-crowned | WV | | | | | | | | | | | |
| Golden-crowned | WV | | | | | | | | | | | |
| Fox | WV | | | | | | | | | | | |
| Lincoln | WV | | | | | | | | | | | |
| Song | R | | | | | | | | | | | |
| English | R | | | | | | | | | | | |
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   March 30, 1951 5 cents
   Showing the probable occurrence by months, of the birds that might be found during the course of a year, within 35 miles of Sacramento, California.

3. Check list of the Wild Plants, Sacramento Area by Thomas F. Wittsche
   May 15, 1951 25 cents
   A list of the plants growing naturally in the vicinity of Sacramento, California. Included are 96 families and 660 species of ferns and seed plants, excluding the grasses and sedges.

4. Nature Notes from California State Redwood Parks by John B. Allard
   Illustrated by Julie K. Howard
   June 1, 1951 50 cents
   Stories and sketches of the plant and animal life of the Redwoods of Humboldt County. Check lists of the plants, birds, mammals, reptiles, and amphibians are included.

5. Key to the Lepidopterous Larvae found in Stored Foods in California by George T. Okumura
   June 10, 1951 25 cents
   A key with notes on the hosts, distribution, and morphological details of each species. This pamphlet should be useful to food inspectors and warehouse managers.

PUBLICATIONS IN PREPARATION

Handbooks on the Birds, Mammals, Fish, Reptiles, Amphibians, Insects, and Plants of the Sacramento area. Biological Studies of the Sacramento and American Rivers.
DEDICATION

To those who seek after
and thrill at finding a
new wild plant.

INTRODUCTION

This list has been compiled as a first step toward a
survey of the plant life of the Sacramento region. In-
formation has been derived from my personal herbarium
and field studies, from specimens found in the Sacramen-
to Junior College herbarium, and from my interpretation
of statements of distribution found in W.L. Jepson's
"Manual of the Flowering Plants of California."

For the reader's convenience I have indexed this pa-
per using the page numbers from "Jepson." This was done
as an easy approach to further available information on
each plant.

Since this is a check list of plants reputedly found
around Sacramento and vicinity, I make no claim that
every species listed herein will be found in this area.
Corrections are invited.

This list includes 96 families, and 660 species of
ferns and seed plants (except grasses and sedges) which
are thought to be included in the area bounded generally
by the Mokelumne River on the south, Davis on the west,
the Bear River on the north, and the upper limit of the
Upper Sonoran life zone on the east. This includes most
of Sacramento County, and parts of the counties of Yolo,
Placer, Eldorado, Sutter, and San Joaquin.

I extend my special thanks for advice and assistance
to Dr. Hubert O. Jenkins, Professor of Life Sciences
and Director of the Natural History Survey of the Sac-
ramento State College, Dr. Herbert F. Copeland, Profess-
or of Botany and Curator of the herbarium of the Sacra-
mento Junior College, Dr. Margery Anthony, Assistant
Professor of Biological Sciences, Chico State College,
and Mr. C.M. Goethe, Sacramento Naturalist.

I should like to thank the following students of
Sacramento State College who took part in this study:
Helen Braden, Marvin Delfendahl, Ruth Criqui, Bruce
Payne, C.C. Thomas, and Gerald M. Lanning. Cover
design and other illustrations by Julie K. Howard.
MAP OF CALIFORNIA INDICATING THE APPROXIMATE AREA COVERED IN THIS STUDY

OPHIOGLOSSACEAE — Adder's Tongue Family

Ophioglossum californicum Adder's Tongue

POLYPODIACEAE — Fern Family

Gymnogramme triangularis Gold Fern
Polypodium vulgare Licorice Fern var. occidentale
Adiantum capillus-veneris Common Maiden-Hair
Adiantum emarginatum Calif. Maiden-Hair
Pteris aquilina
var. languens
Cheilanthes californica Bird's Foot Fern
Pellaea ornithopus
Pellaea andromedaefolia Coffee Fern
Woodwardia radicans Chain Fern
Polystichum munitum Sword Fern var. nudatum

MARSILEACEAE — Marsilea Family

Pilularia americana Pill Wort

SALVINIACEAE — Salvinia Family

Azolla filiculoides Duckweed Fern

EQUISETACEAE — Horse-tail Family

Equisetum hyemale Common Sawing Rush var. californiense

SELAGINELLACEAE — Selaginella Family

Selaginella rupestris
var. hansenii

ISOETACEAE — Quillwort Family

Isocetes orcutti
<table>
<thead>
<tr>
<th>Family</th>
<th>Genus</th>
<th>Species</th>
<th>Page</th>
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<td>BETULACEAE - Birch</td>
<td>Alnus</td>
<td>Alnus rhombifolia</td>
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<td>FAGACEAE - Oak Family</td>
<td>Quercus lobata</td>
<td>Valley Oak</td>
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<td></td>
<td>Quercus douglasii</td>
<td>Blue Oak</td>
<td>273</td>
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<tr>
<td></td>
<td>Quercus kelloggii</td>
<td>Calif. Black Oak</td>
<td>276</td>
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<tr>
<td></td>
<td>Quercus wislizenii</td>
<td>Interior Live Oak</td>
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<td></td>
<td>Quercus morehus</td>
<td>Oracle Oak</td>
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<td>Urtica gracilis</td>
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<td>ver. heloeiseae</td>
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<td>Aristolochia californica</td>
<td>Dutchman's Pipe</td>
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<td>SAURURACEAE - Lizard-tail</td>
<td>Anemopsis californica</td>
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<td>Polygonum acre</td>
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<td>Rumex crispus</td>
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<td>Common Purslane</td>
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<td>Cerastium viscosum</td>
<td>Mouse-ear Chickweed</td>
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<td>Stellaria media</td>
<td>Common Chickweed</td>
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<td>Stellaria nitens</td>
<td>Shining Chickweed</td>
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LABIATAE - Mint Family

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Trichostema lanceolatum
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Scutellaria tuberosa
var. similis
Marrubium vulgare
Salvia acnomsensis
Pogogyne douglasii
Pogogyne ziziphoroides
Lamium amplexicaule
Monardella lanceolata
Monardella candidans
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SOLANACEAE - Nightshade Family

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Datura tatula
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FRANKENIACEAE - Frankonia Family

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NATURE NOTES FROM CALIFORNIA STATE REDWOOD PARKS

BY JOHN B. ALLARD

ILLUSTRATED BY JULIE K. HOWARD

PRICE 50¢
In the California north land
There is a spot sublime;
It's right next door to heaven,
A mystic holy shrine.

The towering trees reach upward
To pierce the ethereal blue,
And teach the aspiring soul of man
Where he may find the true.

And God's eternal spirit
Revealed within these trees,
Speaks to the weary souls of men
Of courage, faith, and peace.

Here come the tired pilgrims
From out life's noisy ways,
To find for souls a sweet release
Throughout the passing days.

There is within this sacred grove
The heart of God revealed,
And seeking men, embracing Him,
Are now forever healed.

Back to the busy marts of trade,
With new found strength, they go,
Their courage as the strength of ten,
And faces all aglow.

Oh lovely trees, Oh glorious forms,
To all our hearts so dear,
Inspire our souls through all the days,
Till we come back next year.

—Herbert Brooke
When the early morning dew is sparkling on the leaves
And the golden rays of sunlight are sifting through the trees
I stand in awe and the tears bedim my eye
As I gaze at God's cathedral in the Redwoods 'neath the sky.

—Jean Horn
When fires pass and leave their deep
Black scars within your soul, be strong
And silently reclaim your wounds
Until your faith avenges wrong.

Lift up your eyes, and match your soul
With these tall trees, that there remain
A monument of life that shall
Endure and make men hope again.

—M. G. Berglund

From The Secret Place, copyrighted by The Judson Press.
I long ago learned to love the Redwoods and all the folks that dwell therein. But in 1942-3-4 when my assignment was to serve as Nature Guide in Richardson Grove State Park, I came to know some of the finest in trees and folks. And of all the folks, none came finer than the Allard family. John B. Allard, with his two brothers and sister and parents, occupied a cabin adjoining the Park every summer. John grew up in an environment where he could not help but learn and love the ways of the forest and of the evening campfire. I recommend him most highly for the job he has undertaken in interpreting the life of the forest, and I have enjoyed watching his progress as he worked on this project while a student at the Sacramento State College.

Julie K. Howard came to us like a spirit from another world whose pen is a wand that makes loveliness unfold. She is responsible for the art work and design. From now on anyone in our department who is working on a publication is "counting on Julie."

The poetry is entirely by Richardson Grove visitors. Anyone who fears to let his spirit soar above the lesser things, had better stay away from the Park. The place is enchanted.

Hubert O. Jenkins, Professor of Life Sciences, Sacramento State College.

It took many years for the people of California to realize fully the importance of protecting the natural resources within her boundaries. A very material advance in public opinion was shown in 1928 when the voters approved the expansion of the State Park System by passing a bond issue of six million dollars to further the acquisition of land. These parks were to be accumulated through one-half State funds and one-half private funds or land of matching value.

The State Park Commission has the authority to purchase and preserve land for the enjoyment of present and future generations. The Division of Beaches and Parks in the Department of Natural Resources is the administrative agency responsible for carrying out the policies adopted by the commission for the development, operation, and protection of the park system. This division has expanded from a few employees to a well knit organization of nearly four hundred working together in a great conservation program. At the present time the Division of Beaches and Parks is responsible for the administration of more than 581,000 acres of land valued at almost twenty-nine million dollars.

The Save-the-Redwoods League has been of immeasurable value in conservation of the Redwoods, both by building up public interest and by actually raising funds and purchasing tracts of land valuable for State Park purposes for transfer to the State. Thus many fine groves that were threatened with destruction before the State could legally act were saved for the public.

The State through its Division of Forestry began purchasing tracts of Redwood forest for park purposes in southern Humboldt County as early as 1921. During the next ten years, land with an estimated value of three and a half million dollars was brought into the State Park System. Since 1931, land grants and monetary gifts from sources other than the State have more than doubled the acreage of the parks. The Redwood groves within the State Parks of Humboldt County alone now have a value of over six million dollars and include almost 30,000 acres. Every acre is well worth the money spent to preserve it.

Trees one thousand or more years old will not be replaced for many generations of man, and if all of the older trees are allowed to be cut, man might never again view one of these giants. Many lumber companies are replacing wasteful clear-cutting practices with scientific methods of selective cutting as provided for by the State Forest Practices Act. This practice has proved beneficial to all concerned in that it provides for future timber crops.

The Redwood belt would not be complete without the birds, mammals, reptiles, amphibians, flowers, trees, and shrubs that are associated with the giant Redwoods. Each of these helps to make the woods more beautiful and interesting. It is intended that this handbook will give the reader more of an idea of the natural wonders of the Redwood Parks in Humboldt County. If the reader understands the importance of his position in the conservation program, the material included herein will have accomplished its intended purpose.

I wish to acknowledge the advice and encouragement given by the Sacramento State College faculty, and particularly the departments of life sciences, art, and English. Dr. Hubert O. Jenkins, Professor of Life Sciences and former Nature Guide at Richardson Grove State Park, was a great help and inspiration. It was a pleasure to watch Julie Howard as she gave life to the pen which linked sketches on the scratchboard. I am deeply grateful to that devoted naturalist and humanitarian, Mr. C. M. Goethe, who has given so much of his self and substance toward promoting the ideals of State and National Parks, and who has had faith enough in this publication to aid materially in placing it before the public.

I hereby dedicate this booklet to that public, whose love for the Parks is the best guarantee that the Parks shall be forever preserved.

Park Naturalist, Richardson Grove State Park, 1951

John B. Allard
The one tree dominating all of the others in Humboldt County is the Redwood. This huge tree has very small leaves and cones, for neither is more than an inch in length. The leaves, or needles, are olive-green, flat, and have pointed ends. The oval cones are purplish-brown, less than an inch long, and about a half an inch wide. Under each scale of the cone are four or five seeds which are shed slowly and carried by the wind. The bark is reddish-brown and becomes deeply furrowed as the tree grows older. The bark on some of these Redwoods is more than a foot thick. Many other distinctive features could be described, but the best picture is the one seen through the eyes of a visitor of the park.

"Redwood" was the name given to these trees on October 10, 1769, by the Portola expedition when they saw some very tall, reddish colored trees. Since that time, when other groups have found the same trees, the identical name has been applied without any knowledge of its previous use.

Sequoia is the scientific name of the Redwoods. It was selected as a tribute to a half-breed Cherokee Indian, "Sequo-yah", who had developed an alphabet of eighty-six characters for use by his native tribe. He, by the way, never saw the trees which bear his name. Sempervirens, a Latin word literally meaning "always living", helps to describe the age attained by the Redwoods.

Another species of Sequoia is the Sierra Redwood or Big Tree which is found in a limited range in the Sierra Nevada. This Sequoia gigantea, as it is known scientifically, achieves a size unequaled by any other living thing in the world. Most of the Sierra Redwoods are within the boundaries of either State or National Parks, but their value as a lumber tree is not as great as that of the Coast Redwood. The Sierra Redwood has a foliage similar to that of the Juniper or Cypress and has a larger cone than the coastal variety. The age of the Sierra Redwood is greater than that of its brother, and some are reported to be about 4,000 years old. In the remainder of this book the name "Redwood" will be used to designate the trees of the Coast, not of the Sierras.

The Coast Redwoods are limited to an area from sea level to three thousand feet and within forty miles of the Pacific Ocean. The most abundant growth seems to appear within the fog belt, where excessive drying is prevented during California's rainless summers. The winters give the trees up to a hundred inches of rain, which keep them supplied with all important moisture. The Redwoods are found from Monterey County to the Oregon border with three small groves located in Curry County, Oregon.
The second most important lumber tree in Humboldt County is the DOUGLAS FIR. Many of these trees attain heights surpassed only by their neighbors, the Redwoods. The wood of this tree is sometimes sold as Oregon Pine, Red Fir, and Yellow Fir.

The Douglas Fir has thick, furrowed bark of a smoky-brown color. The needles, which grow around the branch, are usually deep blue-green and average about one inch long. The cones which hold the small winged seeds are from two to four and a half inches long. Conspicuous are the three-pointed bracts protruding beyond the cone scales.

This tree can be found mixed with the Redwood or in groves by itself. It favors moist mountain slopes but can stand somewhat drier conditions than the Redwood and there becomes dominant. The Redwood, however, responds so readily to the more moist conditions of the deeper canyons and the flats bordering the streams, that the Douglas Fir may there become crowded out completely.

The TANOAK grows from fifty to one hundred and fifty feet tall and can be distinguished by its reddish-brown bark, by its flowers, like those of the chestnut, and by its oak-like acorn seated in a cup that resembles the bur of a chestnut. This indicates that the Tanoak may be the connecting link between the oaks and chestnuts.

The bark of this tree is used commercially in the tanning industry. In many flats of the surrounding area the work of the bark-cutters may be seen. In these spots entire groves of Tanoaks have been stripped of their bark and left to die. The wood is an excellent hardwood, and a better conservation practice would be to utilize both bark and wood.

The leaves are about three inches long, with teeth on the edges, coming to a point at the end. On the under side of the leaves is a powdery substance which rubs off readily. The cup with its slender spreading scales holds the acorn of the Tanoak. Many times the Squirrels and Chipmunks remove all of the green acorns before they fall to the ground and store them for the winter.

The CALIFORNIA LAUREL, another inhabitant of the Redwood belt, has an odor similar to the bay leaves found in the kitchen of your home. The true bay, however, is an European tree. The wood of the Laurel is very hard and is almost impossible to split after it becomes dry. The long narrow dark green leaves and the dark reddish brown and scaly bark help to set this tree off from the others which surround it on the river flats and moist slopes. The many names given to this tree confuse a person who hears them at different times. The California Laurel is also known as Bay Tree, Pepperwood, and in Oregon it is called the Oregon Myrtle. A visitor to Oregon may hear the expression that this tree occurs "only in Oregon and in the Holy Land." It may be meant that California is the Holy Land, for the tree is distributed throughout California and southwestern Oregon.

The CANYON LIVE OAK, a full rounded tree with holly-like leaves, is found on the ridges, slopes, and canyons throughout the park. This tree has a smooth bark covering a very strong and close-grained wood considered the most valuable wood of the oak family in the West.

There are many other trees to be found quite frequently in the Redwood forest, and while not quite as prominent, they are just as important in making the park the beautiful spot it is.
The abundantly growing HUCKLEBERRY, which ranges from four to eight feet high, is found on many of the flats and north slopes in the Redwood belt. It forms much of the underbrush occupying the shaded portions of the ground under the tree-filled sky. The shiny leaves hide the black berries when they ripen toward the middle of July and throughout the month of August. These berries are eaten by many a deer, bird, squirrel, or other animal as well as by the campers who gather enough to make pies or some jam for their pancakes. Huckleberries are tart at first, almost disagreeably so, but after you eat a few, you find it hard to leave them alone.

Another conspicuous shrub in the company of the Redwoods is the POISON OAK. This plant grows in every form. It may be found as a very small plant growing only a few inches above the ground, as a shrub the size of a Huckleberry, or as a vine climbing into the heights of the trees. Some people seem to be immune to the poisonous juice of the plant. Still it is advisable to leave it alone. The leaves, appearing in threes, are round to ovate in shape and turn bright red in the late summer months. There are numerous remedies on sale for Poison Oak rash, but residents say that washing thoroughly with a strong laundry soap immediately after contacting Poison Oak is the best way to prevent the uncomfortable itching of the rash.

THE MANZANITA, another prominent shrub of the area, has very shiny red branches and light green leaves. The wood from these bushes is rarely found straight, and usually grows in a crooked, grotesque fashion. The little white or pinkish bell-shaped flowers become berries in the early summer. These green berries turn reddish brown toward the middle of August.

The flowering plants found under the Redwood trees are those most able to live without much sunlight. The principal plant of the forest floor is the REDWOOD SORREL. This clover-like plant thrives in the deep layer of leaf and twig mould which covers the ground immediately surrounding the base of each Redwood. The pink to purple colored blossoms add to the green of the leaves to make a beautiful carpet for the shady groves of giant trees.

The thin leaves of the STAR-FLOWER which spread out horizontally about six inches from the ground, take advantage of the pale sunbeams that filter through the tent of Redwood trees. Standing about an inch above the three leaves is the dainty flower resembling a six-pointed pink star. The blossoms gradually disappear in June, and only the early visitors enjoy these dainty pink flowers.

The COAST TRILLIUM, or Wake Robin, rises above the Redwood Sorrel and its shorter associates. This three-leaved plant grows from eight to twelve inches high on a naked stem. Just above the long pointed leaves stands the white flower of three petals, which turn to a deep rose later in the summer.

The small amount of sunlight that finally reaches the ground is welcomed by the INSIDE-OUT FLOWER, which attains a height of eight to ten inches. Although growing with the Sorrel, the Inside-out Flower stands above and absorbs all of the available rays of sun that are within its grasp.

The Mountain Iris, Alum Root, Glade Anemone, Slim and Fat Solomon, Redwood Violet, White-veined Shin-Leaf, Redwood Lily, and all of the others are helpful in adding more color to the carpet of green that completes the picture of the Redwood groves. All of this undergrowth seems insignificant when seen beside the gigantic Redwoods, really the rulers of the area. Each different plant has its own distinctive green shading, causing it to stand by itself even as it blends in with the world of living things in the groves. The combination of the plant and animal life makes these beautiful groves seem much closer to Heaven than any other spot in the world.
When walking down the river trail, one might hear a whistled "ki-ik, ki-ik, ki-ik," and, looking up, see a hawk-like bird with white underparts, hovering over a nest built of a pile of sticks stacked on the broken top of a Douglas Fir snag. This OSPREY, or Fish-hawk, is on his way to find a meal of fish. We find that he does not choose the trout that we would prefer, but rather selects one of the suckers from the large pools along the river. The Osprey selects these fish because they are much easier to catch than the fast moving trout.

One nest used by a pair of Ospreys has been occupied for many summers, and numerous nature-lovers at Richardson Grove have watched for and seen the young birds hatch there. These birds are some of the few Ospreys remaining in the area, and every precaution should be taken to insure the future campers an opportunity of witnessing the actions of this harmless and interesting bird.

We wonder, this year, if the Osprey Came back to raise its young On the old tree stump by the river's edge Where its morning cry was sung. —Mrs. L. Baird

Another bird you might see along the river is the SPOTTED SANDPIPER. This bird seems to teeter as it stands on the river bank. Even as it runs along you think that its legs are too delicate to hold the body because of the way it wavers between steps. The large round brown spots on its throat and breast and the "peet-weet" accompanying its flight over the water make it easy to identify. The flight pattern of the Spotted Sandpiper is very interesting in that its wings stroke only a few times. Then he soars with the help of very weak wing movements as he picks up the insects flying over the surface of the water.

The BLACK PHOEBE is the little black bird which seems to be always dressed in his best suit. Whether he is building his mud nest or catching mosquitoes for his dinner, he always is attired in a dress suit complete with the white vest. When you observe him, you might think that he is quite nervous because of the way he is always moving his head from side to side as he sits on his perch. This constant watching is a search for the little insects the Black Phoebe eats. The only vegetable matter he eats is the leaves or berries upon which the insects were feeding when they were caught.

The little Black Phoebe, who nests on the rocks along the river, helps to rid the Redwood groves of the gnats and mosquitoes that would be very plentiful if he, as well as many other birds, were not always on the job.

If you are awakened in the morning by a squawking that could alarm the entire camp, you have been formally introduced to the STELLER JAY. The crest of this large bird added to its deep blue-black color makes it very conspicuous as it hops upward from limb to limb only to sail down and hop back up again.

Aside from table crumbs, the Steller Jay feeds largely on seeds, acorns, and berries with an occasional bird's egg to add variety to its diet. Some of his food, as you will see in reading about the Chipmunk, comes from the hiding places of this little mammal. The Steller Jay has been accused of stealing great quantities of food, but it will probably never try to take more than a slice of bread, a pancake, or a cookie that was left on your table. After all, he was there before the campers, so why is he not entitled to a little pay for the rent of his home?
If you ever see a little bird with a chestnut back and a dark brown cap, you have observed the CHESTNUT-BACKED CHICKADEE. This Chickadee is one of the few birds that likes to hang from a branch rather than sit on it. He spends hours head down either on the side of the trunk or hanging from one of the lower limbs. The Chestnut-backed Chickadee flits about in the sections of the tree which are out of view of the ground, but on those occasions when he comes down, he is extremely interesting to anyone who watches his acrobatics. This bird, like many of the others, spends most of his time picking out the insects found on the trees and shrubs of the area.

Many times during the summer one will see ducks on the water, though seldom in the swimming area. The ducks, which always appear in pairs, are the AMERICAN MERGANSERS. The male is a large bird with a black back, a black head, and a brilliant scarlet bill, making him very easy to identify. The mergansers feed largely on trash or slow-moving fish, crustaceans, and other living matter found in the water.

If you ever happen to notice a little bird with white neck and underparts clinging to the bark of a tree, you have seen the BROWN CREEPER. This little bird climbs the tree in its original spiral fashion as it picks insects or their eggs from the crevices in the bark. Only as it flutters to the bottom of the next tree to repeat its performance are you able to see the white of its body because while clinging closely to the tree, he seems to become a part of the bark.

An interesting practice of the Creeper is to make use of his tail as a brace as he pecks for insects. As he clings to the tree, he sings his song between pecks. He has a faint call, and only when you listen carefully can you hear his lisping voice.

When the trail comes to a flat of huckleberry bushes, you might see something rummaging around in the dead leaves and notice a little bird dive into the underbrush. If you were very observing, you saw the characteristic reddish-brown sides, white belly, black head, tail, and neck of this bird. In a few moments this SPOTTED TOWHEE will appear at some distant point scolding you for bothering him in his search for food. The fact that he spends most of his time under the cover of a bush will cause a stranger in the park to mistake him for a chipmunk as he scratches for berries, seeds, and insects. Always disturbed by any passerby, the Towhee seems to resent completely the presence of those who trespass on his happy hunting ground, and he makes it his practice to let you know how he feels too.

The OREGON JUNCO can easily be identified by the flash of its white outer tail feathers as it flies into the lower branches of a nearby tree as soon as you approach its feeding ground. Its blackish head and neck and its flesh-colored bill make it hard to find as it blends in with the surroundings. Wherever the Junco nests, usually close to the ground, he greatly objects to being disturbed and will flutter about in anxiety until the intruder leaves.

The light quavering trill of the Oregon Junco can be heard as he hops about on the ground in search of the seeds and insects which comprise his diet. His movements suggest that he is very nervous, but he seems to be as willing to become friendly with campers as do any of the birds of the park.
The BATS, found in abundance in the Redwood groves, are of many species. These little mammals live in many of the burned out trees as well as in attics of buildings. Their ability to fly, unique among the mammals, is owing to the fact that they are equipped with four long fingers on their front legs between which is stretched a very thin membrane. This membrane extends along the side of the body between the front and hind legs. The hind toes enable the bat to suspend itself in a restful hanging position.

Bats are not as frightening as they may seem to be. The blood-lapping vampire and fruit-eating bats are not found in the United States, but in South America. Very few bats have ever become entangled in women's hair, and the fault was in every case in the human and not the bat.

These little mammals are great insect eaters, and their very sensitive eyes and ears enable them to fly extremely close to structures without so much as touching them with the tip of the wing. He is able to fly between objects by sending out a shrill squeak resembling a radar signal.

The RACCOON is an animal that will seldom be seen by park visitors, although its baby-like tracks may be found in great numbers. The alternating black and gray stripes around the tail and the black mask it seems to wear between the white stripes on its face give this gray mammal a very distinctive place in the animal world.

Dogs are very often able to sneak up on animals and catch them, but the Coon, as it is sometimes called, has very good eyesight and will always see the dog first and seek shelter immediately. This shelter is usually the upper limbs of a tree. A Coon is inclined to be much more fearful of dogs than of men.

A young Raccoon makes a good pet. You may not be able to handle him safely at first, but he will become very attached to "his master" after he has been tamed.

The Coon usually washes his food before eating it, and while eating he, like the Chipmunk, makes excellent use of his hands. His meals consist of frogs, mice, fish, corn, berries, eggs, insects, and melons. Whenever possible he carefully immerses these items in water before he partakes of them.

The SKUNK, a cat-like animal, is unmistakably identifiable by its black and white fur. Each skunk possesses a powerful weapon which is unequalled by any other animal large or small. This means of protection is hidden at the base of the skunk's tail. When the fine yellow particles are emitted, they may be detected for many miles under favorable weather conditions. The skunk does not immediately send out this acrid scent when confronted by an enemy; he may strike the ground with his forefeet, rush at his enemy, or go through other performances such as doing a handstand before actually spraying the tormentor. The Spotted Skunk in the illustration is demonstrating this handstand. He has his back legs in the air, and his tail, in a white plume, is all fluffed up to let the intruder know that if he does not depart now, he will wish he had.

Although the Skunk is intensely disagreeable to anyone who encounters his spray, he is beneficial to all others. He eats grasshoppers, beetles, grubs, and rodents which are harmful to farmers as well as campers.

Many children have thoroughly enjoyed playing with a Skunk whose scent glands have been removed by a competent veterinarian, but a close relationship with the untreated variety is not advisable for anyone with a sensitive nose.
The CHIPMUNKS of the park are a joy to everyone who has ever seen them at work. This mammal is easily identified by the four light longitudinal stripes separated by similar darker stripes which run down its back. In addition to these, there are stripes on the sides of the head of the Chipmunk. The Douglas Squirrel, often confused with the Chipmunk, does not have all of these outstanding markings.

The little Chipmunk has a pocket inside of each cheek for the purpose of carrying food. These little creatures are given credit for much of the natural reforestation because of their practice of storing food in little holes in the forest floor. Each load of food is cached in a different hole that is covered to avoid loss to other animals or birds. Many of these seeds are not recovered and grow into trees.

Mrs. W. S. Conner of Madera, while visiting Richardson Grove, observed a Chipmunk hiding its load of seeds in a little hole thinking that it would be safe until the winter months. Very carefully the Chipmunk cached its food away unaware of a Steller Jay who was watching from his vantage point on a limb of a nearby tree. Little Mr. Chipmunk covered the hole carefully and scampered off for another load when the Steller Jay sailed down, scraped away the covering, and enjoyed a meal of seeds. It is because of things such as this that the Chipmunk must bury many more seeds than he will be able to eat during the winter.

When a green Douglas Fir cone falls at your feet, and you look up, you may see a DOUGLAS SQUIRREL on the limb above. The practice of cutting cones keeps the Chickaree, another name for the Douglas Squirrel, busy every morning during the summer months. After he has several cones on the ground, he comes down, strips the scales off, and removes the seeds. Like the Chipmunk, he harvests enough seeds and nuts during the summer to last all winter. The Chickaree spends a great deal of its time in the trees and finds it necessary to come to the ground only to cache his food or to drink.

The Douglas Squirrel has a dark brown back separated by a darker line from the gray or reddish underparts. The coloration and the larger size distinguish it from the Chipmunk.

The BLACK-TAILED DEER is the only Deer in this vicinity. In the evening as the sun leaves the river the Deer come out of the woods to get their daily drink. Many times during the summer Deer are seen feeding on huckleberry bushes in the parks. In addition to huckleberry greens and berries, the Deer eat acorns, grasses, and the tips of trees and shrubs.

The spotted fawns are never seen far from their mothers. The completely black tail, typical of this species, is raised when this deer becomes frightened. Needless to say, Deer and all other living things, are protected in the State Parks, and it should become the responsibility of every visitor to see that no harm will come to them.

The ROOSEVELT ELK, a close relative of the Black-tailed Deer, can be seen if you travel north. In Prairie Creek Redwoods State Park the largest remaining herd of Roosevelt Elk in California may be watched from the highway. This Elk, while much larger than the Black-tailed Deer, is similar in many ways. Every visitor to this area should realize the importance of preserving this diminishing herd and should take every precaution to see that the Roosevelt Elk are not lost to those who would kill them all.
REPTILES

The CALIFORNIA KING SNAKE may be seen at times in the park area. This snake is clearly marked with white stripes alternated with black. The black bands are about twice as wide as the white ones.

The fact that the King Snake is immune to the poison of the Rattlesnakes makes him a friend of man. The King Snake, usually about three feet long, may attract and kill snakes much larger than himself. After killing his prey, he eats the entire snake, as he is doing to the Rattlesnake in the illustration. The King Snake is willing to fight any snake, but he will not go out of his way to start a fight. He is very quiet and spends most of his time searching for food. Birds, mammals, eggs, or other snakes make up his entire menu.

The California King Snake lays about ten eggs in the early summer on the ground or buried under trash or brush. After the five or six weeks incubation period, the young hatch, and from the beginning they hunt for their own food and shelter.

Pacific Rattlesnake

From Amphibians and Reptiles of the Pacific States, by Gayle Pickwell. With the permission of the author and the publishers, Stanford University Press.

The only poisonous snake found in the vicinity is the PACIFIC RATTLESNAKE. It is a ground color, sometimes black, with white markings on its back. The most outstanding characteristic of this snake is its rattle. This rattle is made up of a series of segments loosely hooked together to form a string. The number of rattles has no connection with the age of the snake because the segments become worn and break off as it crawls. A new segment is added each time the skin is shed, and this process may occur three or four times a year. The rattle is shaken from side to side when the snake becomes nervous or angry.

This snake is not an inhabitant of the wooded area, but may be seen while hiking in the clearings. The Pacific Rattlesnake feeds on mice, rats, or other small mammals. The prey is killed through the use of poison, then swallowed in the typical head-first manner. The young snakes, born in broods of about ten, are an average of thirteen inches long.

The GARTER SNAKE, or Water Snake as it is known by many of the visitors of the area, is usually found near the river. The snake is usually about two feet long but varies from six inches to three feet. The young are born in the late summer, and many of them may be seen swimming during their early days. The Garter Snake is harmless, but many people are frightened by the sight of him.

The food of the Water Snake consists of frogs, toads, salamanders, earthworms, crayfish, insects, and small mammals found in the vicinity of the river. These snakes have no poison glands, but they may strike viciously when captured or frightened.

The Garter Snake usually has a central light-colored stripe down its back bordered by a darker band on each side. This snake moves very fast and can swim under water for great distances.

AMPHIBIANS

One of the interesting little creatures found either in the water or in damp places is the SALAMANDER. Many people believe that these amphibians are poisonous and should be destroyed but there is no basis for this opinion. There are many varieties of Salamanders in the area, but they are all similar in outward appearance. Most of them are dark on the upper side, and some have a beautiful orange underside. Their strong jaws allow them to hold anything that comes within reach of their tongue. The Salamander catches its food by directing his quick-moving tongue toward any insects nearby.
This list was taken from a thorough inspection of the literature available concerning the Redwood Belt of southern Humboldt County. The method of listing the families follows "A Manual of the Flowering Plants of California" by Willis Linn Jepson. It was found necessary to omit the grasses and sedges because of the many inconspicuous plants which are included in these families. The Check List includes only those plants which are most prominent in the summer months.

**Fern Family — POLYPODIACEAE**
- Athyrium filix-femina
- Polypodium vulgare
- Adiantum capillus-veneris
- Adiantum emarginatum
- Adiantum pedatum
- Pteris aquilina
- Lomaria spinicant
- Woodwardia radicans
- Athyrium filix-femina
- Polystichum munitum
- Aspidium spinulosum
- Cystopteris fragilis
- Equisetum hyemale

**Redwood Family — TAXODIACEAE**
- Sequoia sempervirens

**Cypress Family — CUPRESSACEAE**
- Libocedrus decurrens
- Chamaecyparis lawsoniana

**Cedar, Incense**
- Libocedrus decurrens
- Chamaecyparis lawsoniana

**Pine Family — PINACEAE**
- Pinus contorta

**Yew Family — TAXACEAE**
- Taxus brevifolia

**Yew, Western**
- Taxus brevifolia
- Pinus contorta

**Lily, Fire**
- Xerophyllum tenax
- Brodiaea laxa

**Lily, Fire, Gold**
- Brodiaea laxa
- Calochortus pulchellus
- Erithronium californicum

**Fairy Bells**
- Disporum hookeri
- Disporum smithii

**Fairy Lantern**
- Smilacina sessilifo/ia
- Achninephyllum minus

**Fat Solomon**
- Smilacina sessilifo/ia

**Fat Solomon, Oregon**
- Maintherum bifolium

**Coltsfoot, Oregon**
- Maintherum bifolium
- Clintonia borealis
- Clintonia uniflora

**Slinkfoot**
- Scalopus bigelovii

**Trillium, Common**
- Trillium sessile
- Trillium ovatum

**Coast Iris Family — IRIDACEAE**
- Iris douglasiana

**Iris, Mountain**
- Iris douglasiana

**Orchid Family — ORCHIDACEAE**
- Calypso bulbosa
- Habenaria unialata
- Epipactis gigantea
- Cephalanthera austiniae

**Calypso**
- Calypso bulbosa
- Habenaria unialata
- Epipactis gigantea
- Cephalanthera austiniae

**Choral Root**
- Corallorrhiza maculata
"The Distribution of the Birds of California" by Joseph Grinnell and Alden H. Miller was used as the pattern for the listing of the birds found in the area covered by the plant check list. The birds which are found in the locality during the summer months were the only ones listed; the addition of the winter birds would have made the list longer and less effective. Those birds which are extremely rare were also omitted.

**BIRD CHECK LIST**

Heron and Bittern Family — ARDEIDAE

- Great Blue Heron: *Ardea herodias*
- Egret: *Casmerodius albus*

Duck, Goose, and Swan Family — ANATIDAE

- Merganser, American: *Mergus merganser*
- New World Vulture Family — CATHARTIDAE
- Turkey Vulture: *Cathartes aura*

Hawk and Eagle Family — ACCIPITRIDAE

- Goshawk: *Accipiter gentilis*
- Sharp-Shinned Hawk: *Accipiter striatus*
- Red-Tailed Hawk: *Buteo jamaicensis*
- Bold Eagle: *Haliaeetus leucocephalus*

Osprey Family — PANDIONIDAE

- Osprey: *Pandion haliaetus*

Grouse Family — TETRAONIDAE

- Sooty Grouse: *Perdix fuliginosus*
- Ruffed Grouse: *Bonasa umbellus*

Quail Family — PHASIANIDAE

- Mountain Quail: *Orioperdix californica*

Pigeon and Dove Family — COLUMBIDAE

- Band-Tailed Pigeon: *Columba fasciata*

Horned Owl Family — STRIGIDAE

- Screech Owl: *Otus asio*
- Barn Owl: *Tyto alba*

Nuthatch Family — SITTIDAE

- Red-Breasted Nuthatch: *Sitta canadensis*

Tanager Family — THRAUPIDAE

- Black-throated Gray Warbler: *Dendroica nigrescens*

Finch and Sparrow Family — FRINGILLIDAE

- Pine Siskin: *Spinus pinus*
- House Finch: *Carpodacus mexicanus*

**Swallow Family — HIRUNDINIDAE**

- Violet-Green Swallow: *Tachycineta thalassina*
- Bank Swallow: *Riparia riparia*
- Cliff Swallow: *Petrochelidon albigrans*
- Progne subis

**Martin, Purple Martin: *Progne subis***

**Jay and Crow Family — CORVIDAE**

- Steller’s Jay: *Cyanocitta stelleri*
- California Jay: *Aphelocoma californica*

**Raven Family**

- Common Raven: *Corvus corax*
- Tame Raven: *Corvus brachyrhynchos*

**Goatsucker Family — CAPRIMULGIDAE**

- Brown Creeper: *Certhia familiaris*

**Towhee Family**

- Green-tailed Towhee: *Pipilo chlorura*
- Spotted Towhee: *Pipilo maculatus*

**Wren-Tit Family — CHAMAEDINIDAE**

- Wren-Tit: *Chamaea fasciata*

**Flycatcher Family — TYRANNIDAE**

- Say’s Phoebe: *Sayornis saya*
- Western Meadowlark: *Sturnella neglecta*

**Thrush Family — TURDIDAE**

- Red-breasted Nuthatch: *Sitta canadensis*
- Hermit Thrush: *Hylocichla guttata*
- Yellow-bellied Sapsucker: *Sphyrapicus varius*

**Mockingbird and Thrasher Family — MIMIDAE**

- Eastern Phoebe: *Sayornis phoebe*
- Bewick’s Wren: *Thryothorus bewickii*
- California Towhee: *Pipilo crassirostris*

**Flycatcher Family — TYRANNIDAE**

- Western Kingbird: *Tyrannus verticalis*
- House Wren: *Troglodytes aedon*

**Sparrow Family**

- Chipping Sparrow: *Spizella passerina*
- House Sparrow: *Passer domesticus*

**Leaomark**

- California Towhee: *Oporornis tolmiei*
- American Dipper: *Cinclus mexicanus*

**Wren-Tit Family**

- Canyon Wren: *Thryothorus elegans*
- Rock Wren: *Salpinctes obsoletus*

**Sparrow Family**

- Gray-crowned Rosy-Finch: *Carpodacus erythrinus*
- Rock Wren: *Thryothorus borealis*

**Flycatcher Family — TYRANNIDAE**

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- Western Meadowlark: *Sturnella neglecta*

**Thrush Family — TURDIDAE**

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- House Sparrow: *Passer domesticus*
MAMMAL CHECK LIST

“Mammals of California” by Lloyd Glenn Ingles was used as the authority for the range locality of the mammals included in this check-list.

Mole, Townsend
Wood
Shrew-Mole
Shrew, Trowbridge Pacific
Water
Marsh
Myotis, Big
Yuma
Hairy-winged
Long-eared
Bat, Silvery-haired
Big Brown
Hoary
Long-eared
Pallid
Raccoon
Fisher
Ermine
Weasel, Long-tailed
Mink
Otter, River
Skunk, Spotted
Striped
Lion, Mountain
Bobcat
Chipmunk, Townsend Sonoma
Squirrel, Beechy Ground
Squirrel, Douglas
Gray
Flying
Gopher, Pocket
Mouse, Harvest
Deer
Rat, Wood
Mouse, Lemming
Red Tree
Red-backed
Long-tailed Meadow
Oregon Meadow
Rat, Black
Mouse, House
Beaver, Mountain
Mouse, Jumping
Porcupine
Rabbit, Brush
Elk, Roosevelt
Deer, Black-tailed

Mole, Townsend
Wood
Shrew-Mole
Shrew, Trowbridge Pacific
Water
Marsh
Myotis, Big
Yuma
Hairy-winged
Long-eared
Bat, Silvery-haired
Big Brown
Hoary
Long-eared
Pallid
Raccoon
Fisher
Ermine
Weasel, Long-tailed
Mink
Otter, River
Skunk, Spotted
Striped
Lion, Mountain
Bobcat
Chipmunk, Townsend Sonoma
Squirrel, Beechy Ground
Squirrel, Douglas
Gray
Flying
Gopher, Pocket
Mouse, Harvest
Deer
Rat, Wood
Mouse, Lemming
Red Tree
Red-backed
Long-tailed Meadow
Oregon Meadow
Rat, Black
Mouse, House
Beaver, Mountain
Mouse, Jumping
Porcupine
Rabbit, Brush
Elk, Roosevelt
Deer, Black-tailed

REPTILE CHECK LIST

Lizard, Leopard
Western Fence
Swift, Small Scaled
Skink, Western
Lizard, Whiptail
Alligator
Rough-scaled Alligator
Snake, Rubber
Ring-necked
Racer, Blue
Pacific
Snake, Gopher
California King
Coral King
Sharp-tailed
Narrow-headed Garter
Pacific Garter
Spotted Night
Rattlesnake, Pacific
Turtle, Pacific Mud

Gambelia wislizenii
Sceloporus occidentalis
Sceloporus graciosus
Eumeces skiltonianus
Cnemidophorus tesselatus
Gerrhonotus coeruleus
Gerrhonotus multicaudatus
Charina bottae
Diadophis amabilis
Coluber constrictor
Coluber lateralis
Pituophis catenifer
Lampropeltis getulus
Lampropeltis multicincta
Contia tenuis
Thamnophis ordinoides
Thamnophis sirtalis
Hyalocryptophis ochrachat
Crotalus viridis
Clemmys marmorata

AMPHIBIAN CHECK LIST

Newt, Oregon
Western Red-bellied California
Salamander, Pacific Giant
Olympic
Long-toed
Tiger
Northwestern
Red
Slender
Rusty
Black
Arboreal

Toad, American Ribbed
Western
Tree-toad, Pacific
Frog, Red-legged
Yellow-legged
Western Spotted
Bullfrog

Triturus granulosus
Triturus rivularis
Triturus torosus
Dicamptodon ensatus
Rhynchohydrids olympicus
Ambystoma macrolepidopterum
Ambystoma tigrinum
Ambystoma gracile
Ensatina eschscholtzii
Batrachoseps attenuatus
Aneides ferreus
Aneides flavipunctatus
Aneides lugubris
Ascaphus truei
Bufo boreas
Hyla regilla
Rana aurora
Rana boylii
Rana pretiosa
Rana catesbeiana
KEY TO THE LEPIDOPTEROUS LARVAE
FOUND IN STORED FOODS
IN CALIFORNIA

By
George T. Okumura

SACRAMENTO STATE COLLEGE PUBLICATIONS
June 10, 1951   Natural History Series   Number 5
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HUBERT O. JENKINS, Professor of Life Sciences, Editor

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INTRODUCTION

The following key and information is intended to assist entomologists in recognizing the lepidopterous larvae in stored foods.

Many of the drawings are diagrammatic and complete in detail only to the extent necessary. The mandibles are drawn only for species which may be confused with others or for species with unusual structures. The mandibles of Ephestia cautella (Wlk.) and E. elutella (Hbn.) are so similar to each other with no important characters serving for identification, that the mandibles of these species are not drawn.

When examining setal charts showing lateral views, the head of the larva is left of the observer; and in dorsal views, the head is toward the observer.

When using this key, one must take into consideration the host and distribution as important factors in final determination of the specimen. Also, one must bear in mind that some of the characters given in this key may not completely fit the description of certain correctly determined species because of variation; for example, seta VI on the 9th abdominal segment of Carpocapsa pomonella (L.) may occasionally be on the same pinaculum with setae IV and V whereas normally it is on a separate pinaculum. Also, the mandible may not identically match the drawings because the teeth may be broken or worn down.

We, in the Insect Identification Office of the California Department of Agriculture, have adopted the Roman numeral system in designating the caterpillar body setae since this system is far easier to understand and use than the Greek letter system.

Many of the terms in the glossary were obtained from Torre-Bueno's "A Glossary of Entomology" and Alvah Peterson's "Larvae of Insects".

ACKNOWLEDGMENTS

I want to express my thanks to the Mary Glide Goethe Memorial Fund for making this publication possible. I am also indebted to Professors Hubert O. Jenkins and Carl E. Ludwig of Sacramento State College for their general guidance and criticisms, and to the following members of the California State Department of Agriculture, Bureau of Entomology: Mr. Hartford H. Keifer, systematic entomologist, under whose supervision this problem was performed, and who, furthermore, carefully modified this key, as well as critically reviewed the paper; Mr. H. M. Armitage, Chief, for reading the present manuscript and offering certain constructive changes; Messrs. Peter C. Ting and Howard L. McKenzie, systematic entomologists, for their assistance in the routine work in preparation of this paper.

I am further indebted to the California State Department of Agriculture for the loan of specimens and of data in regard to the distribution and hosts of the lepidopterous larvae in California.
GLOSSARY

Adfrontal suture: The sutures separating the adfrontal sclerites or areas from the epicranium.
Anal prolegs: The prolegs on the last abdominal segment.
Asperities: Surface roughenings or dotlike elevations.
Biordinal crotchets: Crotchets having a uniserial circle of two lengths, alternately.
Crotchet(s): One of the series of sclerotized hooklike, cuticular structures, usually arranged in rows or circles on the prolegs of lepidopterous and other larvae.
Cuticle: Outer covering of an insect.
Dorsal: Of or belonging to the upper surface.
Epicranial suture: The suture which usually separates the two epicranial plates on the dorsal surface of the head.
Front: Area on the head enclosed by the smallest of the two inverted V.
Median adfrontal suture: Suture between the apexes of the adfrontal sutures and the front.
Mesothorax: The second segment of the thorax bearing, when present, the second pair of thoracic legs.
Metathorax: The third segment of the thorax bearing, when present, the third pair of legs.
Ocellus(i): Simple eyes of larvae on the sides of the head.
Papilla(ae): A soft minute elevation.
Peritreme: Any sclerite about a body opening.
Pinaculum(a): A seta-bearing plate thicker than the surrounding cuticle.
Prespiracular wart: Sclerotized seta-bearing area in front of prothoracic spiracle.
Proleg: A fleshy abdominal leg with or without crotchets.
Prothoracic shield: The chitinous plate on the prothorax just behind the head.
Prothoracic spiracle: Spiralke on the prothorax.
Prothorax: The first segment of the thorax bearing, when present, the first pair of legs.
Sclerites: Any sclerotized (hardened) portion of a body wall frequently in part bounded by sutures.
Sclerotized: Hardened by the deposit of sclerotin or hardening substances.
Seta(ae): A sclerotized hairlike projection of cuticula arising from a single trichogen cell and surrounded at the base by a small cuticular ring.
Spiracle: A breathing pore.
Suranal plate: Usually a rather heavily sclerotized area on the dorsum of the last abdominal segment.
Suture: A seam or line separating two adjacent sclerities of the body wall or appendages.
Thorax: The second or intermediate region of the insect body bearing the true legs; area between head and abdomen.
Uniordinal crotchets: Said of crotchets when they are arranged in a single row and are of a single length throughout or somewhat shorter towards the ends of the row; opposed to biordinal.
Ventral: Pertaining to the under-surface of abdomen.
Vertical triangle: The thinly sclerotized dorsal area bounded laterad by the caudal projections of the head capsule and caudad by the prothorax.
This study is divided into two sections. The first portion presents a dichotomous key to species of larvae found in stored foods in California. The second part includes notes on hosts and distribution as well as additional morphological details of each of the larvae mentioned in the key. This data is arranged according to lepidopterous families with their included species.

1. Three setae on prespiracular wart of prothorax (A); no sclerotized rings or crescent-shaped plates around setae III on 8th abdominal segment (B) ...

2. Two setae on prespiracular wart of prothorax (C); sclerotized rings or crescent-shaped plates around setae III of 8th abdominal segment (D); (Pyralis farinalis (L.) and Aglossa caprealis (Hbn.) usually have obscure rings) .....6

3. (1) Prolegs rudimentary with 3 or 4 obscure crotchets each (E) Sitotroga cerealella (Oliv.) Angoumois grain moth.

Prolegs long with more than 4 crotchets each (F) .........................3

3. (2) Setae IV and V of proleg-bearing segments widely separated (G) Nemapagon granella (L.) European grain moth.

Setae IV and V of proleg-bearing segments adjacent (H) ..................4

4. (3) Setae II of 9th abdominal segment not on a sclerotized plate (I); crotchets uniordinal, sometimes unevenly biordinal. Pyrodercus rileyi (Wlsm.) scavenger worm.

Setae II of 9th abdominal segment on a sclerotized plate (J); crotchets always uniordinal .............5

5. (4) Setae IV, V, and VI of 9th abdominal segment always on same pinaculum (K); head clear reddish brown and slightly mottled. Melissopus latiferreanus (Wlsm.) Filbertworm.

Setae IV, V, and VI of 9th abdominal segment not on same pinaculum; seta VI usually on separate pinaculum (L); head deep brown and greatly mottled. Carpocapsa pomonella (L). Codling moth.

6. (1) Sclerotized rings or crescent-shaped plates around setae III of mesothorax (M) .........................7

No sclerotized rings or crescent-shaped plates around setae III of mesothorax ..................12


More or less complete sclerotized rings around setae III of mesothoracic and 8th abdominal segments ............8
8.(7) No setae on abdominal segments 1 to 7 arising from distinct pinacula (N).

*Plodia interpunctella* (Hbn.) Indian-meal moth.

Setae arising from distinct and usually well colored pinacula on abdominal segments 1 to 7 (O) .......... 9

9.(8) Diameter of prothoracic spiracle is less than the distance between prespiracular group setae IV and V (P); spiracle of the 8th abdominal segment is smaller than the membranous area enclosed by sclerite of seta III (Q).

*Ephestia elutella* (Hbn.) Tobacco moth.

Diameter of prothoracic spiracle is equal to or greater than the distance between prespiracular group setae IV and V (R); spiracle of 8th abdominal segment is equal to or greater than the membranous area enclosed by sclerite of seta III (S) .......... 10

10.(9) Distance between seta IIIa and the spiracle of the 8th abdominal segment equal to or less than the diameter of the spiracle (T)..... *Ephestia cautella* (Wlkr.) Almond moth. *Ephestia figulilella* Greg. Raisin moth.

Distance between seta IIIa and spiracle of the 8th abdominal segment greater than the diameter of the spiracle (U) .......... 11

11.(10) Setae I of 6th abdominal segment closer to each other than setae II (V)..... *Vitula serratineella* Rag. Dried fruit moth.

Setae II of 6th abdominal segment same distance as between setae I, or somewhat closer together (W)..... *Ephestia kuhniella* Zell. Mediterranean flour moth.

12.(6) Sclerotized rings around setae III of 1st and 8th abdominal segments. *Aphomia gularis* (Zell.) Dried prune moth.

Sclerotized rings around setae III of 8th abdominal segment only; rings usually obscure .......... 13

13.(12) Length of median adfrontal suture approximately equal to that of epicranial suture (X); 4 visible ocelli. *Pyralis farinalis* (L.) Meal moth.

Length of median adfrontal suture approximately ¼ that of epicranial suture (Y); 6 visible ocelli. *Agloosa capreaalis* (Hbn.). Murky meal caterpillar.

*See page 10 for difference between *Ephestia cautella* (Wlkr.) and *Ephestia figulilella* Greg.
**FAMILY COSMOPTERGYIDAE**

*Pyroderces rileyi* (Wlsm.)

**Stored Foods**
Corn and dried fruits.

**Distribution**
Southern California; especially coastal.

**Description**
When mature approximately 7 mm. in length with pink or reddish body and pale brown head. Adfrontal sutures extending to vertical triangle; front extending about ⅛ to vertical triangle. Prespiracular wart with 3 setae. Crotchets on abdominal prolegs usually uniordinal and occasionally unevenly biordinal; setae II of 9th abdominal segment not on a sclerotized plate; abdominal setae IV and V adjacent; seta III of 8th abdominal segment in front of spiracle.

**FAMILY GALLERIDAE**

*Aphomia gularis* (Zell.)

**Stored Food**
Dried fruits.

**Distribution**
San Francisco Bay Region.

**Description**
Approximately 25 mm. long with white to grayish-white body. Thorax and body with microscopic asperities. Epicranial suture nearly twice as long as median adfrontal suture. Perspiracular wart with 2 setae. Crotchets on abdominal prolegs usually uniordinal and occasionally unevenly biordinal; setae II of 9th abdominal segment not on a sclerotized plate; abdominal setae IV and V adjacent; seta III of 8th abdominal segment in front of spiracle.

**FAMILY GELECHIIDAE**

*Sitotroga cerealella* (Oliv.)

**Stored Foods**
Barley, beans, corn, cowpeas, Japanese buckwheat, sorghums, and wheat.

**Distribution**
Throughout most of California.

**Description**
Larva white and about 5 mm. in length with yellow to brown head and poorly developed abdominal prolegs. Larva usually found inside of grain. Thorax much stouter than abdomen and with short thoracic legs. Perspiracular wart with 3 setae. Each indistinct proleg usually with 3 or 4 crotchets.

**FAMILY OLETHREUTIDAE**

*Coropacapa pomonella* (L.)*

**Stored Foods**
Barley, beans, corn, cowpeas, Japanese buckwheat, sorghums, and wheat.

**Distribution**
Throughout California.

**Description**
When mature about 20 mm. in length with dirty-white or pinkish-white body. Head with black mottling and stripes; adfrontal sutures reaching vertical triangle and front extending approximately ⅛ to vertical triangle. Prespiracular wart with 3 setae. Pinacula prominent on body; crotchets uniordinal; setae II of 9th abdominal segment on same pinaculum; setae VI not on same pinaculum with setae IV and V; suranal plate usually with flecks.

*Carpocapsa pomonella* and *Melissopus latiferreanus* larvae are sometimes found infesting nuts in warehouses, although normally such nuts are believed to be infested in the field prior to storage.
FAMILY PHYCITIDAE

Since the four species of the genus Ephesia Guenee mentioned in this paper are very similar to each other, except for some parts of the characters noted in the key, a general description will suffice.

Ephestia cautela (Wilkr.)
Stored Foods: Almond moth
Cereal products, dried fruits, and nuts.
Distribution: Central and Southern California.

Ephestia elutella (Hbn.)
Stored Foods: Tobacco moth
Beans, cereal and cereal products, chocolate, cocoa beans, coffee, dried fruits, nuts, pepper, and spices.
Distribution: Throughout California.

Ephestia figulilella Greg.
Stored Foods: Raisin moth
Cereal products, dried fruits, nuts.
Distribution: Throughout California.

Ephestia kuhniella Zell.
Stored Foods: Mediterranean flour moth
Bran, candies, cereals, corn, dried fruits, flour, nuts, and wheat.
Distribution: Throughout California.

Cuticle white to pinkish. Front extending half of distance to vertical triangle. Two setae on prespiracular wart of prothorax; mesothoracic and 8th abdominal segments with sclerotized rings enclosing a membranous area around bases of setae III. Crotchets biordinal.

Ephestia cautela (Wilkr.) and E. figulilella Greg. are extremely similar. The writer has examined some E. cautela specimens which were identified by rearing and found that the puncture between setae I and II of the head was relatively smaller than in E. figulilella. This difference was fairly constant in the writer's specimens (see drawing page 2). Although a thorough examination was made of the two species with a 54x magnification, only the puncture difference was observed; this difference is not enough to satisfactorily distinguish between the two. Perhaps with higher magnification additional differences in the spinnerets and antennae could be observed.

Myelois venipars Dyar
Stored Foods: Indian-meal moth
Candies, cereal products, chili, dried beans, fruits, grain, nuts, and red pepper.
Distribution: Throughout California.

Plodia interpunctella (Hbn.)
Larva pinkish and about 18 mm. long. Head usually not mottled; adfrontal sutures almost reaching vertical triangle; front extending about 1/2 to vertical triangle. Prespiracular wart with 2 setae; crescent-shaped plates around setae III of mesothoracic and 8th abdominal segments. Crotchets biordinal.

Vitula serratilineella Rag.
Dried fruit moth
Dried fruits (probably prefers those slightly fermenting) and rotting bee combs.
Distribution: Throughout most of California.

Navel orangeworm
Larval pinkish and about 18 mm. long. Head usually not mottled; adfrontal sutures almost reaching vertical triangle; front extending about 1/2 to vertical triangle. Prespiracular wart with 2 setae; crescent-shaped plates around setae III of mesothoracic and 8th abdominal segments. Crotchets biordinal.
**FAMILY PYRALIDAE**

<table>
<thead>
<tr>
<th>Aglossa caprealis (Hbn.)</th>
<th>Murky meal caterpillar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stored Food</td>
<td>Grains</td>
</tr>
<tr>
<td>Distribution</td>
<td>Probably throughout California.</td>
</tr>
<tr>
<td>Description</td>
<td>About 27 mm. long. Cervical shield, suranal plate, and thoracic legs yellowish. Front extending less than half-way to vertical triangle; median adfrontal suture approximately ( \frac{1}{2} ) the length of epicranial suture. Prespiracular wart with 2 setae. Group VII setae of 9th abdominal segment with two setae. Posterior area of peritreme of abdominal spiracles 2 or more times as thick as the anterior area; non-sclerotized parts of body covered with asperities; biordinal crotchets; larger crotchets 3 to 4 times as long as smaller ones.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pydalis farinalis (L.)</th>
<th>Meal moth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stored Foods</td>
<td>Dried fruits, nuts, wheat, and potatoes.</td>
</tr>
<tr>
<td>Distribution</td>
<td>Throughout California.</td>
</tr>
<tr>
<td>Description</td>
<td>Larva approximately 25 mm. long with dirty white body with head and prothoracic shield dark. Front extending slightly less than half-way to vertical triangle; median adfrontal suture about equal in length to epicranial suture; four distinct ocelli. Prespiracular wart with 2 setae. Dorsal and ventral setae on abdominal segments 1-7 without distinct pinacula; group VII setae of 9th abdominal segment with one seta. Posterior area of peritreme of abdominal spiracles 2 or more times as thick as the anterior area; non-sclerotized parts of body covered with asperities; biordinal crotchets; larger crotchets 3 to 4 times as long as smaller ones.</td>
</tr>
</tbody>
</table>

**FAMILY TINEIDAE**

<table>
<thead>
<tr>
<th>Nemapogon granella (L.)</th>
<th>European grain moth.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stored Foods</td>
<td>Dried fruits and grains.</td>
</tr>
<tr>
<td>Distribution</td>
<td>San Francisco Bay region and southern coastal areas of California.</td>
</tr>
<tr>
<td>Description</td>
<td>Larva approximately 9 mm. in length with yellowish-white body and head red-brown. Adfrontal suture reaching vertical triangle; front extending more than ( \frac{1}{2} ) to vertical triangle. Prespiracular wart with 3 setae; seta IV of first 8 abdominal segments behind spiracle, and seta V below same; pinacula not prominent. Crotchets uniorinal.</td>
</tr>
</tbody>
</table>

**LITERATURE CITED**