

# YOSEMITE NATURE NOTES



Volume IV

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Number 18

## VACATION-LAND IN OUR HOMES THROUGHOUT THE YEAR

Few of us are fortunate enough to spend more than a short vacation each year in our mountain playgrounds. How many of us, as we stood upon the heights and felt the thrill of fellowship that comes with first-hand acquaintance with the birds, the flowers, the trees and the mountains themselves, have wished that the inspiring influence of these associations could be with us throughout the year in our everyday life.

Our government is doing its part to help us to more thoroughly enjoy and understand our great playgrounds, the National Parks. In Yosemite we find a splendid museum and a corps of naturalists who conduct daily field trips along the trailsides and who deliver evening campfire lectures on a wide variety of natural history subjects. But why should we be satisfied with but an introduction to the trailsides of our beloved Sierra? Is there no way in which we may continue our friendship with the Big Country during each month and each week of the year?

There is a way! Lovers of the California mountains have organized to interpret and present in popular form all of the manifestations of Nature of the Sierras and more particularly of Yosemite National Park. Primarily the **YOSEMITE NATURAL HISTORY ASSOCIATION** concerns itself with the living things of the Yosemite region; yet it must necessarily be a factor in inspiring a regard for American Wild Life in general.

**YOSEMITE NATURE NOTES**, which has been published in mimeographed form by the Park Naturalist for a number of years, has been adopted as the official organ of the Association. Cooperating with the government, the Association prints "Yosemite Nature Notes" weekly during June, July, and August and monthly throughout the remainder of the year, each of the twenty-four issues being sent to all members.

If you are one of the hundreds of thousands who love Yosemite, you will wish to keep in touch with her through the Association. There are hundreds of thousands of others who have no conception of the big message of the Out-of-doors. You will want those uninitiated to learn of what the Park has to offer.

Act now! Fill out the enclosed application for membership and mail it with a check or money order for \$2.00 to The Park Naturalist, Yosemite National Park, California. Every cent of the \$2.00 will be devoted to keeping you in touch with your Yosemite.



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## THE SIERRA AND THEIR GEMINATE SPECIES

By David Starr Jordan

TO THE lover of trees one special feature of the Yosemite region and the High Sierra may be commended. This is the presence everywhere of what I have called "Geminate Species": that is, of trees, flowers and animals which are "twins" of other species found in other similar regions. Closely related species of dogwood, red bud, osier, spruce, fir, cedar, pine, chipmunks, birds, lizards and snakes are almost never found together in the same range. Neither are they as a rule far apart. They are usually nearby and always separated by a barrier of some sort, which prevents free motion and interbreeding. This separation in space lies at the basis of separation in classification, for it is the chief element in species forming.

So common and universal is this law of twin species that some writers (myself included) take it to be the chief method in the "Origin of Species." I use the name "species" only for groups occurring in nature, though good imitations can be put in a breeding pen or greenhouse. These we may call by the florist's (and milliner's) term "creations." A species, in the strict sense, is a definable series of similar individuals bound together by heredity, and which, in running the gauntlet of life, have endured.

A "creation" is a definable series of similar individuals bound together by heredity, which starts from an individual showing special variations, or from a hybrid, its features being determined and continued by selection, segregation and in-breeding. A creation, to endure, must be continuously protected from the stress of life and from submergence in mass-

breeding.

"Species" and "creations" are developed in similar fashion, the one in long periods of time, with resulting endurance; the other in very short periods, and without regard to permanence, but in both cases through selection and segregation. The common elements in this process are:

1. The presence of variation, more or less marked, which may fall into the grasp of heredity.

2. The physical separation of variants from the mass, this involving, in some degree, the heredity of traits concerned.

3. The protection of selected variants from breeding with the mass, by which their characters would be lost, the mass having, not only numerical superiority, but from long heredity, greater prepotency.

In every "creation" the same factors must obtain, although the element of segregation was not fully recognized by Darwin and has been ignored by many others. It is, however, an element distinct from selection, and usually equally vital in species-forming. Natural selection destroys the ill-adapted. Artificial selection eliminates forms not desired by the experimenter. Inhibition from mass-breeding is essential in both cases alike.

### **The Overshadowing Fact of Evolution**

The problem of the origin of species has in recent years been attacked by three different types of scientists: Observers, experimenters and philosophers. The conclusions of all agree as to the overshadowing fact of evolution, but there is much difference of opinion as to how it comes about.

As species exist in Nature, and as their origins and relations are the essence of the problem, students of species, as original observers, have, we may say, the right of way. It is their problem first, which experimenters undertake to clarify, and on which philosophers build their deductions.

In deciding on the origin of species, certain facts must be explained. Some types of animal and plant life are very widely distributed; some extremely local, some families and genera are represented by many species, some by very few.

The traits separating species of the same genus or family are never those of special usefulness to the organism itself. All species of the same group that pull through are to all appearance alike adaptable.

Closely related species show a definite relation to barriers, which in the past have separated a few individuals from the mass, segregating them from mass-breeding.

### **Segregation Necessary to Produce New Species**

In most cases of geminate species (and thousands of them

are recorded) it is evident that sudden change within the mass could not produce new species, unless aided by segregation. This is the rule, unless the new form of "mutation" might have special traits of superiority. No case of this is on record. Notable variants may spread for awhile only to be finally submerged in the mass.

For this reason, I do not believe that the idea of species-forming through "mutation" now in vogue among greenhouse botanists is more than a passing aberration. Recent experiments on a hybrid form of Evening Primrose are very far from demonstrating a general rule.

The idea that species of plants at certain periods in their history throw off new species, as a planet is imagined to throw off moons, has a touch of the grotesque.

The theory that new species are formed by small modifications of old species has a better standing, although still shaky. In every case such changes to be permanent must be accompanied by separation with development under new selections, with new enemies and new environment. Apparently we are forced to conclude that new species in general are derived from old ones through the co-operation of the internal factors, of heredity and variation, and moulded by the external factors of selection which eliminate the unadaptable, and separation which prevents mass-breeding, and works through barriers to break up uniformity.

The Yosemite region is packed with geminate species. It is an interesting study to trace these back to their parent stocks, to compare them with their twins and cousins elsewhere, and try to find out where they came from and how they got there.



## YOSEMITE NATURE NOTES

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Communications should be addressed to C.P. Russell, Park Naturalist, Yosemite National Park.



## AFIELD WITH THE NATURE GUIDES

### YELLOW SPOTTED SALAMANDER IN YOSEMITE

Some weeks ago "Yosemite Nature Notes" reported the discovery in Yosemite valley of what seemed to be a new salamander. The first specimen found was very small and immature. Later adults of the species were found at Fern Spring, at the lower end of the valley, along the base of the cliffs near the old village, and at Taft Point, 7500 feet altitude, on the south rim. Coincident with these discoveries came T. I. Storer's splendid publication, "A Synopsis of the Amphibia of California." Reference to Storer's keys quickly established the fact that the supposed new species was none other than *Ensatina croceator*, the yellow-spotted salamander described by Cope in 1867 from Fort Tejon, Calif. E. C. Van Dyke had previously taken two immature specimens of the species in Yosemite valley, but this fact was not published until Storer's synopsis appeared.

The interesting little amphibian has been recorded from Placer county, El Dorado county, Yosemite valley, South Rim of Yosemite, Madera county, Fresno county, Giant Forest, Tulare county, Fort Tejon and doubtfully from San Lucas and San Diego.—C. P. Russell.

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### OBSERVATIONS ON THE LIFE HISTORY OF A CENTIPEDE

While peeling the bark from a fallen western yellow pine, I uncovered a large centipede either laying eggs or feeding upon the eggs of some other arthropod. She was surrounding the egg mass and kept moving the legs of the anterior third of her body. I watched her for some time, then I touched her to see what the response would be. As soon as I touched her she wriggled and seemed about to run away as in fright. Instead, however, she stopped and began to eat her eggs. Not wishing her to devour the lot, I took her away when she had eaten two.

There were twenty-three eggs in the group held together in a loose pile, probably by cohesive force. They were a sixteenth of an inch long and of rich amber color. I kept them in hopes that they would hatch, but either because they were not fertilized or the conditions of humidity and temperature were not correct, they failed to develop.

Three weeks later I was with the Yosemite School of Field Natural History in the same region. While removing the bark from a yellow pine stump we found another large centipede. This one was in a clear area walled by insect workings and seemed to be hovering a mass of tiny centipedes.

The chamber was a fourth of an inch in depth and was in the form of an irregular oval two and a half

by three and a half inches. There was no apparent outlet for the mother.

There were sixty-one young centipedes in the mass. They were almost white in color and were not so flat as the adults. They did not seem capable of locomotion, but each was rolled in a little ball more after the manner of millipedes.

While not a complete account, these two observations throw some light on the life history of centipedes.—R. D. Harwood.

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### HOW ARE MOVEMENTS OF BATS GUIDED?

Three blue-fronted jays were having some fun with a bat one mid-afternoon this week, in the diminutive clearing east of Roe Island; and the bat (of goodly size, perhaps *Eptesicus fuscus*?) seemed to be having some fun of his own. That crepuscular being looked oddly out of place seen against the sun-flooded sky, but there was nothing uncustomary about his manner of flight. The jays would swoop upon him singly, with a brave show of vigorous attack, but without ever scoring an actual strike; and each short swift swoop would end in a perch on the nearest tree and a vocal explosion, usually answered in chorus by the other two. Sometimes all three would then take the air together, but only one would launch the attack, the other alighting in trees and, but for squawking, remaining inactive, as if the rules of the game so required. The bat, on the other hand, kept the air continuously, most of the time between fifty and thirty-five feet above the ground, though occasionally descending to within some ten feet of it, and his ceaseless, twinkling, wavering flight with its incalculable curves and angles and dips and rises seemed easily to elude his pursuers. Sometimes he would sally out over the river where none of the jays would follow. And once, when one of these had alighted on a dead tree top the bat ringed the bird, very neatly and very closely, the jay opening his black bill widely at him—the two and the gray "snag" and the luminous sky making an unforgettable picture. The performance ended with the sudden disappearance of the bat and the consequent withdrawal of the jays.

Presumably they had disturbed the bat in his bed-chamber. Other conjectures the observer abstains from, except this one: That if bats are really "blind" in daylight they must be guided so well kinaesthetically (or by some other sense) that sight seems quite superfluous or them.

## THE YOSEMITE NATURAL HISTORY ASSOCIATION ITS PURPOSES

1. To gather and disseminate information on the wild-life of the Sierras.
2. To develop and enlarge the Yosemite Museum (in co-operation with the National Park Service) and to establish subsidiary units, such as the Glacier Point lookout and branches of similar nature.
3. To promote the educational work of the Yosemite Nature Guide Service.
4. To publish (in co-operation with the U. S. National Park Service) "Yosemite Nature Notes".
5. To study living conditions, past and present, of the Indians of the Yosemite region.
6. To maintain in Yosemite Valley a library of historical, scientific, and popular interest.
7. To further scientific investigation along lines of greatest popular interest and to publish, from time to time, bulletins of non-technical nature.
8. To strictly limit the activities of the association to purposes which shall be scientific and educational, in order that the organization shall not be operated for profit.

### MAY WE SEND YOU EACH ISSUE OF YOSEMITE NATURE NOTES?

Your check for \$2.00 sent to the Park Naturalist, Yosemite National Park, will help to pay the cost of its publication for one year and make you a member of the Yosemite Natural History Association for the same period.

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### FROM THE NATIONAL CONFERENCE ON OUT-DOOR RECREATION

Called by PRESIDENT COOLIDGE

"THAT THE CONFERENCE ENDORSE NATURE STUDY IN SCHOOLS AND THE EXTENSION OF THE NATURE STUDY IDEA TO EVERY AMERICAN SCHOOL AND FAMILY; . . . . THAT THE ESTABLISHMENT OF MUSEUMS OF NATURAL HISTORY IN NATIONAL PARKS WILL INCREASE THE EDUCATIONAL RECREATIONAL VALUE OF THE PARKS".—Resolution of the Conference.



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Dan Anderson