YOSEMITE NATURE NOTES

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Dry or "Moraine" Rock Garden at Yosemite Museum

By C. EDWARD GRAVES

At the beginning of the course of the Yosemite School of Field Natural History this summer, a suggestion was made that some student might take as a project the continuance and improvement of the moist rock garden that was started last year at the west end of the museum as a student project. Upon investigating the work already done I found that the garden, in spite of lack of water the previous fall and the growth of many grasses and weeds, was in a fairly prosperous condition. Most of the introduced plants had lived, but there was a tendency to plant and leaf growth at the expense of blossoms. This was probably due to the fact that the loam soil used was too rich and perhaps that the sun does not reach the garden more than three or four hours a day in midsummer. In planning for an extension of this moist garden it seemed a good idea to provide space where plants that like dry soil and sunny locations could grow. Unfortunately, there was a water pipe outlet beside the garden so that the extension could not be built in the most architecturally suitable location. A connection was made with the then garden however, and the new portion extended to the corner of the building.

FOLLOWING BEST AUTHORITY

Much time was consumed in the preliminaries of the work, finding suitable locations for the proper soil, getting the sod "skinned" from the garden location, and visiting local gardens in the valley for ideas. In planning the garden (Mrs. Graves worked with me throughout the project) we not only drew on our experience of four or five years but obtained through the library a book by Henry Correvon, the leading world authority on alpine plants entitled, "Rock Garden and Alpine Plants." The following quotation explains the principles adopted in the building of the garden:

"These 'moraines' at once call to mind two cardinal points of good cultivation one still only half-understood, drainage; another almost invariably neglected, top-dressing. Many are too apt to fancy that the benefit of good drainage is summed up in the prevention of stagnant water about the roots. But drainage does far more: in light soil, where it should especially be deep, it guards against drought as much as in retentive soil it guards against sourness. By giving free passage to the rain it places

aerating channels and carries warmth through the subsoil; it prevents a caking of the surface in fiery sunshine and by checking evaporation prevents an accumulation there of saline constituents and so secures an even distribution of inorganic matter throughout the whole feeding ground. And it is upon this slowly dissolving inorganic matter that alpine plants chiefly live.

"It is true that even in the highest ones there are extinct lake beds and similar places where alluvial soil has gathered to great depths; there are half drained bogs, so that among our alpines are found plants happy in loam, or peat, or swamp But the majority grow in a shallow layer of soil upon the native rock Some may be shallow rooters, but even these draw most of their sustenance, not from the scanty organic substance around them or from such little portion of the direct rainfall which that layer can retain, but from the ever trickling film of moisture along the surface of the rock—a moisture that fell as rain upon the higher slopes and descends charged with soluble inorganic salts. Others bury their main roots far down in imperceptible, inconceivably narrow fissures into depths little organic matter can penetrate.

"We could not imitate these fissures except by splitting some huge rock by chisel or wedge and fitting the two edges close together and spreading a little soil about the upper edge. Our narrowest pockets are by comparison chasms, as it were, choked with mingled grit and humus. Not that one even advocates the attempt to imitate them; to do so would be to forget the enormous waste of vegetable life upon the Alps—for one plant that survives and thrives, how many never germinate or wither almost before they have begun to grow? But, the fact that it is in such circumstances that alpines grow best demonstrates the need of a constant supply of soluble salts well distributed, and this can be secured only by deep and perfect drainage.

"Again, alpine plants are constantly receiving top-dressing. In nature the process is natural. In our gardens it is also essential; it provides food for the superficial roots, promotes the formation of layers, corrects the action of frost in lifting plants at the collar from the ground. For this we use compost. If of grit, it will keep the soil cool in summer and dry in winter, to save the leaves from damping off. Broken sandstone will absorb the surface moisture—indeed, the benefits as well-nigh innumerable."

PREPARING THE SOIL

First we removed the surface loam to a depth of several inches below the top of the ground and filled in with large boulders for good drainage, covering with layers of smaller rocks. The first layer of soil came from a pit near the garbage incinerator containing much leaf mold mixed with decomposed granite. The rest of the soil came from a pit west of the "zoo," being almost pure granite sand and gravel, the same kind of soil in which nearly all of the dry-soil alpine plants grow Rocks with appropriate pockets were planted in the soil as it was laid down. A long half day of strenuous work with the museum truck was necessary for this part of the operation.

Next followed the gathering and planting of the flowers, the most interesting part of the work Several of the plants were collected from the rocks near Lower Yosemite Falls, such as the sedums, cotyledons, some of the ferns and pentstemons (nothing, of course, was taken from the trailsides) Trips were made to the cliffs above Camp Curry and half-day excursions up canyons behind the Camp Curry toboggan slide and near Cathedral Spires. An all-day trip up the North Dome trail from Yosemite Falls as far as Indian creek yielded several varieties, and on top of Half Dome an interesting assortment of eriogonums was collected

The problem of proper irrigation is, of course, an all important one if the garden is to be a success. It is my hope that very little artificial irrigation will be necessary, unless the overhanging eaves intercept too much rain and snow. All the plants in the garden grow naturally in dry soil and rocky crevices filled with disintegrating granite. In mid-summer the garden is in full sunlight only from about 12 to 4 and if a small amount of watering is done and fresh granite dust mulch added occasionally, they should grow well with very little attention. The whole question of irrigation is a matter of experimentation and no definite conclusions can be reached for a year or two.

It might prove desirable in the future to make the garden more of a depository for the smaller alpine plants from the peaks of the higher mountains. The difficulty of quick transportation is a big one. Every opportunity should be taken to send plants down by people making quick trips to these higher peaks. As a museum piece, the garden might prove more valuable if an effort were made to specialize in these higher alpine plants. People can more easly see the alpine plants that grow at lower altitudes. An ideal garden would include both kinds, but the limitations of space are serious at the present time.

RECENT MUSEUM ACCESSIONS

Mode Wineman, who spent most of June in Yosemite photographing places of unusual interest or beauty, sent in as a gift to our museum 27 of his camera studies enlarged to 15 by 20 inches, all beautifully framed in solid walnut frames. These are now hung in our museum clubroom. This exhibit is a most attractive one and the gift much appreciated.

Through the courtesy of M. Hall McAllister, a Smith & Wesson revolver dated 1863, and having considerable historic interest, was presented to the museum.

A colored geological map of the State of California, size 4 by 6 feet, was received from the State Division of Mines.

A manzanita match box made by Adolph Sinning was loaned to our museum by Harry Harris of San Francisco.

Mrs. Alice Dudley McLean of Coulterville has loaned to the museum the following:

Stereoscope of the Mono Works at Bodie.

Photograph of Gertrude (Cosie) Hutchings.

Photograph of the Yosemite chapel.

Early photo of Cathedral Rocks.

Photo of Hosea E. Dudley, proprietor of the early day station known as Dudley's.

Book of sketches made by Mrs. E. Hutchings.

Jack Kearns presented to the museum an ox yoke pin found this summer in Camp 7.

Mrs. C. E. McFarland of Pittsburg presented 17 original Watkins stereoscopes, evidently made in Yosemite in 1861.

Alice James of our local Indian village presented the museum a good exhibit of sinew.

Miss Henrietta F. Brewer and Mrs. Eldridge M. Fowler of Oakland and Pasadena, respectively, presented 12 early Watkins photos of Yosemite, 18 by 24 inches.

GOLDIES STORE NUTS FOR WINTER

C. H. Oneal, Ranger - Naturalist

Beautifully colored, unafraid, even sociable, the golden-mantled ground squirrels (Callospermophilus chrysodeirus) are easily the most interesting animals at Glacier Point. They run about over the porch or peer upward from the ground below at the guests leaning over the rail to watch them. Standing on their haunches, propped by their tails, paws often waving in the air, these squirrels are such expert little beggars they are invariably rewarded.

Salted peanuts are their favorite food. In order to secure these choice morsels they will climb into one's lap, crawl upon one's shoulder or sit in one's hand. The first few kernels are eaten to satisfy their appetite, then their internal cheek pouches are filled. The capacity of those pouches is amazing. A hotel guests counted the halves as they disappeared in a certain squirrel. When 47 had been disposed of, the cheeks seemed about to burst. The squirrel then prepared to leave. The guest rustled the sack and back he came. But his cheeks ached. In order to relax the muscles he massaged them vigorously with his paws. The space evidently increased and in went some more, a grand total of 54 halves of peanuts. His cheeks stuck out until he looked as if he had a terrible case of double mumps.

In disposing of their excess food, temporary caches are sometimes used. However, they are more secretive about hiding their food in their burrows. They usually run a short distance as fast as possible and turn to see if they are followed. If a boulder is near they will usually go to the top of it to scout around before they scamper away. Then back they come for a new supply.

When the rain of peanuts has abated, they often take a dust bath to rid themselves of fleas. This they do by digging a shallow hole, crawling into it and kicking dust over themselves. If the weather is hot they often crawl on top of some cool rock in the shade, flatten their rear legs out sideways and cool off.

PREY OF GROUND SQUIRRELS

They seem to have but few enemies. One of these is the California ground squirrel, which has worked its way up into the higher mountains. On several occasions these intruders have been seen to kill young golden-mantled ground squirrels and chipmunks. On one occasion one was seen to be eating a young golden mantle. However, this is rare. A large hawk (species unknown) was seen to strike one and carry it away. One night a striped skunk (Mephitis occidentalis) was discovered carrying one under the hotel. But their worst enemies are probably the weasels.

The call of the golden-mantled is a metallic click very much like that of the chipmunk. This is often made as they chase each other about during the mating season. But one at Glacier Point has greatly extended his vocabulary. He is called "Precious" or "Fatty" according to the sex of his admirers. One day we were surprised to hear a song very much like the trill of a German roller canary. But we could find no bird. The next day Fatty was sitting in the hand of the attendant of the curio store, feeding on peanuts. Her hand began

MONROE'S BOUQUET

Ranger-Naturalist C H. Oneal

In the early '80s a Negro named George Munroe drove a horse stage through Wawona He was accustomed to arouse the anticipation of his passengers with vague but glowing terms about a wonderful bouquet they were to see en route This bouquet was described as being over 10 feet high. Stopping the stage Munroe would show them a sugar pine tree growing out of the top of a blackened Jeffrey stump. Appreciating the practical joke on themselves, the tree was called "Munroe's Bouquet."

Today it seems a vigorous, well formed tree but, according to Ranger Adair, not much increased in size This is hard to realize because of its sturdy appearance.

It is located on the old road about 100 yards before going up to the new one between Chinquapin and Wawona A short spur of an old road which is blocked by a log marks the spot. The stump is about five feet in diameter at the base and 10 feet high It has been badly charred by fire The top is hollowed and filled with dirt and humus. The sugar pine is about 36 inches high and two inches in diameter at the base It bears many close-set, well-needled branches. Reports state that formerly there was beside it a currant bush.

The fact that a tree could grow under such conditions for over 50 years is amazing But there it is, to be seen by all interested.

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to shake There was our friend vibrating all over as he gave forth a beautiful rollicking canary-like trill. The estimated average duration of these trills was 10 seconds He sat erect, his little paws pressed against his chest while his diaphragm vibrated with each note. Whether the song was natural or acquired by listening to a bird we do not know. Many times then and later it was repeated. Each time it was a clear-toned repeat. We were convulsed with laughter but mystified.

Trusting in man because he has been worthy of that trust, the golden-mantled ground squirrels more than repay man for their protection.

Indian Picture Writing in Yosemite

C. C. Presnall, Ass't. Park Naturalist

Picture writing is the most puzzling of the many evidences of early Indian culture which are to be found in Yosemite National Park. Students of American ethnology have not yet learned the meaning of any of the pictographs that have been found in at least 50 localities in California.

In the Yosemite region the best example of these pictographs, or petroglyphs, as they are properly termed, is to be found in Pate valley, on the Tuolumne river, about five miles above the Hetch Hetchy reservoir. On the vertical rock walls that form the northern side of this valley are many designs scattered at random over an area approximately 200 yards long and as high as a man can reach. They are all painted on the granite with a dull red pigment. Most of them are crude geometrical designs in irregular arrangement. Henry R. Schoolcraft, in his monumental work on American Indians, states that such symbols are simply chronological or arithmetical devices. One peculiar feature that has not been previously mentioned concerning these petroglyphs is the frequent recurrence of nine—nine straight lines, or dots, or angles in one design (as at "A").

In Bulletin 78 of the Bureau of American Ethnology, A. L. Kroeber sums up in a few paragraphs all that is definitely known concerning petroglyphs in California. He states that these picture writings are found all over the territory once occupied by the Shoshonean Indian stock, which spread over most of the Great Basin and included the Mono and Piute tribes. Some petroglyphs are carved into the rocks, but most are painted with red, yellow, black or white pigment. Geometric designs prevail usually in irregular arrangement.

It is thought that some of the more elaborate ones may be associated with the "toloache" cult which was a common religious cult among the Indians of the southwest. In the initiation rites of this cult a narcotic plant, Datura meteloides (called toloache by the Indians) was used to produce stupor, frenzy and visions.

As to the age of the California petroglyphs, it is quite possible that they may be only 200 or 300 years old. Present day Indians know nothing concerning the origin or meaning of them, but evidence shows that their traditions fail to preserve any knowledge for more than four generations, except when in the form of a myth. The determination of the age of these petroglyphs offers an interesting field of investigation for some young mineralogist. There is much to learn concerning the rate of erosion on the inscribed rock surfaces, and also the composition of the pigments that were used in making the designs.

YOSEMITE BIRD REPORT FOR AUGUST

ENID MICHAEL Ranger-Naturalist

In Yosemite Valley during the month of August the days were warm and the nights balmy. To relieve the monotony of sun-filled days grand cumulus clouds often appeared and floated leisurely across the summer skies. Occasionally these clouds banked in great billows and thunder showers seemed imminent, but only twice during the month did showers wet the paved roads and so slight were they that they had no effect on the sun-baked soil.

At the end of the month the low-lying meadows still retained some shades of green, but for the most part the open spaces had taken on the tawny tints of late October. In spite of the utter lack of rainfall some flowering plants manage to prosper. Prominent among the late blooming flowers on the floor of the valley were Yosemite aster, lessingia and buckwheat (Ericgonum virgatum). In the loose soil along the highway this late blooming eriogonum made a wonderful show even at the end of the rainless month. On the cliffs above the valley floor colonies of mild fuchsia (Zauschneria) spread patches of fiery bloom, and here it was that hummingbirds of three species gathered to fight and feed. Seemingly all of our hummers have a strong preference for red flowers.

Fifty-five species of birds were listed for the month, which number is three below the August average of the last 10 years. Also many of the species present were represented by less individuals than in former years. This month brought the nesting season to a close. The last occupied nest that came to our attention was noted August 6. This nest contained four young robins about ready to leave. With most species of birds the song season also came to a close. However, the songs of the yellow warbler and the cassin vireo were heard almost daily during the month. Songs of the canyon wren and the Sierra creeper were occasionally heard. The presence of the Allen hummingbird in the valley is perhaps the one outstanding feature of this report Twice a male bird was seen visiting the blossoms of potted geraniums that stood on a window ledge in the new village.

The old bull elk in the paddock started to shed the velvet from his antlers on the second day of the month. On August 4 he began to bugle and by August 13 he had his harem gathered about him while he bellowed defiance to the herd of young bulls.

Elderberry (Sambucus), Coffee Berry (Rhamnus), and western choke-cherry (Prunus demissa) are all bearing fair crops. Robins prefer the fruit of the prunus. Pigeons, both species of grosbeak, and the tanagers prefer the coffee berries. The Kellogg oaks have a fairly good crop of acorns this year while the golden-cup oaks have practically no crop at all.

AUGUST BIRDS

Great Blue Heron—A lone bird noted on two occasions.

Spotted Sandpiper—Only twice noted during the month. Last noted August 9.

Band-Tailed Pigeon—Perhaps a dozen pairs present throughout the month. The last 10 days of the month a band of a dozen birds came daily to feed on the wild coffee berries at the mouth of Indian Canyon.

Mourning Dove—A lone bird noted August 29.

Sharp-Shinned Hawk—A family group noted August 6 and 8.

Cooper Hawk—A lone individual noted August 16.

Red-Tailed Hawk—A lone bird seen sailing over the valley on several occasions.

Golden Eagle—A lone individual noted on two occasions.

Sparrow Hawk—Present daily and likely to be found about any of the meadows.

Horned Owl—Only noted once during the month and on this occasion the owl was being mobbed by a number of smaller birds.

Pigmy Owl—Twice seen during the month and once the bird was heard singing.

Belted Kingfisher—Present daily and birds likely to be seen anywhere along the river from Happy Isles to Pohono bridge.

Hairy Woodpecker—Present daily. Not numerous, but each cottonwood grove was likely to have its pair or family group.

Willow Woodpecker—No doubt present daily as birds could be found when ever we made an especial search.

White-Headed Woodpecker—Absent from the valley during the greater part of the month, but toward the end of the month they began to return.

Red-Breasted Sapsuker—A lone male noted on two ocasions.

Pileated Woodpeckers—The lone male noted August 2.

California Woodpecker—A common bird in all the Kellogg oak groves about the valley.

Red-Shafted Flicker—Present daily. Next to the California, the most common woodpecker.

Black Swift—August 18 a lone bird was seen and on August 21 a little band of 10.

White-Throated Swift—Not so numerous as usual this month. The larger flocks probably feeding beyond the "rim."

Anna Hummingbird—Lone male birds noted on several occasions.

Allen Hummingbird—Twice noted during the month. A new record for the Yosemite Bird Report. On August 18 six male birds were seen feeding in the Zauschneria gardens at the base of upper Yosemite Fall.

Calliope Hummingbird—Lone individuals frequently noted.

Western Kingbird—Lone birds twice noted.

Black Phoebe—A lone bird often seen along the river near the Sentinel Hotel.

Olive-Sided Flycatcher—A lone individual noted August 6.

Western Wood Pewee—Rare this month but we could usually find one or two when our walk took us through the cottonwood groves along the river.

Traill Flyactcher—Possibly a few birds present throughout the month, but on many days we failed to find a single bird.

Blue-Fronted Jay—Considering all sections of the valley the jay was probably the most common bird.

Bullock Oriole—A lone bird noted on two occasions.

Brewer Blackbird—Rare during most of the month, but on August 21 a flock of 100 was seen and on August 26 there was a flock of at least 200. They were here today and gone tomorrow.

Evening Grosbeak—Just about as numerous and as talkative as the blue-fronted jays. Flocks of 20 or 25 not uncommon.

California Purple Finch—Exceptionally rare. Two or three birds occasionally seen.

Green-Backed Goldfinch — Small bands of these birds were often found feeding on the seeds of the evening primrose or on the seeds of the cone flower in the Ahwahnee grounds.

White-Crowned Sparrow—On three occasions a bird that I took to be a Huasonian whitecrown was seen in the Ahwahnee grounds.

Shipping Sparrow — Rare this month. No flocks were seen and there were days when we failed to find a single bird.

Sierra Junco—Also rare and missing entirely on several of our daily walks.

Sacramento Towhee—No doubt a few birds present throughout the month as they were always to be found in certain haunts.

Green-Tailed Towhee—A lone individual was noted on four different occasions.

Western Tanager—Possibly a few birds present throughout the month. Rather more common the last few days of the month.

Warbling Vireo—Probably a few birds present throughout the month, but as they were silent they were rarely noted.

Cassin Vireo—Not numerous, but as they were again in full voice the last two weeks of the month they were often noted.

Yellow Warbler—Probably the only warbler present throughout the month. Song heard almost daily.

Black-Throated Gray Warbler—A lone bird noted August 8.

Hermit Warbler—A family group noted August 2.

Tolmie Warbler—Lone birds occasionally noted.

Water Ouzel—A lone bird noted on the main river August 25.

Canyon Wren—No doubt present daily as there were three locations where we could usually find a singing bird.

Sierra Creeper—Probably a few birds present throughout the month, but there were morning walks when we failed to see a single bird.

Red-Breasted Nuthatch — Only twice noted during the month.

Mountain Chickadee—Possibly two pairs present throughout the month.

Western Gnatcatcher—A lone bird noted on two occasions.

Russet-Backed Thrush—A lone bird noted on the first day of the month.

Western Robin—Rather common. More numerous the last week of the month. Outside birds probably came to the valley to help clean off the crop of wild cherries.

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