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YOSEMITE NATURE NOTES

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W. B. LEWIS
Superintendent

"LEARN TO READ THE TRAIL-SIDE"

YOSEMITE NATIONAL PARK, CALIF. 1927

A PERSONAL INVITATION.

YOSEMITE NATIONAL PARK IS YOURS! WE OF THE NATIONAL PARK SERVICE WANT TO HELP YOU TO MAKE FRIENDS WITH YOUR PARK AND TO UNDERSTAND IT IN ITS EVERY MOOD. ALL OF THE FOLLOWING SERVICE IS OFFERED TO YOU *free* BY YOUR GOVERNMENT:

Visit the Yosemite Museum!

Here you will learn the full story of the Park — what tools were used by the great Sculptor in carving this mighty granite-walled gorge; who lived here before the white man came; how the Days of Gold led to Yosemite's discovery; how the pioneers prepared the way for you; and how the birds and mammals and trees and flowers live together in congenial communities waiting to make your acquaintance.

Plan your trail trips on the large scale models in the Geography Room.

The Yosemite Library in the museum provides references on all phases of Yosemite history and natural history.

Popular lectures on Yosemite geology and other branches of natural history are given by nature guides at scheduled times each day.

The nature guide on duty will be more than willing to answer your questions on any subject.

Go Afield with a Nature Guide!

Take advantage of this free service that will help you to know your Park A competent scientist will conduct you over Yosemite trails, and from him you may learn first hand of the native flowers, trees, birds, mammals, and geological features.

See Schedule of Nature Guide Field Trips.

Visit Glacier Point Lookout!

From there you will obtain an unexcelled view of Yosemite's High Sierra. The binocular telescope will bring Mt. Lyell to within one third of a mile from where you stand; you can recognize friends climbing trails several miles away. The Nature Guide in attendance will help you to operate it and will explain what you see.

A small library is at your command.

You will enjoy the informal nightly campfire talks given here.

Attend the Nature Guide Campfire Talks!

In addition to the museum lectures members of the educational staff give talks as a part of the evening program at Camp Curry and Yosemite Lodge. Non-technical explanations of how Yosemite came to be; what you may expect of Yosemite bears; how the local Indians lived; what birds you see about your camps; what trout you will catch in Yosemite waters; how you may best visit the wonderland of the summit region; and scores of similar subjects are given by the National Park Service Nature Guides.

ALL OF THESE OPPORTUNITIES ARE PROVIDED FREE OF CHARGE BY YOUR GOVERNMENT.

—TAKE ADVANTAGE OF THEM—

Volume VI April 30, 1927 Number 4

THE YOSEMITE MUSEUM

By C. P. RUSSELL

So many requests for literature on the Yosemite Museum are received that it seems advisable to make this brief description of its work and exhibits available until such time as a booklet on the subject may be distributed. The building is a gift to the National Park Service from the American Association of Museums, which organization procured building funds from the Laura Spelman Rockefeller Memorial. Since May, 1926, the exhibit rooms have been open to the public and during the busy year that has elapsed all curatorial energy has been directed toward completing unfinished exhibits and serving the ever-growing number of visitors. With the completion of exhibit plans it will soon be possible to prepare the needed pamphlet containing detailed information on the materials possessed and displayed.

The Yosemite Museum is an important part of the "New Yosemite Village," located near the foot of the warm north wall of the Yosemite gorge. From a point on the "rim" of that wall, just slightly west of the museum, Yosemite Fall plunges in its roaring descent to the valley floor.

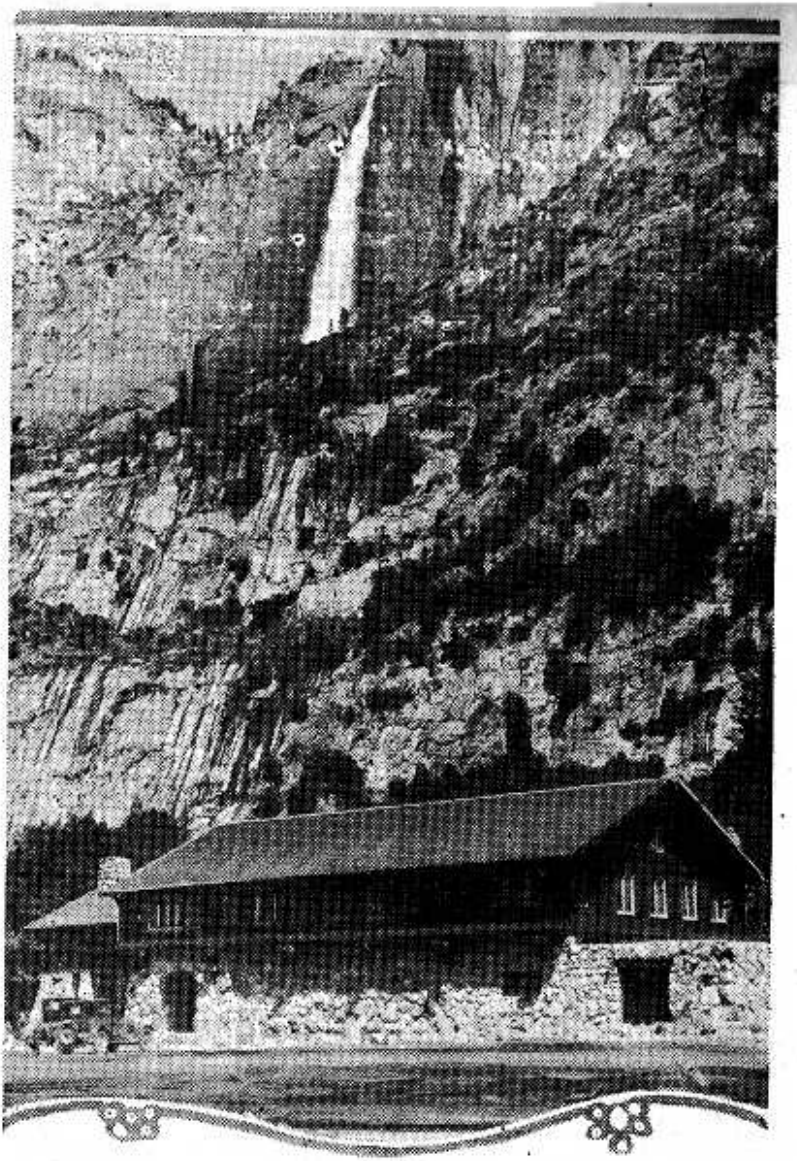
In the same north wall at a point just east of the museum is a deep notch known as "Indian Canyon." It served as a means of entrance and exit to Yosemite before the days of white men's trails. No trail has been built in it, and it is untraveled except by a few who enjoy unusual climbs.

A Magnificent Setting

The museum fronts upon the main thoroughfare extending east and west in Yosemite Valley. In front of it, but set off to the west sufficiently to give unobstructed approach, is the stone-faced Administration building. The museum faces south; the Administration building faces east. Directly opposite the museum and facing it is the Officers and Rangers' clubhouse. This last building is located on the opposite side of the road and is sufficiently removed from the others to give no feeling of crowding. Some rods to the east of the museum, and facing south also, is the studio and auditorium of the camera artist, A. C. Pillsbury. Immediately in front of all of these buildings is a large, open plaza offering good parking space for the hordes of automobiles that visit us.

The base of the south wall of Yosemite Valley is less than half a mile from the museum. On its "rim" more than 3000 feet above is Glacier Point, from where the much advertised "fire fall" pours each evening. Sentinel Rock, another of the well known Yosemite monuments of the south wall, is within plain view from the museum. To the east the Half Dome dominates everything.

The first floor of the museum is constructed of concrete faced with rock. In building, care was given to leaving undisturbed the lichens and moss growing upon these cobble stones and boulders. The sec-



THE YOSEMITE MUSEUM

A National Park Service Institution built by the American Association of Museums with funds procured from the Laura Spelman Rockefeller Memorial. 200,000 visitors will enjoy its exhibits in 1927.

ond floor is of frame construction, and the roof and walls are covered with shakes. Between the upper and lower floor is a concrete slab, which assures the absolute fireproof quality of the lower exhibit rooms. Above is a spacious attic.

A nine-foot cross section of one of Yosemite's sequoias mounted at the front entrance lends unique character to the interesting lines of the building.

The main entrance opens into a foyer in which are exhibited topographic and bas-relief maps, and many park photographs. Here, too, is the attendant's desk and show case for display of sales publications produced by the Government. The main stairway to the upper floor is in this room, and a balcony, upon which are exhibit cases containing insects, overlooks the room. Two birds, the Water ouzel and the Western tanager, about which so many questions are asked, are given prominence in the foyer. Two small habitat groups portray something of the family life of these birds.

The Museum Library

To the left of the foyer is the library. This spacious room is naturally lighted by large windows, which give splendid views of the south wall of the valley. A beautiful stone fireplace, in which has been built a historic picture of the Wawona Big Tree, occupies most of the wall opposite the entrance. This fireplace and the one in the clubroom above were built by Mr. and Mrs. E. C. Oviatt of Santa Barbara, Calif., at an expense of $1650. Sequoia book shelves that will accommodate 6000 volumes have been built by the National Park Service. An attendant's desk and an exhibit case are to the right of the library entrance.

Double swinging doors open from the library into the Mather library. Here are more sequoia book shelves, upon which will rest reference volumes to which anyone interested may have access. Books for the general collection and historical and scientific works for the Mather collection are steadily being received from friends of the National Park Service. About 1000 volumes are now the property of the museum, and at present the Yosemite branch of the Mariposa county library is also housed in our general library room.

The Geology Room

As the visitor enters the foyer, unless he is on library business bent, he naturally turns to the right to enter the inviting doorway of the geology room. Here a series of nine-foot models awaits his study. The first one of these portrays the method of uplift of the Sierra Nevada. The second demonstrates the extent of ancient glaciers over Yosemite National Park. Next is a detailed model of Yosemite Valley and its immediate surroundings, showing the condition 15,000 years ago just after the ice retreated from the valley proper. Last in the series is a very accurate model of Yosemite Valley as it is today. Upon it, all roads, trails, streams and other details are accurately shown, and visitors make splendid use of it in planning their trail trips. Behind each one of these models is a large explanatory label in big type. The geological story of Yosemite is clearly told by the models and explanations, and it is gratifying to find many visitors carefully studying the entire story. Not a few use notebook and pencil. Frequently, each day, one of the naturalists in charge gives twenty or twenty-five-minute talks to fifty or sixty visitors (all that can gather before the models) in the geology room. Dr. F. E. Matthes of the U. S. Geological Survey, of course, is always given credit for having provided the data from which the models and the story are prepared. On the wall opposite the models are exhibits of rock specimens in which Dr. Matthes read at least a part of the story. Some of these are exhibited on hand trays that permit of specimens being touched by visitors. Others are arranged in five plate glass cases. All specimens are fully labeled. On the wall above these exhibits are some of the Mode Wineman Yosemite camera studies.

The Natural History Exhibits

Visitors continue from the geology room to the natural history exhibits. They come first to a habitat group portraying a contact between coyote and skunk. Space in the Yosemite Museum will not be given to more habitat groups. Most of our large animals may be seen in life in the great museum of the Yosemite Out-of-Doors. This coyote group, showing animals not often seen in life, was presented to us by Gus Nordfulst, taxidermist of Oakland, California. Opposite the coyote exhibit is a hand tray upon which are exhibited skulls of large Yosemite mammals. Important among these is an elk skull with antlers embedded in the large trunk of a madrone tree and the skulls of two mule deer, the antlers of which are inextricably interlocked.

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GLACIAL MORAINES ON THE FLOOR OF YOSEMITE VALLEY

THE upper arrow points to the medial moraine built at the confluence of the Merced and Tenaya glaciers. The lower one indicates the terminal moraine built by the combined Tenaya and Merced glaciers during the period of ice activity termed by Dr. F. E. Matthes, 'the second glacial period." When the ice melted back, some fifteen or twenty thousand years ago, the terminal moraine served as a natural dam and behind it the water backed up to form the ancient Lake Yosemite. This lake was filled by sand brought to it in the many streams that flowed into it.

Both of these moraines, as well as many others in the higher regions of the park, may be viewed by Yosemite visitors.

"READING HISTORY IN GLACIAL DEBRIS"

By C. P. RUSSELL

How fascinating must have been the work of the U. S. Geologist, F. E. Matthes, and his assistants in deciphering the story of Yosemite!

The vailable records of the activities of the ancient glaciers consist of ridges of earth and rock scraped up by the nose and sides of the ice masses. Many of these moraines, especially those of the lower levels, are greatly disintegrated and overgrown by chaparral and forests; they are not to be studied from a seat on some vantage point overlooking much territory, but must, in many cases, be investigated on hands and knees under the manzanita. In the loose gravel of the moraines are found rounded boulders transported by the glacier from far distant points. The rocks of the Yosemite region are nearly all granites, and, while they are easily distinguished by a petrographer, to the untrained eye the various types of granite are the same in aspect. When thoroughly weathered, these rocks may not be recognized even by the trained worker, and at times it was necessary to spend time chipping corners off boulders in order to discover the type of granite.

Before this hidden story could be interpreted, it was, of course, necessary that the workers be familiar with the rock structures of the high country from whence the ice masses projected long tongues into the lower canyons. With a knowledge of the rock types of the summit region it was possible to study the lower moraines and determine the course followed by the glacier in question. Through such work it was established that Glacier Point was inundated by ice of a very early epoch. So long ago was the famous promontory covered by the glacier that all signs of the ice flood have vanished, except for some boulders and cobblestones held within a protecting hollow on the summit of the 3200-foot cliff. When these cobbles were broken it was determined that they were of the type of granite from the Little Yosemite region and absolutely foreign to the Glacier Point neighborhood. It was then the Merced glacier that overwhelmed the point.

Specimens of these various rock types collected in moraines far from their points of origin, may be seen in the geology room of the Yosemite Museum.

"YOSEMITE DOMES"

It requires no scientific turn of mind to discover that Yosemite landscapes are characterized by huge, bulging masses of bare granite, swelling out from the timbered slopes. Thoughtful study of the domes reveals the fact that each and every one is divided, at the surface, into curved plates. Removing an outer plate reveals another, and the domes seem, like an onion, to be composed of concentric layers.

Geologists, in explaining these peculiar structures, have developed two general theories. According to one theory, the granite of the domes has always been divided into curved plates. Because of this layered structure it has been possible for water and ice to model the rounded domes.

The other theory holds that the layered formation originated subsequent to the forming of the domes and was caused by unequal expansion and contraction at the surface of the solid mass of granite. F. E. Matthes of the United State Geological Survey, who has made clear the story of Yosemite, points out that this layering of the domes develops only at the surface and that only monoliths, solid rock masses, may form domes.

We see, then, that in spite of what has been written of the action of glaciers, sculpturing Sierra domes, we may look upon them not as plastic masses that responded to the glacier's modeling touch but rather as rock masses, which, by virtue of their extreme solidity, have escaped remodeling by the ice. Indeed, some of them, Half Dome and Sentinel Dome for example, were never covered by the ice flood. —C. P. Russell.

Continued from page 27.

The Yosemite Life Zone Room

The next room is the Yosemite Life Zone room. In it are five cases 9x6x6 feet containing plant, bird and mammal indicators for each of the life zones of the park. On the wall opposite the cases is a large diagram showing relation of the zones. I believe that such emphasis placed upon the story of the distribution of life in a given area has not been attempted in other museums. Yosemite is especially qualified to present such a story, for within the park one may pass through the same life changes encountered in traveling from Southern California to Northern Alaska. The zones included are the Upper Sonoran, Transition, Canadian, Hudsonian and the Arctic-Alpine. About thirty bird and mammal specimens are shown in each case, and transparent photographs about the edge of each supply what cannot be shown in the exhibit proper.

The Indian Room

From the Life Zone room visitors pass into the Indian room. Much interest in always shown in the relics pertaining to the savages from whom this valley was wrested. About $50,000 worth of rare baskets of local origin are included in the exhibits displayed here. Material pertaining to origin, distribution, dwellings, food and food preparation, implements and weapons, customs and ceremonies occupy half of the room. Basketry occupies the other half.

The History Room

The History room tells the story of the white man's influence on Yosemite from the time of early Spanish exploration west of the park, through trans-Sierra exploration, by Yankee trappers, gold excitement in the canyons a few miles below Yosemite, Indian troubles and discovery of Yosemite by irate miners, early mining in the Sierra summit region, early tourist travel and development of Yosemite, and a concise history of administration to date. This is the room in which more time is spent by visitors than any other. It is also the room upon which it was necessary to devote much study, for Yosemite history had been worked up, in detail, by no one. Three months of very long days were given to writing history labels alone. By the way, every article in the museum is labeled with a standard 5x4-inch printed label. About 40 cents each was expended for the printing of these small labels.

The outstanding possession of the museum is a collection of pencil drawings made by Thomas Ayres, an artist who accompanied the first party of sightseers in Yosemite in 1855. The priceless drawings are the gift of Mrs. Ernest Bowditch, Mrs. C. W. Hubbard and Mrs. A. H. Custis, all of Massachusetts. The pictures, ten originals and one lithograph, are exhibited in the History room and in the library.

The Wild Flower Exhibit

From the History room, a rear door exits visitors to a covered porch, upon which is a wild flower exhibit stand and old stage coaches. Live boxes containing reptiles are placed here also, in summer. We are proud of our scheme for showing fresh cut flowers. Our metal stand is equipped with troughs through which fresh water flows constantly. The cut ends of the stems are bathed in this and the specimens remain fresh and attractive for a surprisingly long time. Metal holders contain neatly printed labels for each specimen.

In the back yard is a typical Yosemite Indian dwelling built of cedar bark. Beside it is a granary for acorns, upon which Yosemite Indians subsisted largely. There is also a great granite mortar rock pitted with holes in which acorns were ground. This ancient grist mill has been in place here for untold centuries and is proof that the Yosemite Museum stands upon the site of an ancient Indian village.

The Tree Room

When visitors have been conducted to the back porch, it is possible for them to return to the foyer through a rear entrance. A neat sign at the foot of the broad stairway invites them to view the tree and flower exhibits on the floor above. The tree room contains wood, bark, foliage and fruit specimens of common Yosemite trees and shrubs. A central case is devoted to telling something of the wonderful story of the Sequoia gigantea. Insect enemies of trees and parasitic plants that prey upon them are also given much space. Most of the splendid Mode Wineman pictures are here exhibited.

In winter, of course, fresh flower specimens do not exist. Many pressed flowers displayed in Riker mounts are exhibited in the flower room that adjoins the tree room. This room also serves as lecture room and laboratory for the Yo-

semite School of Field Natural History, which school each summer trains twenty teachers.

At the end of the building opposite the flower room is the clubroom of the Yosemite Natural History Association. Here local organizations such as the Masons, American Legion, and Boy Scouts hold regular meetings. In it are exhibited numerous photographs Yosemite pioneers which could not be hung in the history room.

On the north side of the hall leading to the club room is Caretaker Selby's living quarters. Adjoining his room is a shower room and lavatory. On the south side of the hall is the park naturalist's office. It is equipped with proper furniture and filing systems. Two large cabinets containing neat reprint holders care for the thousands of technical publications that are available to staff members and students. Adjoining the park naturalist's office and accessible from the hall, of course, is the nature guide and secretary's office. Three desks here provide facilities for staff members who do office work. Here, too, are the files of lantern slides and back correspondence. The stationery room and an information desk are also in this office.

A splendidly equipped laboratory, in which all work on exhibits is done, adjoins the nature guide office. We have been fortunate in acquiring an elaborate equipment of tools, reagents, and materials of all kinds. Cases from the old museum, from which the glass has been removed and replaced with lightweight panels, provide good cabinets for this room.

Next to the work room is the printing shop. A good assortment of type and all other necessary appurtenances for the printing of labels, pamphlets and publications is available here. Here is published our monthly "Yosemite Nature Notes," the expense of production of which is met by the Yosemite Natural History Association. A 10x15 motor-driven press is owned by the museum, but the expense incident to operating the little printing plant cannot be met by the National Park Service.

A small dark room, well equipped with an enlarging camera and other paraphernalia, makes it possible to do the necessary copying, enlarging, etc., incident to making museum exhibits as well as general photographic work. The museum possesses a splendid naturalist's Graflex and two 5x7 view cameras.

Across the hall from the work rooms are public lavatories and rest rooms.

The museum plan provided for a hot water heating system. However, the funds procured by the American Association of Museums were insufficient to finish all exhibit rooms and exhibits as well as install the electric units and radiators of the proposed heating system. The auxiliary wood heater is made use of, and hot water is circulated through the pipes installed, but radiators are lacking except in a few rooms. Experience has demonstrated that the lower exhibit rooms may be kept sufficiently warm without radiators, but the upper offices and work rooms need water heated to a higher degree than the auxiliary heater is capable of providing.

The Center of Educational Work

The museum is, naturally, the center upon which the educational work of the park revolves. Field trips, evening lectures at resorts and prescribed course work for the field school students, reach 75,000 individuals each summer. Nine naturalists make up the summer staff, and beginning July 1, 1927, a full-time museum assistant will be employed.

About 150,000 people visited the museum during the twelve months just passed. More may be expected in coming years. Each summer about 12,000 visitors are entertained at the Glacier Point Branch Museum. In addition to the multitude served by museum work, some 75,000 individuals are reached by the various activities of the Nature Guide Service. In one way or another contact is made with nearly every park visitor.

MISCELLANEOUS NOTES

"INSPIRATION FROM A STUDY OF NATURE"

"One impulse from a vernal wood may teach you more of man, of moral, evil, and of good than all the sages can." To this statement of Wordsworth most will agree, but few there are that get the impulse. Many visitors to Yosemite search for amusement or at best for scenery and are blind to all living things about them; they hear jazz and perhaps the thunder of waterfalls but are deaf to the finer sounds of nature. The nature guides in Yosemite teach visitors "to read nature as a book," a basic preparation for securing the impulse mentioned in the quotation above.—H. C. B.

* * *

"SIERRA NEVADA RANGE A SINGLE MOUNTAIN"

The whole Sierra Nevada Range, extending for more than four hundred miles roughly parallel to the eastern boundary of California, is geologically but a single mountain. It is a single block of the earth's crust, a block four hundred miles long and eighty miles wide, that has been tipped up at the eastern edge. The western edge lies buried beneath the alluvial sediments of the San Joaquin and Sacramento valleys, and the elevated eastern edge is represented by the crest of the Sierra Nevada from the Mount Whitney region in the south to the Mount Lassen district in the north.

A good simple account of the successive uplifts that finally raised the Sierra Nevada some 13,000 feet in the Yosemite region will be found in the admirable geological resume, "The Story of Yosemite Valley," written by Francois E. Matthes, and recently printed on the back of the Yosemite Valley Special Sheet. This map may be obtained from the United States Geological Survey for 10 cents.

* * *

"MISTLETOE"

In the Yosemite Valley both the Kellogg and Chrysolepis oaks are badly infected with mistletoe. The mistletoe berry is the favorite food of a number of species of birds, and in seasons of plentiful crops many birds come here to feed. The Western Blue bird is a bird that is especially fond of mistletoe berries, and it is through the agency of the bluebird that the mistletoe is able to extend its territory. The berries are swallowed whole; the seeds pass through the body undigested and with the excrement are cemented to any surface where they may be deposited. In passing through a bird, the process of germination is started, and when seeds are placed in favorable situations, there is every likelihood that a seedling mistletoe will be the result. Instinctively or otherwise, bluebirds are horticulturists, starting a crop that may eventually be harvested by themselves.

* * *

INTERESTING NOTES ON "INSECTS AND THE MILKWEED"

The showy milkweed which grows plentifully in Yosemite Valley is one plant which attracts many of the insects that inhabit the valley. The milkweed plant (Asclepias speciosa) has a stout stem, 1½ to 5 feet high, woolly with odd, inconspicuous pink to reddish purple flowers, bearing conspicuous horns which grow from the disk of the flower.

Practically on any sunny day one may observe numerous insects flying about, crawling and walking over heads of the flowers. Many of these insects may use the plant as their food—the common milkweed bug, Western 12-spotted cucumber beetle and the Convergent ladybird beetle. Other insects alight upon the flowers as resting places, as the tumbling flower beetles, while still others alight to sip the nectar from the flowers, as the Monarch butterfly, Western swallowtail, black-bordered Sulphur and Buckeye butterflies, yellow-faced bumble bees, leaf-cutting bees, yellow jackets, carpenter bees and many others. Other insects alight on the stems or leaves of the plant for protection. Some will deposit their eggs on the milkweed, as the lace-wing and Monarch butterfly.

The most interesting attraction of insects on the milkweed is the saddlebag-like stamens, which are sticky to the touch and act as a trap for many unfortunate insects. Some very interesting insects which are rather few have been found entangled in this trap, as the pine butterfly, marsh fly and a blue and yellow wasp.

To the beginner who wishes to study insects, the milkweed plant might perhaps be a good plant on which to begin.—Samuel Beller.

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.*