ESPECIALLY FOR FIELD COLLECTORS

(Under the supervision of JAMES R. MERRITT)

EDITORIAL NOTE: — In the following, two articles continue the series on noteworthy collecting localities, and with them is the latest in the discussion of the number of species to be found in one locality at one time.

The editor for this "Collectors' " section has been forced to resign, effective at the end of this year, due to new professional pressures. The editorial duties will be taken over by Mr. FRED THORNE, veteran southern California lepidopterist. The advisory committee for this section of the *News* will continue to be: GEORGE EHLE of Pennsylvania, RICHARD GUPPY of British Columbia, and WILLIAM E. SIEKER of Wisconsin. New correspondence for this section should be addressed to Mr. THORNE (1360 Merritt Dr., El Cajon, Calif., U. S. A.).

SAN FRANCISCO'S VANISHING BUTTERFLIES

by J. W. TILDEN

During the Second World War, or shortly thereafter, there occurred in San Francisco, California, an event which affected the average inhabitant of the area but little. It was, however, of considerable interest to entomologists. If the mythical average man had known, he might have cared still less. But to lepidopterists, it meant the end of a losing battle for one more of our native creatures. This event was the passing into extinction (so far as known) of the peculiarly local and endemic butterfly of the sand dunes, the Xerces (*Glaucopsyche xerces*) Blue. Only a few years before, it had been the most characteristic butterfly of the coastal sand dune area known as the Sunset District, but complete settlement of the area left it no habitat to inhabit.

Xerces is not alone among the peculiar butterflies of San Francisco. Why this region should have been inhabited by a number of endemics is not clear. The coastal region of California is rich in relict forms, but the immediate environs of San Francisco seem to have been more than usually endowed in this respect.

The first species to disappear was *Minois sthenele.* This species was lost so early and so rapidly that few specimens remain. The largest series was destroyed in the fire of 1906. The early stages were never recorded. Since it became extinct too early in the history of the area, almost anything that may be written concerning it is in the nature of conjecture. It is interesting to speculate on why it became extinct so rapidly, since it was at one time considered common. It disappeared, oddly enough, while there was still a good deal of unsettled land in the city.

Another satyr, *Minois behrii,* was the next to be lost. The locale is different, but the story is much the same. *M. behrii* was recorded as flying in the Mt. Tamalpais area in Marin County, just north of the Golden Gate.

It is not in a strict sense a butterfly of San Francisco, but is included here for regional completeness. The types of this species were also destroyed in the San Francisco fire, and no further material has ever been taken on the type locality. *Minois masoni* Cross is similar to the description of *M. behrii* and has been considered as subspecies of the latter by F. M. BROWN (*Butterflies of Colorado*: p. 18; 1954). HOLLAND (revised *Butterfly Book,* 1930) figures on Plate LXXI, figs. 9 & 10, insects which he refers to *M. behrii.* However this may be, the insect is apparently extinct at the type locality.

The endemic lycænids of the region were more persistent. In the 1930's *Glaucopsyche xerces* still could be found in the vacant lots of the Sunset District and in the Lake Merced area. Some survived for years in Fort Funston, but these apparently disappeared when the area was bulldozed bare. At present the former habitat of *xerces* is almost one hundred percent settled. Most collectors who are familiar with the conditions concede that *xerces* is apparently extinct, although the exact time is not easy to fix. I am not sure that any have been taken since the Second World War. It is conceivable that the species may reappear, but such a possibility seems remote.

Why did it disappear? Here and there in the region remain waste strips and roadside vegetation that harbor certain insects. These do not seem to have been sufficient for *xerces.* The most probable answer lies in the food plant. In the larval stages, *xerces* fed on a species of *Lotus* (*Hosackia*). This species was a low-growing matting type of sand dune plant which could not tolerate disturbance of the soil. In some places the plant seemed to disappear before the butterfly did. HOVANITZ (personal conversation) noted having seen *xerces* oviposit on Lupine, but observations showed that this plant was not suitable for the larval development of *xerces.*

Xerces is of interest for another reason than its local distribution. It exhibits, in as great a degree as any other North American butterfly, the peculiar effect of certain mutations on small populations. In this one species, there are no fewer than five named variants. Typical *xerces* has large white spots on the secondaries below. The form "polyphemus," which was the "normal" or common form, has small black pupils in the white spots. The forms "mertila," "antiacis" and "huguenini" represent increasing size of the spots, especially of the black pupils. "Polyphemus" and the other black-pupilled forms are easy to associate, but true *xerces* looks very different. DYAR (*List of North American Lepidoptera,* 1902) did not associate *polyphemus* and *xerces* at all, but placed *xerces, antiacis* and of course *lydgamus,* as separate species, with what we now know as *G. lygdamus behrii* as a subspecies of *antiacis.* This association is easily seen to be faulty when specimens of all are at hand, since the soft lavender blue of all forms of *xerces* is quite different from the cold blue of *lygdamus* subspecies. Moreover, all of the *xerces* complex have the short rounded forewing of that species. These named segregates of *xerces* are merely genetic variants. All were found flying together in the same locality and are in no true sense subspecies. They show to a marked degree the effect that genetic mutations may have on a small population.

Almost as remarkable as *G. xerces* is another lycænid, *Plebeius icarioides pheres.* So much paler below is this subspecies that it was for years considered a distinct species. Its fate is less definitely known than is that of *xerces.* A small colony existed in the Presidio until quite recently. Military activities in that area seem to have destroyed its habitat. Whether or not it is really extinct, I cannot ascertain. However, if it persists today, it has been overlooked in recent years by the many collectors who have searched for it. Numerous specimens of a somewhat similar subspecies from Marin County have been found in recent years, but these seem not to represent true *pheres.* I am inclined to think that the name *pheres* should be restricted to specimens actually taken in San Francisco, at least until the situation has been much more thoroughly studied.

On the topmost portion of the famous Twin Peaks of San Francisco is found a subspecies of *icarioides* that was described by HOVANITZ. This isolated area seems to be the only locality for *P. i. missionensis,* the Mission Blue. This is a rather heavily marked subspecies, in contrast to the very pale *pheres* which occupies an area only a few miles away. The food plant of *missionensis* is a low perennial Lupine of the *chamissonis* groups. Human settlement is beginning to encroach on its already restricted habitat, and the disappearance of *missionensis* is only a matter of time.

There remains to be considered one other butterfly on the list. On all of the hills in San Francisco where *Eriogonum* grows, is to be found *Callophrys viridis.* For many years this was considered by most students as a synonym of *C. dumetorum.* By some it was regarded as *C. affinis.* HOLLAND (revised *Butterfly Book,* 1930) stated that he had *affinis* from California. CLENCH (Revision of *Callophrys, Bull. Mus. Comp. Zool.* 94: pp. 226-228) pointed out the differences between *dumetorum* and *viridis* and considered *viridis* a valid species. Its exact status is not for me to decide here. It is at least easily separable from *dumetorum* on appearance alone. It flies alone, not in company with *dumetorum,* which may indicate that it is a subspecies of *dumetorum.* Like the other San Francisco butterflies, *viridis* is engaged in a losing struggle with man's encroachment.

It is interesting to note that these local butterflies have been unable to extend their ranges down into San Mateo County to the south. The more southern portions of the San Francisco Peninsula seem to be unsuitable for them. To the observer of the area, there is no ready explanation for this peculiar fact. Even the flora seems alike enough to have allowed for this extension. The whole story seems to show what has been shown before, that specialization is a one way street with no return.

This history of San Francisco's butterflies is obviously incomplete. It is hoped that other observers will be stimulated to add their information to the knowledge of this interesting matter.

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