Technical Papers

The Breeding Site of *Drosophila lacicola* Patterson[1]

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The *Drosophila virilis* species group has been intensively used for the study of genetics (*1, 2*), cytogenetics (*3, 4*), sexual isolation (*5–7*), and geographical isolation (*8*). Under laboratory conditions the various species have proved to be excellent experimental animals, but even experienced collectors invariably have had trouble in finding the wild specimens. Furthermore, our information to date concerning the breeding sites of the various species has been completely nil, except for *D. virilis* itself, which is a "domestic" species found in produce houses, etc., breeding on rotten fruits. It has been well known, however, that adults can be trapped only in the immediate vicinity of bodies of fresh water.

One species of the group, *D. lacicola* Patterson, is known from Minnesota. During the last week of July 1950, collections made by trapping with rotting bananas disclosed that a large population of this species was concentrated about a small pond on the campus of The University of Minnesota Biological Station at Itasca Park. Such trapping showed (1) that the adults could be taken only in the immediate vicinity of the pond and that traps set 30 ft back from the shore did not capture the flies, and (2) that many of the flies which were caught were young, recently emerged individuals. The latter fact indicated that the species must be breeding in a narrow fringe about the pond.

An intensive search was undertaken, and the breeding site of *D. lacicola* was found to be the rotting phloem of the aspen *Populus tremuloides* Michx. During October and November 1948, several large aspen trees on the edge of the pond had been felled and the trunks cut into cordwood. By 1950 the phloem of the stumps and the pieces of cordwood had decomposed to a dark-brown to black state, although maintaining its original fibrous condition. This material, when exposed by stripping the bark, gave off the rancid, pungent odor characteristic of rotting aspen. Larvae of *D. lacicola* were living in the rotting phloem, and pupae of this species were in the dried, exposed edges of the phloem material, mostly within ½–1 in. of the place where the wood had been sawed. Aspen bark is known to be rich in various sugars, and Clyde Christenson has determined that in these particular pieces of bark yeasts are predominant microorganisms. Apparently the *D. lacicola* larvae feed on these yeasts.

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Adults of *D. lacicola,* but not of the other species which inhabit the region, were attracted to the areas exposed by stripping away the rotting bark, and the eggs of *D. lacicola* were oviposited in considerable numbers upon the inner surface of the bark. Adults of *D. lacicola* were bred from pieces of the bark which were isolated in the laboratory, as well as from individual pupae which were dissected from the bark.

At present the exact breeding sites of the other "wild" species of the *D. virilis* species group are unknown. On the basis of the known distribution of the various species and on the basis of the known distribution of aspen and its close relatives, the cottonwoods, it is suggested that *D. montana* Patterson and Wheeler probably breeds in aspen, and that *D. americana americana* Spencer, *D. americana texana* Patterson, Stone, and Griffen, and *D. novamexicana* Patterson all probably breed in rotting cottonwood phloem.

It is further suggested that *D. virilis,* the domestic species, may have arisen from an ancestral "wild" stock in a semitropical, semiarid area where various fruit-producing plants and cottonwoods grew in close contact in oases or possibly in primitive man's irrigated areas.

References

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An Improved Micromanipulator for Cellular Micrurgy

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One of the micromanipulators most widely used during the past 25 years is patterned after the instrument originally described by Robert Chambers (*1*). The fine three-way movements of microneedles or micropipettes, produced by manipulating the micrometer screws of this instrument, are curvilinear. Although the paths of the microtips follow arcs of large circles, no difficulties arise for the horizontal movements. The two cross movements in the horizontal plane of the Chambers' micromanipulator are entirely satisfactory, as indicated by the wide usage of this instrument in cellular micrurgy (*2–5*).

The fine vertical movement, however, is unsatis-