

Wave Interference Pattern from the Wings of a Bee

David R. Lapp

James B. Conant High School, Hoffman Estates, IL 60194

The students in my physics classes find concepts far easier to grasp and are better able to see the virtues of learning these concepts when they are confronted with practical illustrations. Every good physics teacher recognizes this, but the process of finding these illustrations is often quite challenging. Sometimes the most effective illustrations are those that are observed by chance in nature. I observed such an illustration of wave interference from a two-point source while on vacation last summer.

While relaxing on the bank of a large pond in Lake County, California, I watched a bee fly too close to the surface of the water and get stuck. As it struggled to free itself by beating its wings feverishly, I considered aiding it with a small branch. However, as I approached, I noticed that its two wings were producing a beautiful and stationary interference pattern in the water. I thought that a

picture of the pattern would be interesting to my students, so I had a friend with a 35-mm camera snap several shots, one of which appears as Fig. 1.

My students were more than delighted with the photographs. One of them immediately recognized the pattern as one he had seen in a ripple tank lab. We spent about fifteen minutes reviewing wave interference, nodes, antinodes, coherence, and related nomenclature. It was a thoroughly pleasant and lively discussion, which was sparked and sustained by the photographs of the bee. By the end of our discussion, I was convinced that my students were eager to find more evidence of physics phenomena outside the classroom. I, too, have been encouraged to observe my environment more closely and have been reminded of the wealth of physics illustrations beyond the traditional classroom demonstrations. ♦



Fig. 1. Double-source interference pattern.