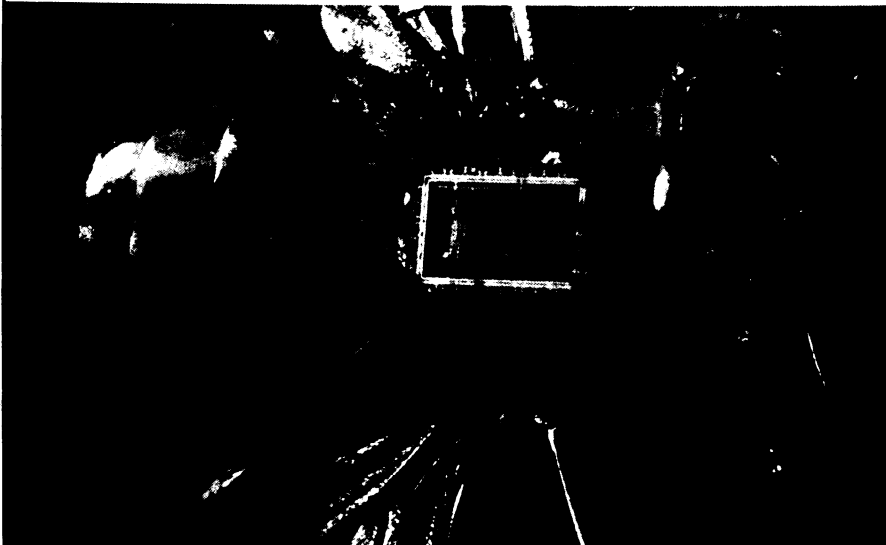


Bee with a chip on its shoulder



Martin Marietta Corp.

Engineers are getting serious about the attack of "killer" Africanized bees. The bees, which are more aggressive than their European counterparts common in the United States, are making their way north from Central America. They should arrive in the United States by next year, where they threaten to disrupt the \$20 billion-per-year beekeeping industry.

Enter the engineers. Instrumentation specialists from the Bethesda, Md.-based Martin Marietta Corp., working at the Oak Ridge (Tenn.) National Laboratory,

have developed a solar-powered semiconductor chip that can be glued to the thorax of a captured bee. The 35-milligram prototype chip, shown here on a European bee, transmits infrared signals to receivers up to a mile away. Scientists hope to use it to study Africanized bees' mating and foraging habits, with an eye toward stemming their migration.

Engineers expect the chip to transmit pulsed signals for the lifetime of the bee, says project leader Gary Alley. "The fragile part of all this is the bee," he says.

Brown dwarf: Seeking a stellar leprechaun

Hunting for brown dwarfs has become a little quixotic over the years, with astronomers inferring their presence here and naming a candidate there, but finding none. Most astronomers not only believe in brown dwarfs—accumulations of interstellar gas that never get massive enough to ignite—but also think the "failed stars" should be quite common. Unfortunately, the smoldering balls of gas would be quite dim and difficult to see.

Now three scientists have announced the discovery of just such a dim object with characteristics consistent with those predicted for a brown dwarf. The presence of most previous brown dwarf candidates has been inferred from indirect evidence, but astronomers have seen this object with the aid of an infrared camera, say William Forrest of the University of Rochester (N.Y.), Michael F. Skrutskie of the University of Massachusetts in Amherst and Mark Shure of the University of Hawaii's Institute for Astronomy in Hilo. Their findings are scheduled to appear in the July 15 *ASTROPHYSICAL JOURNAL LETTERS*.

The object is in a binary system with a known star. It is much cooler and redder than any star lying along the main se-

quence of stellar evolution, but more luminous than low-mass red stars. "Whether we have a brown dwarf or, on the other hand, a very low-mass star evolving toward the main sequence depends strongly on the age of the binary pair," Forrest says.

The object's luminosity corresponds to that predicted for a brown dwarf about 200 million years old or a low-mass star between 600 million and 1 billion years old. Forrest estimates the pair of stars to be between 70 million and 600 million years old.

University of Vancouver scientist Bruce Campbell, whose own brown dwarf candidates (SN: 6/27/87, p.405) turned out not to be the elusive stellar imp, comments that he'd like to see someone else confirm the team's results using completely different methods. Forrest is also cautious, noting that the orbital-motion observations needed to help determine the pair's age may take decades. As more data are collected and refinements in theory are made, Forrest hopes to better estimate the chances of the star being a dwarf or a newborn star. "For now, the chances are about 50-50 that it's a brown dwarf," Forrest says. —C. Vaughan

B₁₂ deficiency sans blood defects

Scientists have developed two new tests for vitamin B₁₂ deficiency, and in the process found that many people suffering from the deficiency do not have the characteristic blood disorders long thought to signal the problem. Instead, the researchers report, B₁₂ deficiency "commonly" causes neurologic symptoms ranging from memory loss to an inability to walk. Such cases were believed to be rare in people deficient in B₁₂.

Diagnosing the vitamin deficiency has long hinged on the presence of blood disorders—including anemia, a low white cell count and enlarged red cells—and on a test that measures B₁₂ in the bloodstream. The new tests, now clinically available, are more reliable and sensitive, say physicians John Lindenbaum of Columbia University in New York City and Robert H. Allen and Sally P. Stabler of the University of Colorado in Denver.

In a study of 323 patients with low vitamin B₁₂ levels, 141 had neurologic symptoms and 40 of those did not have the characteristic blood disorders. The 40 suffered mild to marked neurologic and psychiatric symptoms, including dementia, depression, impotence and loss of balance. Aside from one patient who died during the first week of treatment from advanced complications of the deficiency, patients in this subgroup of 40 benefited from vitamin B₁₂ injections, the standard treatment for the disorder. Most of these patients' symptoms disappeared completely, the physicians report in the June 30 *NEW ENGLAND JOURNAL OF MEDICINE*.

Earlier work had led Allen to question the reliability of the original B₁₂ test. "So I tried to develop a new test to see how well the standard test was working," he says. "The gold-standard cases, the classic B₁₂ deficiency cases, were no problem, but the rare cases—without blood abnormalities—were where the physicians needed extra help."

Originally known as "pernicious anemia," severe vitamin B₁₂ deficiency was fatal until the 1920s, when experiments showed that patients recovered after eating liver. Physicians erroneously attributed this to the iron in liver, until the active factor, cobalamin or vitamin B₁₂, was identified in 1948. Why some patients with the deficiency have blood abnormalities and others have neurologic symptoms remains unknown.

In an editorial in the journal, William Beck of Massachusetts General Hospital in Boston issues a caveat, pointing out that in the past physicians have treated vague, diverse symptoms with B₁₂ injections without adequate justification, and that further confirmation of these results is needed. —C. Eron