

Pollen or poison: A bee's dilemma

A honeybee innocently foraging for pollen may be collecting a deadly stock of pesticide. The microscopic capsules of methyl parathion, which give persistent insect control with increased safety to mammals, resemble pollen to a bee. The capsules fit into the bee's branched hairs and then are packed into its pollen baskets. Back home, the bee stores the capsules, along with pollen, in hive combs. Eventually the microcapsules are consumed and kill the bees. In a report soon to be published in *ZEITSCHRIFT FUER NATURFORSCHUNG*, Roy J. Barker, Yolanda Lehner and Michael R. Kunzmann describe the microcapsules' prolonged toxicity against bee colonies.

Encapsulated pesticide fed directly to bees is less toxic than an emulsion of the chemical. Thus most cases of bee colonies being poisoned are attributed to pesticide contamination by weeds along field edges (or by cover plants in an orchard) rather than to intentional treatment of the crop in bloom. But the biologists at the Bee Research Laboratory in Tucson, Ariz., conclude that microencapsulated pesticide is often responsible. They say, "... contrary to expectations arising from the results of some laboratory tests, encapsulated methyl parathion readily destroys or damages bee colonies where bees visit sprayed areas."

The effects of the capsules are delayed and less dramatic than those of the pes-

ticide emulsion, because accumulation of a lethal dose is modified by encapsulation. Pesticide regulations now do not take that difference into consideration.

The investigators documented each step in pesticide accumulation. Dyed microcapsules collected on the legs of bees. Methyl parathion was detected in the pollen packets of bees that foraged alfalfa sprayed with pesticide-containing microcapsules and also in the combs from contaminated areas. Finally, microcapsules were observed in bees' guts and pollen from contaminated combs killed adult bees from another area.

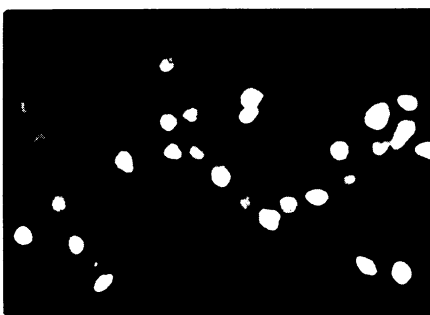
Remedies to the problem suggested by Barker and colleagues include changing the characteristics of the capsules and of the bees' behavior. The manufacturer of PENNCAP-M, the first commercial microencapsulated pesticide, is now labeling the product to prevent misuse, and some states prohibit application where bees may be killed. "Nevertheless, beekeepers still have no effective countermeasures," the researchers say.

They point out that bees are indispensable to agriculture as "manageable pollinators." For effective cross pollination, California almonds alone need 300,000 colonies each spring. Rented bees also pollinate alfalfa, avocado, blueberry, cranberry and melon. The scientists estimate that a third of food depends directly or indirectly on insect pollination. □

Selecting the sex of your infant

Attempts to predetermine the sex of offspring have been around at least as long as recorded history. Aristotle, for instance, recommended having intercourse in a north wind if boys were desired, in a south wind for girls. Now comes a more scientific method of selecting the sex of one's offspring, says W. Paul Dmowski, director of the Fertility Unit at Michael Reese Hospital and Medical Center in Chicago.

In 1973, Ronald J. Ericsson, then of the A. G. Schering Co. in Berlin and now with Gametrics Ltd. in Sausalito, Calif., devised a technique to help couples infertile due to the male's failure to produce sperm vigorous enough to achieve fertilization. The method consisted of taking a sperm sample from a man and placing it in a solution that resisted sperm swimming in it. The more vigorous sperm in the sample would swim through the solution fastest and then be collected at the bottom of the solution. The most vigorous sperm from several ejaculations could be collected and inserted into the uterus of a woman ready for conception (SN: 11/3/76, p. 230). By the end of 1976, seven children had been born with the help of the technique—six in Iran and one in England.



Y (male) sperm cells after separation.

However, Y sperm, those that confer the male sex on the eggs they fertilize, are generally able to swim faster than are X sperm. As a result, the sperm collected with Ericsson's method are usually Y sperm and result in the conception of boys, not girls. Dmowski and colleagues have now applied Ericsson's technique for the express purpose of conceiving boy babies. The only difference between their method and Ericsson's is that they use two layers of human serum albumin as their solution, not three. That way not quite as many Y sperm get collected, but more sperm in general are culled, thus better

ensuring the prospects of inseminated sperm leading to conception.

So far the Ericsson-Dmowski method has led to 14 pregnancies. Seven of them have resulted in boy babies and one is pending. Two of the pregnancies resulted in miscarriages: One was a male fetus; the sex of the other was indeterminable due to the fetus's immaturity. The other four pregnancies did result in girls. However, two of the infants may have been conceived through intercourse, not via the Ericsson-Dmowski technique.

Although selected conception of girls is not now possible, it too may soon become a reality. Antonio Scommegna, chairman of obstetrics-gynecology at Michael Reese, is beginning to work on methods for isolating X-bearing sperm. □

Soyuz 32 success

In the first Soviet manned space flight since the return of the record-breaking Soyuz 29 cosmonauts on Nov. 2, 1978 (SN: 11/11/78, p. 327), two cosmonauts aboard Soyuz 32 successfully docked with and boarded the orbiting Salyut 6 space station at 8:30 a.m. (EST) Feb. 26. According to Soviet news agency Tass, flight commander Lt. Col. Vladimir Lyakhov and civilian flight engineer Valery Ryumin were to check out Salyut 6's systems for future missions. On arrival, Ryumin found a message from the Soyuz 29 team: "Congratulations on the arrival. You are facing a very difficult road. Take care of each other and be very considerate to each other. You have a lot of friends and they will all help you. We wish you success." This was Ryumin's second Soyuz mission; he was aboard Soyuz 25, which failed in its docking attempt. □

Amputations and heart disease deaths

Amputations considerably increase the risk of death and especially death from heart disease, according to a study conducted by the National Academy of Sciences for the Veterans Administration that was recently transmitted to Congress.

Veterans who had one or both legs amputated because of war injuries were compared with veterans of the same age, sex and military service who had not had their legs amputated. The former were found to be at a 30 percent greater risk of death from all causes and at a 50 percent greater risk of death from heart disease. However, veterans who had had arms, hands or feet rather than legs amputated were not found to be at an increased risk of death, especially from heart disease, compared with the control group. Why this discrepancy? The VA is now undertaking research of its own to find out.

The NAS study was headed by Zdenek Hrubec of the NAS and by Richard A. Ryder, an internist from Binghamton, N.Y. □