



### Ants

► THE NEXT time an ant takes a short cut across your picnic cloth, it may put matters into perspective to reflect that ants were here before we were. Long before.

On the evidence of ant fossils preserved in amber, it is known that at least thirty million years ago ants were living together just as they are today, in large communities, with a caste system, with division of labor. Man is a mere Johnny-come-lately, with a scant million years behind him.

Ants are prodigious athletes in proportion to their size. They can lift a weight 400 times their own weight. If weight increased in direct proportion to size, a five-pound ant could easily lift a ton.

Despite their small bulk, ants display a great range of size from the smallest ant to the largest, even within the same species. The largest ant of a species may weigh several thousand times more than the smallest. Among humans, even considering obese giants at one extreme and dwarfs at the other, the factor does not exceed 30 times.

Ant colonies consist of not just two, but three sexes: males, females, and neuters. The neuters, who are the workers, are anatomically female, but sterile. The so-called queen is a sexually mature female. There may be several such fertile females in an ant colony.

The workers are wingless. Only the males and females have wings, which are used

but once, during the nuptial flight. Shortly before swarming time, males and females will be produced in great numbers. The colony is a bustle of activity. The workers keep the adults in check until the weather is propitious.

Warm windless days seem to be preferred, because when such a day comes, from all ant colonies in the neighborhood clouds of males and females will swarm skyward in the nuptial flight.

Males and females pair off in what is destined to be the first and last youthful fling for both of them. The female will immediately burrow herself a home in the earth or move in on an established colony. In any case, she will keep the sperm she received on her nuptial flight in a special pouch in her body, and will use them to fertilize all the eggs she will produce for the rest of her life.

The bridegroom, having fulfilled his biological destiny, wanders off, loveless, homeless and alone, doomed to an early death.

If it is warm and airless the day of your picnic, take a close look at the ant before you flick him off into the tall grass. If he has wings, he is probably a bridegroom, perhaps dazed at the breath-taking brevity of his honeymoon. If he has wings, treat him gently, for his hours are numbered.

Science News Letter, May 29, 1954

### AERONAUTICS

## Speedy Short Lived Jets

► A SHORT but speedy life is forecast for jet planes of the future.

Because at five times the speed of sound, a supersonic airplane would encounter temperatures as high as 1,600 degrees Fahrenheit, tomorrow's fighters may be designed to last only a limited time, Dr. George Gerard of New York University's College of Engineering research division, predicted.

High temperatures beyond the "thermal barrier" will weaken materials used in the plane's construction, thus severely reduce its life span. Aircraft strong enough to withstand such temperatures would have to be substantially heavier and less maneuverable. Because of the weight problem, it may be necessary to design the airplane for limited life expectancy.

The "thermal barrier" is the region above Mach 2. Mach numbers express velocity in terms of the speed of sound in the surrounding atmosphere. Mach 2 is twice the speed of sound. At a speed of Mach 5 in the stratosphere, from about 35,000 to around 100,000 feet above the earth's surface, planes may be subjected to temperatures as high as 1,600 degrees Fahrenheit.

Although aircraft materials are capable of withstanding 1,600 degrees Fahrenheit, tremendous weight penalties may set a realistic limit at Mach 3.5, at which the temperature is 800 degrees Fahrenheit.

Over a period of time this intense heating,

## Questions

**BIOCHEMISTRY**—What clue to drug addiction have radioactive morphine studies given? p. 341.

**ECOLOGY**—How are beavers now being introduced into new territories? p. 344.

**ENTOMOLOGY**—What is the annual loss of farm crops from insects each year? p. 346.

**GENETICS**—Why are Lysenko's claims said to be "all Greek"? p. 344.

**MEDICINE**—What are advantages of using double drug combination to fight TB? p. 340.

What device may replace the familiar clinical thermometer? p. 341.

**PHYSICS**—Why use heavy particles for smashing atoms? p. 345.

**PSYCHIATRY**—What suggestion has been made for use of psychiatrists in courts? p. 340.

Photographs: Cover and p. 343, Purdue University; p. 339, Atomic Energy Commission; p. 341, Fremont Davis; p. 346, Clifford Matteson; p. 352, General Scientific Equipment Co.

JOIN the rapidly increasing group of readers of the Mathematics Magazine. Its broad coverage, ranging from easy problems and elementary papers thru advanced research, contains matters of interest and profit for the entire family of mathematicians. Whether mathematics is your business or your hobby, you'll find help and opportunity in the Mathematics Magazine.

Send \$3.00 to:

**MATHEMATICS MAGAZINE, Dept. C**  
14068 Van Nuys Blvd., Pacoima, California  
for one year's subscription and an "Understandable" article on almost any classic course in mathematics (send alternative) e.g. trigonometry, calculus, topology et cetera.