

MAMMALOLOGY
NATURE RAMBLINGS



Proximity Sensings

► BATS WERE the original discoverers of the principle of the proximity fuze.

These flying mammals have long excited man's wonder at their ability to fly about in the near-darkness of caves, or outdoors in the deepening dusk, without ever colliding with the walls or with each other. Small wonder that our ancestors were inclined to look upon them as endowed with darkly supernatural powers—even to the extent of picturing Satan as having bat's wings!

Modern scientists, insatiably curious and unafraid of the Devil himself, have done some rather extensive experimenting on this uncanny ability of bats to sense their way around in the dark. They have tried putting up obstacles that must be as difficult for bats to see as for human beings, things like stretched wires and suspended strings—and the bats would avoid these as readily as they did larger and more obvious lumps of matter.

Finally the secret was hit upon. Bats, it was discovered, constantly give out exceedingly shrill little chirpings while in flight. Probably the chirps that we hear are the lowest-pitched on the bat's tones, at that—higher notes that they pipe are above the human ear's perceptive ability.

Echoes of these high-pitched notes, returned to the bat's ears by the surfaces of obstacles, warn of impending collisions, and the bat's exquisitely-balanced neuro-muscular flight controls automatically go into action and cause a saving zoom or swerve.

Now this is essentially what the proximity fuze does, except that in its case the echo-producing vibrations are those of ultra-short radio waves in the ether instead of ultra-short sound waves in the air. But the principle is the same—an apparatus that sends out exploratory vibrations and catches their returning echoes. Of course, the resultant behavior is different: the bat swerves, the bomb blows up.

Now it has been proposed to make the avoidance independent of human eyes on the instrument board and hands on the controls—to turn the plane into a kind of mechanical super-bat.

Science News Letter, November 7, 1953

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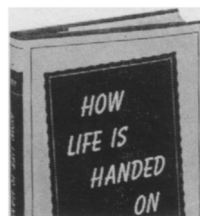
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