

## BIOLOGY

# Rat-Cat Friendship

Psychologist finds that cooperation among traditional animal enemies is possible after training. Experiments point to possible path toward world peace.

## See Front Cover

► TOM AND Jerry, the cat and rodent team of movie cartoons, often take swipes at each other, but usually end up the best of friends.

Now a psychologist has found that cat-rodent cooperation is not restricted to the cartoons. Dr. L. S. Tsai of Tulane University, New Orleans, told the American Association for the Advancement of Science meeting in St. Louis that he had trained a confirmed rat-killing alley cat to work peacefully with a juicy rat for the mutual benefit of both.

For his experiment, Dr. Tsai selected a "very ferocious cat given to us by a family in which she had enjoyed a long and glorious record of rat-killing." While in the laboratory, the cat caught and killed five rats, proving the justice of his reputation.

The cat, called Tom, and the rat, Jerry, were placed in a single cage, but separated by a glass, and later a wire, partition. This cage had an electrically controlled door connecting it with a common cage equipped with two electric buttons that opened still another door.

Beyond this second door was food. But to get to it Tom had to press one of the buttons and Jerry the other. Unless they worked together, neither would eat—except maybe Tom, if Jerry was not fast enough.

It took about 700 trials lasting over three and a half months before the cat finally cooperated with the rat without any act of aggression. (One of Jerry's kin was killed early in the experiment.)

From then on, the rat-killer, Tom, ate amicably out of the same dish with Jerry, the juicy rat.

Dr. Tsai then threw in an extra complication. An electric button controlling Jerry's cage door was placed in Tom's cage. The only way the rat would be available to

help the cat reach food was for Tom to press the button, releasing his old enemy, but now his partner. Tom learned to do this in a hurry.

Thus, through conditioning, the habitual rat-killing cat has been taught to cooperate with his traditional "enemy" towards a common goal, Dr. Tsai said, demonstrating the immense possibility and power of education.

This discovery may throw overboard the idea that in animal nature there is an indestructible instinct of pugnacity which makes fighting or wars inevitable, Dr. Tsai said.

Since the experiment failed to show any such pugnacity instinct even among supposed natural enemies, the rat and cat, Dr. Tsai said, this research may point to a biological foundation for the possibility of world peace.

Other experiments by Dr. Tsai on cooperation among traditional animal enemies resulted in the three-way friendship pictured on the cover of this week's SCIENCE NEWS LETTER, with the rat, cat and dog eating amicably from the same dish.

Science News Letter, January 17, 1953

## TECHNOLOGY

## Motors Canned to Protect Atomic Sub

► TO PROTECT future crewmen of the Navy's first atom-powered submarine Nautilus from dangerous radioactive leaks in the nuclear reactor's hot-water system, Westinghouse design engineers have "bottled up" the motors that will pump the radioactive water from the reactor to the sub's boilers and then back again.

Seals ordinarily used to separate the pumping motor from the liquid being pumped were not satisfactory. All leaked to a certain extent. Since the water would be radioactive after passing through the hot atomic reactor, any such leak aboard the Nautilus could expose crewmen to dangerous radiation.

"Canned" right into the hot-water circulating system, the motor's rotating element and its stationary part both are jacketed in stainless steel coverings. The complete motor is immersed in the very water that is being pumped. Electric current is fed to coils in the stationary part of the motor, and the resulting electromagnetic fields cause the rotor to turn, pumping some of the "hot" liquid right through the motor itself.

Science News Letter, January 17, 1953

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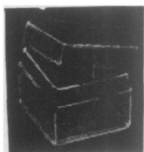
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