SOCIAL INSTINCTS

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It is too often assumed that the law of nature is: kill or be killed. Presenting an argument for the opposite principle: a natural law of cooperation.

Now this is the Law of the Jungle—
as old and as true as the sky;

And the Wolf that shall keep it may
prosper, but the Wolf that shall
break it must die.

. . . the strength of the Pack is the
Wolf, and the strength of the Wolf
is the Pack.

— RUDYARD KIPLING

It is curious that generally "the law of the jungle" has come to have an entirely different meaning from the one Kipling suggested. Most people would say that the rule of the jungle is: kill or be killed. Rugged individualism, aggressiveness, warfare—these have been thought to be the natural tendencies throughout the animal kingdom. Kipling's sentimental verses suggest that, on the contrary, the law of the jungle is not the law of tooth and claw but the very opposite—cooperation. And strangely enough a great deal of modern research in various sciences indicates that Kipling was right. Through many laboratory experiments and observations in the field we are being shown that we have been close to 100 per cent wrong in thinking of animal life as a dog-eat-dog existence. The truth seems to be that nature adheres to the principles of the highest ethics: the Golden Rule is sound biology.

This concept is so far-ranging in its implications for human beings and for nations that a long-term research program has been started to collect and synthesize pertinent data from all parts of the world. The sponsor of the project is the Foundation for Integrated Education, a recently organized group of scholars and businessmen.

Examples of cooperation in the animal world are not at all difficult to find, and they turn up in the most surprising places. Take the case of African elephants, which are notoriously savage and resistant to taming. Hunters in Africa have seen elephants stop beside a wounded comrade and laboriously lift him with their trunks and tusks, when the so-called law of self-preservation should have made them run to safety. The noted explorer Carl E. Akeley several times saw threatened herds of elephants gather in a ring, with the younger and huskier beasts forming the outer circle to protect the older ones.

Or consider chimpanzees, traditionally regarded as self-centered little creatures. Workers at Yale University's Yerkes Laboratory of Primate Biology in Florida have seen chimps helping each other carry loads and even passing food to one another through the bars of their cages.

Even so lowly a mammal as the mouse is known to cooperate with its fellows. A Polish experimenter named T. Vetulani found that white mice isolated in separate cages failed to grow as fast as those that were grouped two, three or four in a cage. The grouped mice huddled together and kept each other warm, thus conserving energy for growth, and they also healed one another's sores by licking.

At the University of Chicago the zoologist W. C. Allee and his co-workers have discovered tendencies toward mutualism among goldfish. For example, a young goldfish will grow more rapidly in water that has previously been inhabited by another goldfish than in clean, uncontaminated water. The reason is that the second fish feeds on food regurgitated by the first.

Allee made a systematic investigation to determine whether animals survive a catastrophe better in a group than singly. The most interesting of several experiments on this problem involved planarian worms. The catastrophe was ultra-violet radiation, which is deadly to these animals. The worms were arranged in Petri dishes, the experimental animals being crowded 20 to a dish and the control animals isolated one to a dish. The worms were then irradiated. All the worms died eventually—but the crowded worms hung on to life much longer. In one test they lived an average of 517 minutes after radiation, while isolated worms lived only 41 minutes.

One possible explanation is that the crowded worms tended to shade one another from the lethal radiation. But that is not the whole story, as was proved by another experiment. This time all the worms were irradiated in groups of 20; none was isolated until after the damage had been done. Then 10 worms were taken from each group and placed singly in separate dishes, while the other 10 were left together. Again the grouped worms lived much longer than the isolated ones, surviving an average of 148 minutes to the latter's 78. The worms that were together somehow lent strength to one another. How? Whatever the factor is, it has not yet been identified.

Allee and other investigators have found that this rule of strength in numbers holds true practically everywhere they have looked. For example, a sea gull breeds more young when it lives in a large flock than in a small one. A salamander tadpole whose tail has been cut off will regenerate it more rapidly when other tadpoles are in the tank than when it is alone; the probable explanation is that the presence of several tadpoles raises the salt content of the water to approximately that of the cut surface and thus favors growth. An ant digging a nest moves more dirt when it works in the company of other ants than when it works alone. The spermatozoa of the sea-urchin retain their ability to fertilize eggs much longer in a heavy concentration than in a diluted one. And so on; the examples can be multiplied.

But all these examples deal only with cooperation among animals of the same species. What of the so-called warfare between different species? Lions kill zebras—no question about that. But the lions do it only for food. This type of aggression can no more be considered war than man can be said to war on oysters and chickens. Lions do not kill for sport or out of blood lust; they kill only when hungry. African explorers have seen them trot through herds of easy game without making the slightest attempt to attack.

Surely cats and rats are instinctive enemies! Actually they are not: a cat has to learn to kill rats. A Chinese investigator named Zing Y. Kuo raised three groups of kittens under different conditions. Group A were left with their mothers, and from the first days of life saw how rats were killed. Group B were not allowed to see killing until they were several months old. Group C never saw killing at any time, and were raised in the same cage with baby rats. The upshot was that in Group A 85 per cent of the kittens became rat killers; in Group B only 45 per cent killed rats; in Group C the kittens lived in peace with their rat cagemates and all other rats of the same species. Kuo concluded: "If one insists that the cat has an intinct to kill the rat, I must add that it has an instinct to love the rat, too."

The traditional belief in "hereditary enemies" among animals is constantly being refuted by the Sunday supplements, which dote on printing pictures of dogs that have adopted cats, and tame foxes that play with chickens. The Philadelphia Zoo has witnessed some remarkable examples of such friendships. There a cat and a Senegal parrot became so attached to each other that they slept together. Another cat struck up an acquaintance with a deer, and chose the deer cage to have her kittens. The deer took special care not to step on the litter. A female goat was cautiously introduced by the zookeepers to a female black rhinoceros, a creature of very savage temperament. The rhino, instead of attempting to eat the goat, befriended her. The two were inseparable for the rest of their lives.

Perhaps the most remarkable story of the effects of companionship comes from the Ohio Bureau of Fish Propagation. The Bureau chief, T. H. Langlois, has persuaded the bass in the Bureau's rearing ponds to give up cannibalism—a practice long supposed to be instinctive with these fish. Langlois noticed that if bass are put into weedy ponds, they tend to become separated by the vegeta-