PSYCHOLOGY

Monkeys Learn String-Pulling More Easily Than Rake-Using

Animals' Abilities Vary: Cebus Excels Rhesus In Some Tests; Imitativeness Aids in Learning

MONKEYS can easily learn to pull strings to get what they want. And they can learn, by imitating each other, to pull a latch-string and open the door to their reward. But in fitting short rakes together to make a long tool for hauling in a distant prize, the abilities of monkeys vary, and the Cebus monkeys seem to be superior to man's closer relative, the Rhesus.

These evidences of monkey intelligence were provided by animals in the Columbia University "primate vivarium" in the course of a program of research being conducted by Drs. C. J. Warden, A. M. Koch and H. A. Fjeld, of Columbia, Essex Junior College and the Research Council for Blind Children (*Journal of Genetic Psychology*, June).

It was just a little bit hard for the monkeys to get the idea of the string-pulling at first. It seemed to them a better idea to use their long tails to reach and pull in the food cup. A light tap on the tail each time it was extended beyond the bars corrected this misconception.

Learned Correct String

From then on it was clear sailing. They learned to pull one string and then the correct one of three parallel strings. When the strings were made to almost meet at the food cup, the difficulty of the problem was increased but it was nevertheless solved. One Rhesus who flunked when the strings were only three-sixteenths of an inch apart where they came together at the food cup, was immediately successful when the distance was increased to three-eighths of an inch.

But when the correct string to pull stretches around corners to the food cup, while the wrong strings go straight in its direction, the monkeys find the problem a real job. Spider monkeys could learn it after a few trials even when the gap between wrong string and cup was only three-sixteenths of an inch wide. But some Rhesus monkeys needed a gap of as much as three inches to prevent their being misled by the indirection.

The study of how monkeys ape one another seems to have settled a point much in dispute between animal psychologists. Experiments on ability of cats, dogs, raccoons and chickens have all been pretty disappointing. In general the idea has grown that genuine learning through deliberate imitation simply does not occur among the animals below man.

Success in the present experiment is laid to the apparatus used. This would remind you of the dual-control automobiles and airplanes used for the instruction of student drivers and pilots.

One monkey can watch his instructor pull the latch-string and get a delicious raisin. During this time he is tied up in an adjoining cage, but pulling on the leash. As soon as he is released, he generally rushes to his own controls to try it himself. The animals were successful within 60 seconds in 76.4% of the tests. In about half of these successes it took less than 10 seconds.

Even with putting a series of rakes together to make a long tool for reaching food outside the cages, the intellectual limits of some of the monkeys were not reached. Two Rhesus monkeys failed even with one rake. Two other Rhesus monkeys and one Cebus failed when they had to use more than four rakes. But two Cebus monkeys were successful even with eight rakes and the number could have been increased even more except that the very long tool became too clumsy for the animals to handle.

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Wheat bran contains at least *four* food factors which aid chick growth.

PUBLIC HEALTH

Proper Industrial Piping Called a Health Necessity

RENOVATION of water piping in industrial plants all over the country is a health necessity, according to recent reports from public health engineers. Their reports refer to conditions during normal times but the situation probably needs attention more urgently than ever, now that industrial production is being speeded up for national defense, with consequent extra loads on the plumbing and piping.

Residents of Joliet, Ill., a few months ago found their drinking water strangely flavored with beer and soda water flavors. The reason was a cross connection between city water and a private supply in two breweries and two soft drink bottling places which permitted back-flow into the city mains.

Reporting this occurrence, A. R. McGonegal, formerly plumbing inspector for the District of Columbia, points out that "poisonous solutions such as acid copper cleaning compounds might have been drawn into the mains by a drop in pressure just as easily as beer.

"With all the publicity attending a single heedless condition of piping arrangements responsible for nearly 100 deaths and hundreds of broken bodies seven years ago," Mr. McGonegal comments, "one would think that native American intelligence would see that it did not happen again anywhere. But just pore over the reports of the U. S. Public Health Service, which set forth in detail that the same thing has happened over and over again."

Mr. McGonegal was referring to the amebic dysentery outbreak in Chicago in 1933.

Thousands of physical connections exist, Elmer W. Campbell, Chief Engineer of the Maine Department of Health, states in Public Health Engineering Abstracts, between pipes carrying city water of controlled purity and pipes carrying water of questionable character, or even pipes carrying sewage. Frequently there is only an ancient valve to mark the line between life and death.

Valves, however, are prone to leakage. Careless or stupid attendants may open them.

The remedy for this dangerous situation is known. It should be applied promptly, before another and worse catastrophe than the Chicago amebic dysentery outbreak occurs.

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