

swarms of them at the entrance of caves where the enemy was hiding.

Of course, the idea is already mentioned in our Torah (*Shemos* 23:28). *Hashem* promised to assist the Jewish nation in conquering the land of Canaan by sending the *tzirah*, a type of wasp, ahead to vanquish their enemies.

In America today bees are being trained to sniff out mines, much like the rats in Africa.

During the Gulf War in 1991, the US military actually brought in chickens to help overcome Saddam Hussein. But they were

not serving alongside the infantry, nor acting as alarm clocks for the troops. The Coalition armies feared that Iraq might use biological or chemical warfare against them, as Hussein had done to the Kurds in his own country.

Since chickens are very sensitive to poison gas, the plan was to mount them on the

forward tanks as they went into battle. Should the chicken suddenly die, those inside the tank would know immediately that they had come under chemical attack. Unfortunately, the plan did not work because the chickens proved to be extremely sensitive to the intense desert heat as well. They died, but of natural causes. ■

Amazing Animal Intelligence



• Moshe Miller

Everyone knows that parrots can talk... but are they just "parrotting" the humans around them, or can they actually understand what they are saying? One scientist has spent over 30 years endeavoring to prove that we should re-evaluate our opinion of bird brains. And in case you thought that parrots hold a monopoly on non-human chatter, meet some friendly talking elephants, as well as other creatures with astonishing abilities.

Alex The Parrot

"Wanna banana!" Alex exclaimed.

The research student handed the parrot a grape she was holding in her hand. After pausing for a moment, Alex tossed it on

the floor, annoyed. "Wanna banana!" he repeated insistently.

A banana was fetched.

The student was amazed, watching Alex take the banana and eat it with gusto. This was her first encounter with the famous

bird who could communicate with spoken words. If the claims of Alex's supporters are true, he would be the first known animal in history trained by humans to speak, with an understanding of what the words actually mean. Still, many remain skeptical.

Alex was the "pet" project of researcher Dr. Irene Pepperberg, a psychology professor who has spent over 35 years studying animal intelligence, especially that of parrots.

Pepperberg decided to take her research in an original direction by trying to break the communication barrier with parrots, which, unlike chimps, are able to vocalize in a very similar way to humans. Her plan took some daring: Apes are known to be intelligent animals with large brains – but the young African Grey parrot that Pepperberg bought from an ordinary Chicago pet store in 1977 had a brain the size of a shelled walnut.

Initially, it was hard to convince any institution to fund her project. "If you propose something that's sort of... unusual, there's a lot of skepticism out there. People don't know if you're brilliant – or if you're crazy," explained a distinguished scientist who has worked with Alex, in referring to Pepperberg's research. Eventually, though, Dr. Pepperberg got her project off the ground.

For 30 years she worked tirelessly with Alex, an ordinary parrot that she had asked a pet store employee to pick out for her. She developed brand new training techniques. One of her methods was to model desired behavior, interacting with another researcher while using various tricks to get Alex to pay attention. This technique has since been successfully adapted to help autistic children learn social skills.

By the time of his unexpected death in 2007, Alex had become a celebrity in the field of animal intelligence—and beyond.

Not Your Average Bird Brain

Alex performed many tasks in response to spoken commands. He could also correctly answer a wide variety of questions about



Alex, the intelligent parrot, participating in a study.

his surroundings. He even interacted with people by making various demands and comments to the humans around him.

Just what was Alex able to do? He "knew" over 100 English words like "banana," "truck," and "grape." He could identify 50 different objects by name, recognize quantities up to six, and distinguish between seven different colors and five shapes. For example, given a tray with three green cubes and four blue triangles, any speaker of American English could ask him, "How many green?" or "What color is the three-cornered matter?" Alex was able to give the correct answer—unless he happened to be in a bad mood that day!

When asked if Alex could only understand his trainers, Dr. Pepperberg responded that he could understand most English speakers, but "he has trouble with thick foreign accents."

He was able to understand certain abstract concepts, like "bigger," "smaller," "same," and "different." Alex understood the concept of what a "key" is, and would identify it no matter what size or color it was. When he was presented with an apple for the first time, Alex called it a "banerry." Pepperberg thinks that's because the outside was red like a cherry, and the inside white like the inside of a banana – two fruits whose names he already knew.

Alex was able to use words to express what he wanted. "Wanna go back," he would demand if he wanted to return to his cage. He could ask for specific foods and demand

to be taken to other locations as well. All this, combined with the bird's natural playfulness, contributed to a sense that he had real personality. When Pepperberg inducted two new African Greys into the training, Wart and Griffin, Alex would grow annoyed if they did not respond correctly to questions, and he would shout out the correct answers.

In a recently released study, Dr. Pepperberg revealed that by the end of his life, Alex was actually able to count up to eight, recognize the numerals (1, 2, 3, etc.) associated with each number, and solve simple addition problems correctly 80% of the time, as long as the sum was eight or less. For example, when shown one jellybean, then two, then another one, and he was asked how many in total, Alex answered, "Four."

Celebrity Status

Alex's cognitive accomplishments have been reported in dozens of newspapers and magazines over the years. He became known as the most famous African Grey parrot in history. Any new breakthrough in his development was exuberantly reported by the news media, and quite a following grew up around him.

Pepperberg was his devoted publicity agent, hoping that the attention Alex garnered could be used to positive ends, like attracting new sources of funding for her research. She was constantly on the move, giving speeches and lectures about her work, and drumming up new donors. From elementary school classrooms to university lecture halls, Alex was a star. By the time of his death, he and Dr. Pepperberg had attained international celebrity status, with millions of fans around the world.

Humans are fascinated with any animal behavior that mimics something usually considered to quintessentially human. The more animals seem like them, the more empathy people will feel toward them. People are entranced when they hear about a monkey communicating with sign language, or even sea otters using tools, like rocks to hammer open clam shells. Because of this tendency,

Pepperberg is hoping that her work with Alex and other African Greys will increase public awareness and concern about the African Grey parrot species in general, which is considered "vulnerable" (a step above endangered) by biologists.

Alex's antics endeared him to fans as much as his intelligence. Dr. Pepperberg tells of a time when she was training Alex in specific skills. Ordinarily, she did not allow snacks during a session, but Alex kept pestering her for a nut. She refused several



"Alex, how many blue?" Alex could accurately and consistently count up to six, and by the end of his life, up to eight.



"What matter [is] yellow, Alex?" the researcher asked. "Four-corners," he responded, using the word he had been taught for "square."



Alex showing that he can associate a number with the correct symbol.