

SURPRISE SNACK:

## Betty the Crow Proves She's No Bird-Brain

-- Shocking results from experiment  
give new insight to bird's intelligence.--

### BACKGROUND:

The Behavioral Ecology Research Group at Oxford University's Department of Zoology investigates animal and human decision making with the tools of experimental psychology and of evolutionary biology. The main experimental models, apart from New Caledonian crows as used in this experiment, are European Starlings (*Sturnus vulgaris*). Some current and previous issues include: risk-sensitive foraging behavior, animal decision making, parental and begging behavior, and time perception. For further information, see <http://users.ox.ac.uk/~kgroup/>

The New Caledonian crows last made headlines in December when their preference for using the right side of their beak was discovered. The bird rips pieces from leaves and turn them into tools for removing insects from trees. But when it did, more often than not it used the right side of its beak.

This preference for one side of the body over another is more commonly seen in humans, gorillas and chimps, and its discovery in a bird species raises the question of how it developed.

Some researchers have suggested that the tendency towards right-handedness in humans is a result of the ability to speak, a mental activity concentrated in the half of the brain which controls the body's right side. The discovery of "right-beakedness" in crows makes it look more likely that handedness has a more general origin.

Turning a leaf into an effective insect-winkling tool requires a considerable degree of brain effort. Dr Hunt and his colleagues say their results point towards handedness being a product of being able to carry out complex sequences of actions. Those sequences of actions could result in the making of a tool or the production of speech. Either way, concentrating all the brain effort in one side of the brain seems to be a more efficient way of thinking and acting. So, the results of this past development are consistent with the new, birds are turning out to be a lot smarter than we thought they were.

NOTE: Other birds have also shown surprising levels of ingenuity. The woodpecker finch of the Galapagos Islands uses a cactus spine to spear insects. Pigeons have been known to recognize humans and letters of alphabet. Parrots, though, appear to be at the top of the pecking order. Alex, an African gray parrot, hit the headlines in the 1980s. The bird had a vocabulary of 100 English words and was able to ask questions and make requests.

### STORY:

LONDON - In a challenge to man's sense of the uniqueness of his own intelligence, an ingenious crow called Betty has managed repeatedly to twist wire into a hook to lift food from a tube in a British laboratory. "We had to convince ourselves it was not a fluke, so we repeated the test 10 times and the animal did it in nine of those," said an excited Professor Alex Kacelnik, who led the experiment at Oxford University. Showing an extremely rare capacity for an animal to understand cause and effect and create a tool out of non-natural material, the female crow bent straight garden wire -- a material she had only seen before on cage meshes -- into a hook.

The researchers were testing whether the birds were able to lift food out of a vertical tube using either a straight piece of wire or a hook. "The surprise came in trial number five when the male stole away the hook and flew to another part of the aviary," said Professor Kacelnik. He watched as Betty spontaneously bent a straight piece of wire and used it to retrieve the snack.

She held it in her beak to lower into a vertical pipe from which she lifted a small bucket with meat morsels inside. That display of what the team of three scientists call "tool-related cognitive capabilities" has challenged previous assumptions that primates like apes were the best after humans in problem solving intelligence. "We assume primates will be cleverer because they are closest to us," Kacelnik added in a phone interview from his laboratory in Oxford. "But this animal (Betty) seems to be on a par at least with any primates we have seen." In the tests, Betty consistently outsmarted her older male crow companion Abel -- both from the *Corvus Moneduloides* species on the Pacific island of New Caledonia.

Fortunately for male pride, however, scientists attributed Betty's superior brainpower to her relative youth, not sex.

The only time in 10 experiments when Betty did not make a hook out of the wire was when Abel managed to bring the food up with straight wire. On other occasions, he waited for Betty to bring out the food then stole it from her.

Argentine-born Kacelnik, and British colleagues Jackie Chappell and Alex Weir carried out the crow experiments three months ago and reported them in a paper published by this week's edition of U.S. magazine *Science*. "To bend the wire, she first wedged one end of it in sticky tape -- available around the bottom of the tube and the side of the plastic tray containing the apparatus -- or held it in her feet at a location three meters from the food, where there was no tape," they wrote in their paper.

"In all cases but one, she tried with the straight wire before starting to make the hook. In all valid trials, the birds retrieved the food within two minutes."

In the wild, crows often use twigs as hooks, but Betty's achievement was to manufacture a non-natural material with a specific task in mind. "She had no model to imitate ... Purposeful modification of objects by animals for use as tools, without extensive prior experience, is almost unknown," the scientists said.

The scientists said in similar experiments done by others, only once had a male monkey managed to unbend a piece of wire to obtain honey. In another precedent they cited, chimpanzees repeatedly failed to unbend piping and put it through a hole to grab an apple, unless they received coaching.

"I think the important message is that there is not just one way of being intelligent as we understand it," Kacelnik added. "Different types of intelligence evolve for different animals." Animal insight New Caledonian crows have been seen to make at least two sorts of hook tools in the wild.

Full details of the Oxford University research are published in *Science* (9 August 2002), 'Shaping of Hooks in New Caledonian Crows' by Alexander Weir, Jackie Chappell and Alex Kacelnik.

## SIGNIFICANCE:

In the wild, New Caledonian crows make at least two sorts of hook tools using distinct techniques, but the method used by the female crow in this experiment is different from those and would be unlikely to be effective with natural materials. While they were familiar with similar experiments they had no experience with wires. The findings may have wide-ranging implications regarding birds' understanding of physics and their quality of reasoning about cause and effect.

The team is now exploring whether New Caledonian crows are exceptionally clever in many other respects, or whether they have brains specially evolved for the use and manufacture of tools. Alex Kacelnik, Professor of Behavioral Ecology, said: 'Although many animals use tools, purposeful modification of objects to solve new problems, without training or prior experience, is virtually unknown. Experiments with primates, who are much closer relatives of humans than birds, have failed to show any deliberate, specific tool making and human-like understanding of basic physical laws.

'We are now keen to elucidate if New Caledonian crows are outstanding in all aspects of their intelligence or only in those related to tool manufacturing and use. In other

words we want to understand what kind of mind these crows have. This will give us the opportunity to test hypotheses about the conditions which are needed for complex cognition to evolve.'

Gavin Hunt of the University of Auckland, New Zealand, has studied them. He said the behavior of the young female crow was very interesting but not that surprising. "It is tempting to say that the bird used some kind of insight to access and solve the problem of extracting the food, as humans often do in their toolmaking," he told BBC News Online. "However, we need to carry out more experiments to see if this was the case."

## Perseid Meteor Shower Peaks Sunday & Monday

### BACKGROUND:

Every August, just when many people go vacationing in the country where skies are dark, the best-known meteor shower makes its appearance. As with many celestial phenomena, there's some curious lore surrounding the shooting stars of the annual Perseid meteor shower.

Laurentius, a Christian deacon, is said to have been martyred by the Romans in 258 AD on an iron outdoor stove. It was in the midst of this torture that Laurentius supposedly cried out: "I am already roasted on one side and, if thou wouldst have me well cooked, it is time to turn me on the other."

It is highly doubtful whether this actually happened or was a product of morbid medieval imagination, but King Phillip II of Spain believed it enough to build his monastery place, the "Escorial," on the plan of the holy gridiron. The saint's death was commemorated on his feast day, Aug. 10. The abundance of shooting stars seen annually between approximately Aug. 8 and 14 have come to be known by some as St. Lawrence's (Laurentius') "fiery tears."

We know today that these meteors are the dross of a comet called Swift-Tuttle or the Great Comet of 1862. Discovered in 1862, this comet takes approximately 130 years to circle the Sun. And in much the same way that the Tempel-Tuttle comet leaves a trail of debris along its orbit to produce the spectacular Leonid meteors of November, the Swift-Tuttle comet produces a debris trail along its orbit to generate the Perseids.

Indeed, every year during mid-August, when the Earth passes close to the orbit of Swift-Tuttle, the material left behind by the comet from its previous visits rams into our atmosphere at approximately 37 miles per second (60 kilometers per second) and creates bright streaks of light in the midsummer night skies.

These cometary fragments -- countless bits of metal and stone -- are called meteoroids while they exist in and move through space. But a meteor is not a particle of matter itself. It is merely the short-lived streak of light produced by the meteoroid as it is heated to incandescence by its plunge through the Earth's atmosphere. (The handful of objects that hit the ground are called meteorites.) The kinetic energy released per gram of the meteoroid's weight far exceeds the energy efficiency of the most powerful man-made explosives. Thus, an object the size of a pea or pebble can create a substantial meteor trail.

### STORY:

According to the best estimates, in 2002 the Earth is predicted to cut through the densest part of the Perseid stream sometime between 6 p.m. and 9 p.m. EDT on Monday, Aug. 12. This is during the late afternoon and early evening hours across North America, and while the actual interval of peak activity might be lost to daylight, the predawn hours of both Monday morning, the 12th, and Tuesday morning, the 13th, still holds the promise of seeing a very fine Perseid display.

The Moon, whose light partially interfered with last year's Perseids, will not do so this year. It will be a lovely crescent phase in the early evening sky after sunset, even hovering

near the brilliant Venus on Sunday, the 11th. The Moon will set around 10:15 p.m. Sunday night and about a half hour later on Monday, the 12th, leaving the sky dark for the early morning hours, which tend to be prime-time for meteor viewing.

#### SIGNIFICANCE:

Based on recent history, a very good Perseid shower will produce about one meteor per minute for a given observer under a dark country sky. Any light pollution, moonlight or hazy skies considerably reduces the count. However, observers with exceptional sky conditions often record even larger numbers. Also, during an overnight watch, the Perseids are capable of producing a number of bright, flaring and fragmenting meteors, which leave fine trains in their wake.

On the night of shower maximum, the Perseid radiant is not far from the famous "Double Star Cluster" of Perseus. Low in the northeast during the early evening, it rises higher in the sky until morning twilight ends observing. Meteors appearing close to the radiant have foreshortened tracks; those appearing farther away are often brighter, have longer tracks, and move faster across the sky because of our view of their trajectory. Short on time? Set your clock for 3 am Tuesday morning and watch as long as you can.

#### SPORTS:

### BARRY BONDS MAKES HISTORY

Bats: Left  
Throws: Left  
Height: 6-2  
Weight: 228 lbs  
Positions: Left Fielder, Designated Hitter  
Born: July 24, 1964, Riverside, Ca  
College: Arizona State

There were a variety of responses at Pacific Bell Park to Bonds' 600th homer, which put him in the company of Hank Aaron, Babe Ruth and Willie Mays as the only major leaguers to reach the mark.

Bonds, his wife and his father all felt relief. Jay Arsenault, the man who got a bloody face while catching the ball, saw dollar signs. The fans simply appreciated it, blanketing Bonds with cheers on Friday night and Saturday, when Bonds stayed in the Giants' lineup to contribute to their playoff chase despite a torn hamstring that prevents him from sprinting.

At Pac Bell, the emblem on the left-field wall honoring Bonds' homer achievement will be a constant reminder of his 421-foot solo shot in the sixth inning against right-hander Kip Wells, who got the win in the Pirates' 4-3 victory.

Bonds' penchant for making history didn't stop there. The next morning Bonds tied Willie McCovey's major league record of 45 intentional walks in a season by drawing two more against Pittsburgh. McCovey set the mark in 1969 with the Giants.

Bonds has 33 homers and 73 RBIs this season despite being walked 129 times.

#### WHO YOU NEED TO KNOW:

### LOU GEHRIG

Babe Ruth made all the history books, however, in many a fan's heart Lou Gehrig is the greatest second banana to ever play baseball.

Lou followed Ruth in the Yankee line-up for nearly a decade. Steady, quiet, Lou was a star in his own right, winning four American League MVP awards; including one during the Babe's 60 homer year (1927).

Lou was born in New York from humble beginnings. His mother, a German immigrant was a cook at Columbia University, where he later attended college. He left

Columbia signing for the Yankees for \$1500, times certainly have changed!

It wasn't until 1925 that Lou got his big break. The first baseman, Wally Pipp was out with a headache. Fourteen years later Lou was still there, setting a record for consecutive games played. In fact, Lou played an incredible 2,130 games, earning the nickname: the "Iron Horse".

Gehrig's record runs neck in neck with Babe Ruth. Lou exploded in 1926 with .313 average, 16 homers, 107 RBI and a league leading 20 triples. He and Ruth led the Yankees to the first of eight pennants they would win together.

1927 sees Ruth with a fabulous 60-homer season, but Gehrig quietly put together an even better all around year. He was runner-up in the home run derby with 27, he bested Ruth with 175 RBI, 52 doubles, and 447 total bases. Lou was second in hits with 218, third in batting at .373, 149 runs and a .765 slugging average.

Ruth may have held the 60 homer record for a generation, but Lou Gehrig was the MVP. He captured the heart of America, when in 1939 he tearfully retired from the Yankees due to ALS disease (which has become known as Lou Gehrig's disease). Even then, he told the world that he was the luckiest man alive to have played baseball. Lou died two years later at the age of 38.

THIS WEEK IN HISTORY:

## The Washing Machine Is Invented

Before the days of washing machines, people got dirt out of their clothes by pounding them on rocks and washing the dirt away in streams. Sand was used as an abrasive to free the dirt. Soap was discovered at Rome's Sapo Hill where ashes containing the fat of sacrificial animals was found to have good cleaning powers. The earliest washing "machine" - the scrub board - was invented in 1797.

August 10, 1874 William Blackstone, a Bluffton, Indiana merchant and manufacturer of corn planters, built a birthday present for his wife. It was a machine which removed and washed away dirt from clothes. It consisted of a wooden tub in which there was a flat piece of wood containing six small wooden pegs. The inner mechanism looked something like a small milking stool. It was moved back and forth by means of a handle and an arrangement of gears. Dirty clothes were snagged on the wooden pegs and swished about in hot soapy water. Mr. Blackstone began to build and sell his washers for \$2.50 each. Five years later he moved his company to Jamestown, New York where it is located today and where it still produces washing machines.

Competitors and improvements moved in quickly - there have been more than 200 washing machine manufacturers in the U.S. in the past century.

ENTERTAINMENT:

ELVIS

MEMPHIS, Tenn. - Sporting blue suede shoes and pompadour wigs, thousands of Elvis Presley fans will shake rattle and roll their way to Presley's famed Graceland mansion this week, still captivated by burning love of the rock and roll king on the 25th anniversary of his death.

Beginning Thursday and stretching into the early morning hours of Aug. 16, the date in 1977 Presley died of a drug-induced heart attack at age 42, fans bearing candles and tributes will file past his grave in the garden of his white-columned home on the outskirts of Memphis.

Organizers of "Elvis Week," which kicked off last Saturday in this river town along the muddy Mississippi, said they expected between 50,000 to 75,000 devotees from around the world.

The Mississippi-born Presley's fame only seems to grow with each passing year.

While fans of Elvis span generations, many of those expected to attend the anniversary events grew up in the staid, post-war 1950s, organizers said. The hip-swiveling Elvis, the sole surviving twin of struggling parents, personified the soulful rebel when he burst on the music scene in 1956 with a youthful blend of country and rhythm and blues, which became recognized as rock and roll.

Elvis' gyrating presence will be seen and felt around Memphis over nine days, beginning with a parade down club-lined Beale Street, videos of his performances, renditions of his music by impersonators, and reminiscences by his friends. Ex-wife Priscilla Presley and daughter Lisa Marie were expected to attend a Friday night concert.

Elvis' enduring popularity is revealed in the 600,000 people who tramped through Graceland in 2001, steady sales of repackaged versions of his albums, and a compilation album entitled "ELVIS 30 #1 Hits" that is set to hit stores in September.

Of course, Presley also lives on as the butt of jokes, in parodies and in suspicious sightings of him. His image in his last years was as a toiling, overweight performer addicted to drugs.

FEATURE:

## The 8 Glass Myth No Need to Guzzle All That Water

Trying to do the "right" thing by drinking eight full glasses of water a day may do little more than make a person run to the bathroom, a researcher said on Friday.

Newspaper articles, health and beauty magazines all advise drinking at least 8 full glasses of water a day totaling 64 ounces for optimal health -- an approach called "8x8" by proponents.

But kidney specialist Dr. Heinz Valtin of Dartmouth Medical School in New Hampshire said there is no scientific evidence to back up this advice, which has helped create a huge market for bottled water. "After 10 months of careful searching I have found no scientific evidence that supports '8x8'," Valtin, who has written textbooks on the subject of human water balance, said.

Writing in the American Journal of Physiology, Valtin said people forget that the food they eat also contains some water.

The Food and Nutrition Board of the National Research Council has recommended that people take in about one milliliter of water for each calorie of food eaten. This adds up to two liters, or 74 fluid ounces on an average 2,000-calorie diet. But the National Research Council also noted that much of this is already contained in food.

"I did 43 years of research on that system -- the osmoregulatory system. That system is so precise and so fast that it is impossible to believe that evolution left us with a chronic water deficit," Valtin said.

If a person gets low on fluid, the body compensates by bringing fluid back out of the kidneys and by slowing the loss of water through the skin, Valtin said. Thirst kicks in long before dehydration starts, he added. "It does it very quickly and very accurately and it does so in minutes," Valtin said.

He and colleagues became concerned after seeing dozens of newspaper and magazine articles urging people to sip water all day. He reviewed all the scientific studies he could find and he concluded that though water is essential, someone misinformed has been telling people to drink large amounts of water when most do not need to.

"I am referring to healthy adults in a temperate climate leading a largely sedentary existence," Valtin said. "Persons with certain diseases must have large volumes of water -- kidney stones are probably the most common example." The rest can just drink enough to slake thirst -- and this includes coffee, tea, and even beer -- despite their diuretic effects, Valtin said.

He hopes people will be relieved of the guilt of not getting enough water, and of the

expense of buying bottled water to drink throughout the day. "There is also the possibility that if you drink a lot of water that happens to be polluted then of course you get more pollutants," Valtin said. "Then there is the inconvenience of constant urination," he added.

And overdoses of water can cause water intoxication that can lead to confusion and even death. Water intoxication is one deadly effect of taking the drug Ecstasy, for instance, because it makes people thirsty beyond their physical needs.

**\*\*This article was written with the help of Reuters\*\***

Quote of the Week:

Be wise today; tis madness to defer.

-Edward Young, Night Thoughts

Fact of the Week:

There are no photographs of Abe Lincoln smiling.

Word of the Week:

lazy (la\*zi) Disinclined to action or exertion; sluggish; indolent; heavy in motion.

Thank You for Reading, And Have a Great Week!

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