

ZOOLOGY

Rat Man's Distant Cousin

➤ MEN ARE CLOSER relatives of rats than they think, according to discoveries by scientists studying human evolution.

All of today's rodents are a hardy offshoot from an early form of primate from which man developed, said Dr. Malcolm C. McKenna at the 16th International Congress of Zoology in Washington, D. C.

Dr. McKenna of the American Museum of Natural History, New York, is one of several scientists who have been traveling around the world applying new techniques to the investigation of old collections of fossils.

He found that anagalidae, small extinct animals with hoofs on their hind legs and claws up front, qualify as ancestors of both mice and men.

As associate curator of the vertebrate paleontology department, Dr. McKenna is reclassifying some of the Museum's fossils. He found that the earliest known primates had teeth like humans, but also had many traits belonging to the primitive insectivores, which are mammals such as moles, shrews and hedgehogs.

These traits include the lack of post-orbital bones along the side of the head, claws instead of nails and mole-like blood paths through the skull base.

"Primates probably developed from insectivores in the following way," Dr. McKenna said. "A group of insectivores went in the trees and started to grasp and claw and jump among the limbs.

"They developed good brains and eyes, since nobody could go leaping around in trees without stereoscopic vision. Otherwise he'd eventually miss a limb and not be the ancestor of anyone."

Scientists figure primates first developed about 60 million years ago, and about 55 million years ago their eyes started moving forward and their brains enlarged so they took the form of present-day tarsiers of East India and lemurs of Madagascar.

The group of primates in which the great apes and man are classified emerged about 35 million years ago.

Dr. Elwyn L. Simons, paleontologist at Yale University, said a reexamination of fossils found at the turn of this century shows they have more man-like characteristics than had been thought.

He said it would be wrong, however, to refer to them as missing links between the ape and man. They should be thought of rather as attempts by early primates to experiment with what are now human traits, he explained.

"Whether or not this is true, we would need a time machine to find out," Dr. Simons said.

Dr. J. S. Weiner, of the environmental physiology research unit, London School of Hygiene and Tropical Medicine, England, said once man arrived, he broke up into several races, including our present ones and the extinct Neanderthal, Rhodesian and Solo men.

Contrary to some anthropologists, he said nobody alive today is a descendant of any of those three extinct men.

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Main Heredity Questions

➤ SCIENTISTS studying heredity on a molecular level feel they have answered the major questions that bothered them 15 years ago.

Now they must wait for advances in related fields before they can make further discoveries as striking as those dealing with the trait-determining substance deoxyribonucleic acid (DNA).

"The general principles of how genes duplicate and how they express information are believed now understood," said Dr. Matthew S. Messelson, associate professor of biology at Harvard University.

"There is a feeling among molecular biologists that there are not many surprises left in those areas," he said at the meeting of the 16th International Congress of Zoology in Washington, D. C.

In order to make more "startling progress" in solving the riddle of how living things pass on features to their offspring, he said, we must have answers to "key" problems such as how cells tell each other apart.

Another "key" problem is finding how living things store information from the outside in the form of long-term memory, said Dr. Sol Spiegelman, professor of microbiology at the University of Illinois.

He referred to the job of finding out how the messenger substance ribonucleic acid (RNA) works and how its genetic messages are used and can be controlled.

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Drug Closes Open Eyes

➤ CORTISONE, a drug known to deform the offspring of some animals, has been shown to have an opposite effect.

The finding was reported by Drs. Muriel J. Watney and James R. Miller of the pediatrics and zoology departments of the University of British Columbia, Vancouver, at the 16th International Congress of Zoology in Washington, D. C.

They said they gave cortisone to pregnant mice of a strain so inbred that 65% of them are born with their eyelids open. Normal mice are born with closed eyes.

Instead of getting a still greater increase in the number of mutations as they had expected, the scientists found that after receiving cortisone the number of mice born with open eyes fell dramatically to four percent.

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Polar Bear on Way to Sea

➤ THE POLAR BEAR, lover of icebergs and the chilly Arctic Sea, is hotly suspected of being an "evolutionary breakthrough" taking place in our times.

That white animal may be a step in the evolution of a brown bear into a water beast like a large sea lion, according to a group of leading scientists in the study of why living things come in such a magnificent variety of forms.

"On the other hand," said a member of the group, Dr. Max K. Hecht, "the polar bear may never get around to evolving into anything more, considering the rate at which man is eliminating them. Soon there may be fewer polar bears in the Arctic than in the zoo."

Dr. Hecht, a zoologist at Queens College, New York, and others in his group at the 16th International Congress of Zoology in Washington called themselves "synthetic evolutionists."

Whereas biologist Charles Darwin, who presented the theory that life evolves from lower forms, studied the varieties of beaks on finches, the modern evolutionist searches for evidences of major changes in animals.

"We're interested in the breakthrough itself, not the by-products of the breakthrough," said Dr. Walter Bock, zoologist of the University of Illinois.

Examples of breakthrough animals of the far past, he said, are fossil remains of flying reptiles.

"Our approach is broader than Darwin's,

but we are more Darwinian than ever," said Dr. Bobb Schaeffer, zoologist of the American Museum of Natural History, New York. "We have a firmer factual basis for being so."

Dr. Gerd von Wahlert, of the Staatliches Nature Museum, Ludwigsburg, Germany, recalled that genetics, the study of heredity, once was believed to be "the deathbed of Darwinism."

Early geneticists thought changes in a species could develop in jumps. If you exercised every day, they said, your children would be stronger than you were as a child.

Darwin believed changes in a species came about smoothly over great lengths of time.

Instead of dying in its "deathbed," Darwinism has picked up genetics and used it as an important tool for promoting the current synthetic school.

The new approach combines the knowledge of genetic mechanisms, modern biology, geology, paleontology and the mathematics of variabilities to support Darwin's theory of natural selection.

For example, Dr. James C. King, geneticist at New York University School of Medicine, said that although radiation increases deformities in the trait-bearing genes, it is only a small part of a complexity of forces acting to produce changes in a whole species.

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