

natural sciences

EVOLUTION

Brain casts aid development study

Very little research is being done in the evolution of the mammalian brain, presumably at least in part because brains don't make very good fossils.

But in mammals somewhat lower on the evolutionary ladder than man, brains do leave behind a good record in the contour of the inside of the skull. Anatomist Leonard B. Radinsky of the Pritzker School of Medicine of the University of Chicago is making latex casts of the inside of both fossil and contemporary mammal skulls. He now has more than 450 such casts, which he says are good representations of the actual appearance of the brain's surface. By studying the relative sizes of various regions of these casts he is able to deduce when certain animals began to emphasize certain senses and de-emphasize others.

For instance, he says, some 25 million years ago the ancestors of modern otters began to develop very sensitive whiskers for use as underwater guiding devices. Almost 10 million years ago some species of the dog family began to develop pack behavior. By about 55 million years ago primates had begun to develop better vision and reduce their sense of smell.

FORESTRY

Two new natural research areas

The U.S. Forest Service has added two more tracts of national forest land to the 77 natural research areas contained within the national forest system. These areas consist of virgin forest or other plant communities of particular interest, maintained for scientific research and education.

One of the new tracts, the Roaring Branch Research Natural Area, contains 300 acres of old-growth shortleaf pine and hardwoods in the Ouachita National Forest in Arkansas. It is the first natural area to preserve a stand of virgin shortleaf pine.

The second tract is the Wolf Creek Research Natural Area, 150 acres representative of the Western shrub and grasslands in the fringes of the ponderosa pine range in north-central Washington. This tract is located in the Okanogan National Forest, and is the first to contain the bitterbrush and wheatgrass type of rangeland vegetation.

ENTOMOLOGY

Pond's mosquito lure isolated

It is well-known that mosquitoes lay their eggs in stagnant water, and that control of the pests is best achieved either by removing or poisoning this water. The trouble is that even an empty beer can refilled with a few ounces of rainwater makes a good egg site for some species.

A large percentage of such sites are never even found, let alone treated or dried up.

A substance has been isolated by Dr. Toshiaki Ikeshoji of the University of California at Riverside that may offer hope of dealing with this problem. The substance is isolated from stagnant and polluted water; one-billionth

of a gram of it on a piece of paper caused gravid female mosquitoes to lay their eggs in water near the paper while ignoring equally suitable sites in the same vicinity.

The egg-laying attractant works well with the house mosquito, *Culex quinquefasciatus*. A similar attractant has been isolated for *C. tarsalis*, a bearer of encephalitis. The chemical nature of the active ingredients is not known, though one factor is known to attract the insects and another to start them laying eggs.

The attractant could be used to bait poisoned cans of water in infested areas, avoiding the indiscriminate spreading of pesticides and pulling mosquitoes away from undiscovered egg-laying sites. The implications in cost savings and increased efficiency for disease vector programs throughout the world make this an important contribution to those efforts.

BOTANY

Antibiotics control plant disease

The bacterial disease aster yellows affects not only asters but also a large number of plants ranging from onions, tomatoes and carrots to marigolds and chrysanthemums. It is spread by a leafhopper, against which insecticide control has so far proven both expensive and relatively inefficient. To date the only really effective control method known is destruction of infected plants, a costly solution in nurseries.

Roger H. Lawson of the Department of Agriculture's Agricultural Research Service in Beltsville, Md., has had success in treating infected plants with the antibiotics chlortetracycline and chloramphenicol. Treated plants produce new, healthy growth and healthy flowers.

The disease reappears 3 to 4 weeks after withdrawal of the chemicals, but the treatment could prove valuable in saving a season's fruit crop or harvest of seeds in a nursery.

More significant, the procedure could lead the way to wider use of antibiotics in treating plant diseases, at the moment mostly controlled either by controlling the insect vector or by destroying infected plants.

ZOOLOGY

Key deer to be tracked with radio

In 1947 Key deer were down to a population of less than 40. Now they have rebounded due to strict conservation measures and number over 500. But increasing development of the 18 Florida keys that are their only range is putting pressure on them once again; the automobile is beginning to replace the hunter as the primary deer killer.

The deer, a subspecies of the Eastern whitetail, are particularly interesting because of their ability to survive on the limited range of the small coral islets that are the keys. This aspect and others of their behavior and life cycle helpful to their management will be studied by Dr. Willard D. Klimstra of Southern Illinois University in Carbondale, using tracking radios attached to the animals.

The main population center of the two-foot-tall, 50- to 80-pound deer is on the 16-square-mile Big Pine Key, now being developed extensively for residences.