

First Australian frog fossils

Though four families of frogs are recognized from Australia—Hylidae, Leptodactylidae, Microhylidae and Ranidae—the study of the origin of this fauna has been impeded by the total absence of any native record. Now Michael J. Tyler of the South Australian Museum reports in the April 19 *NATURE* on the first frog fossil find in Australia. Recently discovered among the rich mid-Miocene vertebrate deposits near Lake Palankarina in central Australia, the finding consists mainly of limb fragments that include a well-preserved, seven-millimeter ilium marked by a deep lateral groove extending the shaft. Though the fossils have not yet been referred to any family, the ilium is considered of great diagnostic value for identification of family and genus. “Provisional studies,” says Tyler, “favor the assumption that the fossil will ultimately prove to be a leptodactylid or possibly a hylid.”

Family quarrels

“Canids which play together tend to stay together,” observes biologist Marc Bekoff of the University of Missouri, after studying the social play of four coyotes, four wolves and four beagles during the first four weeks of life.

Coyotes participate in more antagonistic behavior earlier in life than wolves and beagles, reports Bekoff in the April *BIOSCIENCE*, and form their social relationships (who dominates whom) by means of severe, unritualized fights. As their social ranks become more established, the frequency of antagonistic behavior falls and playfulness rises. And though the highest ranking male is the most outgoing and explorative, he is also the least successful at initiating social play and is the only animal in the study to kill prey at eight weeks of age.

On the other hand, the social development of the beagles and wolves was very similar, the beagles being the most solicitous and demonstrating very low levels of combative behavior. Bekoff did not observe any social hierarchy among the beagles throughout the course of the study. The wolves showed only slightly higher levels of agonistic behavior, all of which were threats—no fights.

“At some time during the first year of life, coyote littermates usually disperse, and it is probable that the early development of agonistic behavior, along with undetermined factors, facilitates this dispersal,” comments Bekoff. “. . . That the social development of the wolf in very early life appears not to be very different from that of the beagle is interesting, and comparison of their life styles reveals a marked similarity; namely, both species perform activities which require cooperation among group members.”

Whooping crane population

The official endangered whooping crane population record was recently released by the Interior's Fish and Wildlife Service Director Lynn A. Greenwalt, and the count is 49. Though the birds have never been numerous, 1,000 to 2,000 at peak existence, they numbered less than two dozen in the late 30's and 40's. Their population has risen in cycles. Scientists have noted a certain rhythm over the past four decades that suggests population decline at about 11- or 12-year intervals. In 1937, a wintering ground refuge was established for them in south Texas coastal area at Aransas. From Texas, they migrate to the Northwest Territories of Canada.

May 4, 1974

DNA in search of a function

The nucleus of a cell is often envisioned as a labor camp where all the DNA molecules (genes) present are busy churning out molecules of RNA. This appears to be the case for bacteria cells, but not for mammalian cells. Only about one percent of all DNA in the cells of mammals appears to be engaged in such production, Donald D. Brown of the Carnegie Institution of Washington pointed out last week at a symposium at the National Academy of Sciences. So what is the other 99 percent doing? Maybe regulating the one percent DNA that does the labor.

The only way to find out, Brown says, is to isolate and purify genes of known function, then see how they might be regulated by the surplus DNA. Two such genes have in fact been isolated and purified, one of them by Brown's group. Brown is now working on the isolation and purification of a third gene that makes silk protein in the silkworm. Because he knows the chemical sequence of the RNA molecule that makes the protein, he can deduce the DNA sequence (gene) that codes for the protein.

Multiple sclerosis at cell membrane

Chronic measles virus infections in the central nervous system may cause a slow, degenerative disease called subacute sclerosing panencephalitis (SSP). Such infections may also underlie multiple sclerosis. If so, measles viruses may stick their antigens onto the surface membrane of victim nerve cells, and if the body's immune system cannot get rid of the antigens, multiple sclerosis may result.

Fluctuations in the amounts of measles virus antigens on the cell surface of chronically infected cell cultures have been found by virologists at the Karolinska Institute in Stockholm. So multiple sclerosis, they hypothesize in the April 19 *NATURE*, may indeed result from a chronic measles infection. This suggests that the progression and remission stages that characterize the disease may be the result of “irregular expression of virus-specific antigens in myelin membranes, and an immunological attack on these antigens.”

BCG: Double-edged sword

Since 1964, a strain of tuberculosis used as an anti-tuberculosis vaccine for many years, bacillus Calmette-Guérin (BCG), has been injected into animals and patients with cancer. BCG has induced a number of cancer remissions, apparently by priming a subject's cell-mediated immunity. This promising immunological tool against cancer has its drawbacks, though.

There is evidence that BCG can stimulate cancer rather than suppress it (SN: 6/23/73, p. 409). Edmund Klein and his colleagues at Roswell Park Memorial Institute have now found that BCG can suppress cell-mediated immunity in cancer patients. The Buffalo researchers' findings will soon be published in the *AMERICAN JOURNAL OF CLINICAL PATHOLOGY*.

They gave BCG to 50 cancer patients over a period of time and studied their immune responses. Although BCG originally primed cellular immunity, it seemed to eventually depress it in a number of the patients. Fortunately cellular immunity reverted to normal when BCG treatment was stopped.

“BCG might have value for cancer therapy,” Klein concludes. “But I don't think that the evidence is really as convincing as touted.”

289