

Archaeopteryx: Flying or grounded?

It came, Harrison B. Tordoff says, "like a bolt of lightning."

He was looking with a friend at casts of fossil specimens of a small, winged dinosaur called Archaeopteryx; he had just heard Yale University paleontologist John H. Ostrom describe his controversial theory asserting that the creatures must not have been able to fly. Tordoff's friend, remarking on the specimens, pointed out that they were so well preserved that the asymmetrical shape of the individual feathers was quite obvious. To University of Minnesota's Tordoff, that asymmetric feather meant one thing: Archaeopteryx could fly.

In the March 9 *SCIENCE*, Tordoff and Alan Feduccia of the University of North Carolina explain their reasoning: The central support that runs the length of a typical feather is called the rachis; on either side the interlocking barbs form a sheet that is known as a vane. When the two vanes are identical or nearly the same size and shape, they are called symmetrical; when one vane is much reduced, as in the wing feathers of modern flying birds, they are called asymmetrical. The asymmetry

is important in the wing's aerodynamics—the narrow leading edge gives each feather an airfoil cross-section. In modern birds, Feduccia and Tordoff say, the degree of asymmetry corresponds to their flying abilities. The feathers of very strong fliers have extremely narrow leading-edge vanes; in poor fliers, the asymmetry is less obvious and the feathers of flightless birds are symmetrical.

When they examined Archaeopteryx specimens, the researchers found that the feathers are "clearly asymmetric with the outer vanes reduced as in modern flying birds." The shape of the feathers "seems to show that Archaeopteryx had an aerodynamically designed wing and was capable of at least gliding." If the Archaeopteryx could not fly, the authors assert, their feathers, like those of modern flightless birds, would have reverted to a symmetrical shape.

The finding counters the controversial theory by Yale's Ostrom, which is based on other structural aspects (and "a paleontologist's viewpoint," says ornithologist Feduccia) and which claims the animals could not fly but instead used their wings to capture insects. Say the researchers: "Any argument that Archaeopteryx was flightless must explain selection for asymmetry in the wing feathers in some context other than flight." □

Sticking it to schizophrenia

Among the more dramatic differences between the Chinese and American approaches to behavioral science is the Chinese use of acupuncture to treat schizophrenia and other emotional problems (*SN*: 3/3/79, p. 140). Chinese psychiatrists have reported improvement rates of about 75 percent in schizophrenics who have undergone acupuncture at certain "meridian points" around the body.

The Chinese also use several antischizophrenia drugs employed almost uniformly by Western psychiatrists but often have found acupuncture more effective. In many cases acupuncture augments the drugs' antipsychotic actions, they report. With a less than smashing success rate in treating chronic schizophrenics, U.S. psychiatrists have refrained from being overly skeptical of the Chinese approach to treating mental illness.

And now two behavioral scientists from the Albert Einstein College of Medicine in New York report on what they call the first systematic study of acupuncture treatment of schizophrenia in the United States. Jonathan Kane, a psychiatrist, and William J. DiScipio, a psychologist, compared the effects of genuine acupuncture (at specific meridian points designated by Chinese literature) against those of placebo or pseudoacupuncture (at locations not corresponding to any known meridian) and of a control period of no acupuncture contact with a psychiatrist. No

antipsychotic drugs were administered to any of the three chronic schizophrenic patients in the study during the nine-week period.

Using the Psychotic Reaction Profile, the researchers and hospital staff rated each of the subjects in four categories: withdrawal, thinking disorganization, paranoid belligerence and agitated depression. Kane and DiScipio found noticeable improvement on various measurements in two of the three persons tested, they report in the March *AMERICAN JOURNAL OF PSYCHIATRY*. And, they add, the improvements were found only during and just after true acupuncture, and not during either the pseudoacupuncture or control periods.

The Chinese have suggested that acupuncture at certain points can modulate activation of the brain's cortical and reticular systems in ways that might influence behavior. Some of those points—in the large intestine, liver, governing vessels, pericardium and spleen—were used in the U.S. study.

"The present study shows that acupuncture, when correctly performed, exerts a therapeutic action, possibly by decreasing the level of sensory input to the reticular activating system and thereby lowering excessive cortical activation," say Kane and DiScipio. "Whether or not this mechanism applies to other diseases remains unanswered." □

WHO: It's an 80-proof planet

The World Health Organization, alarmed by sharp global increases in alcohol consumption, has issued an urgent plea for corrective and preventive measures. WHO officials are so concerned about the alcohol problem that they are recommending, among other things, "the establishment of the necessary legislative sanctions" to reduce consumption. Such sanctions might include raising the cost of alcohol and toughening enforcement of blood alcohol level standards and punishments for violations. WHO also recommends the "need to examine existing trade relations between countries from the point of view of their health implications."

What has triggered this WHO reaction is a picture painted by the results of several multinational studies on alcoholism trends during the past two and one-half decades. "So rapidly have ... alcohol-related problems increased, that they now rank among the world's major public health concerns, threatening to slow down economic development in the Third World, and to over-burden the health services of most countries," warns the WHO report. Among the trends depicted are:

- Between 1950 and 1976, the annual per capita consumption of alcohol in 25 countries increased from 30 percent (in Portugal) to 500 percent (in West Germany).

- In England and Wales, admissions to hospitals for alcoholism have increased 20-fold during the last 25 years. But only one of nine at an advanced stage of alcohol dependence receives care by medical or social services in the United Kingdom.

- In the United States, the medical, psychiatric and social consequences of drinking cost an estimated \$43 billion a year.

- Almost one-third of Chile's medical and psychiatric budget is spent on patients with alcohol-related problems.

- Drunken driving contributed to a tripling of road accidents in Kuwait between 1965 and 1975.

WHO blames much of the problem on the relatively low cost and high availability of alcoholic beverages. WHO statistics show that between 1960 and 1972 production of wine increased by 20 percent, distilled beverages by 60 percent and beer by 80 percent. The ramifications are felt not only in the health field but in other areas, WHO notes. "Studies ... implicate alcohol in 13 to 50 percent of rapes, 24 to 72 percent of assaults and 28 to 86 percent of homicides," according to the report.

Such a picture constitutes an "occasion for alarm," WHO says. "What is profoundly disturbing is that the world picture is far from static. ... At the same time, effective interventions are available to prevent and manage many of the problems." □