

# NEUROLOGY

Wray Herbert reports from Washington, D.C., at the meeting of the American Academy of Neurology

## Stuttering: Larynx out of control

Stuttering is an age-old speech disorder. It is mentioned in the Bible and is common to every culture, affecting from 1 to 2 percent of the world population. There are three million stutterers in the United States alone. Yet despite the prevalence of the disorder, there is little known for certain about the source of stuttering — whether it involves the mouth and tongue, the larynx, or the emotions. New evidence, reported by neurologist David B. Rosenfield of the Baylor College of Medicine in Houston, suggests that in a significant number of cases stuttering may result from a failure of the neuromuscular system controlling larynx function.

An interesting characteristic of many stutterers, Rosenfield notes, is that they become fluent when singing, whispering, or speaking in the presence of white noise — all of which involve change in the manner of vocalization and therefore implicate the larynx. Together with Frances J. Freeman of the University of Texas in Dallas, Rosenfield has studied six stutterers who underwent laryngectomies for cancer. Four of the six, the researchers report, are now totally fluent, and the others now have less-severe stuttering problems. The fact that two subjects continue to stutter indicates that it is not a faulty larynx causing the disorder, but instead a disability in the brain system controlling the larynx; and indeed the researchers discovered two people who began stuttering for the first time after a laryngectomy — when they tried to speak with an artificial larynx.

These findings, according to Rosenfield, indicate that for a significant subgroup of stutterers at least, the disorder is a failure of the neuromuscular controls of the sound source; it is reasonable, he says, that some people would improve and others worsen when the sound source is changed. This evidence undermines the notion that stuttering is an emotional problem, Rosenfield argues. While emotions can aggravate movement disorders, he says, psychotherapy can only help alleviate symptoms. "Psychotherapy never cures stuttering," Rosenfield concludes.

## Little risk with immunization

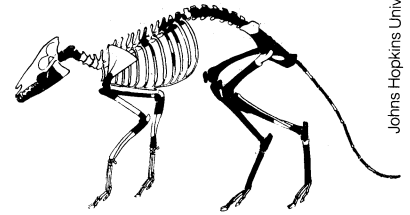
The vaccine for pertussis — or whooping cough — is unpleasant for both parent and child. It makes children uncomfortable and often causes a fever; and for parents it is a source of anxiety because of periodic reports of convulsions — and in extreme cases permanent brain damage — following immunization. Results of a seven-year longitudinal study of 54,000 children indicate that, while the vaccine may not be risk-free, parents' fears may be largely unfounded.

According to neurologist Deborah G. Hirtz of the National Institutes of Health in Maryland, only 2,766 of the children experienced seizures of any kind during the first seven years of life, and of those only 39 — or less than 2 percent of those who had seizures — experienced convulsions apparently related to immunization. Only 10 of those seizures followed a DPT (diphtheria-pertussis-tetanus) shot; the others resulted from vaccines for measles, smallpox and influenza. The seizures following immunization resembled febrile seizures — seizures resulting from high fever, which affect 3 to 4 percent of all toddlers in any case — and in fact half of the children experiencing vaccine-related seizures had family histories of febrile seizure. Many of the children were also suffering from other illnesses at the time of immunization. Furthermore, Hirtz emphasizes, the convulsions, when they did occur, were generally benign. Only one child suffered a long-term effect — a speech disorder — following a lengthy seizure related to the DPT vaccine. None of the children developed cerebral palsy or epilepsy, and all of the children had normal intelligence.

# EARTH SCIENCES

## Sleeker lines for Eocene mammal

A 53-million-year-old skeleton of a mammal called *Diacodexis metsiacus* shows that this oldest member of the order that includes sheep, cattle and pigs was more agile than scientists had thought.



Johns Hopkins Univ.

Until a skeleton comprised of 60 to 75 percent of the animal was discovered in 1979 in the Lower Eocene Willwood Formation in Wyoming, all information about *Diacodexis* was gleaned from a sparse selection of fossil fragments, including a primitive tooth, described a century ago. The more extensive skeleton also shows long, slender legs that were well suited to running and jumping, foreshadowing the locomotive prowess of camels and other ruminants. These specializations are "strikingly progressive for a mammal of such antiquity," writes Kenneth D. Rose of Johns Hopkins University Medical School in the May 7 SCIENCE. The animal, of the order Artiodactyla (even-toed hoofed mammals), was assumed to be the basal ancestor in the order. The animal's sophisticated anatomy, Rose suggests, raises the question of whether *Diacodexis* really does represent the condition of the primitive artiodactyl skeleton, or whether the true ancestor was a yet-unknown form with a more generalized skeleton.

## The Boston Basin tells its age

In the course of recent excavations conducted during the extension of the greater Boston area's transit system, rocks in Somerville, Mass., yielded the coveted answer to a long-standing question: How old is the Boston Basin? Analysis of sedimentary rocks collected from a newly excavated subway tunnel revealed samples of microfossils that scientists say date to the late Precambrian period, about 600 million years ago. The findings are reported in the May 7 SCIENCE by Cecelia Lenk, Paul K. Strother and Elso S. Barghoorn, all of the Harvard Paleobotanical Laboratories, and Clifford A. Kaye of the U.S. Geological Survey in Boston. Kaye suggested the study on a hunch that the rocks might contain microfossils.

The finding may end a century-long dispute regarding the basin's age. Earlier estimates assigned a range of dates, some as recent as 250 million years. This figure, Lenk says, was based on a piece of sandstone that was intruded into the older sediments, only to be found in the early 1900s by two Harvard undergraduates who mistook the rock for a chunk of fossilized tree. The problem of assigning a date has been complicated, Lenk says, by the dearth of minerals in the Boston Basin sediments to which the traditional radiometric dating methods can be applied. Of the three types of blue-green algae observed, *Bavlinella faveolata* is of special significance because the alga also is found in Precambrian glacial deposits in Newfoundland and in southern Norway.

## Mt. St. Helens sulfates make the rounds

As scientists expected, after one orbit around the earth the cloud of aerosols and gases emitted by Mt. St. Helens between May 18 and August 8, 1980 dumped most of its dust, leaving sulfates in quantities 50 times background levels. By December the sulfate layer had decayed to about four times background levels, according to scientists from the National Aeronautics and Space Administration in Cleveland. The findings, based on direct filter samples taken in the Great Lakes region, are reported in the April 20 JOURNAL OF GEOPHYSICAL RESEARCH.