

Hebrew that was used about one thousand years later. One of the most important tablets is one containing a vocabulary of Ebalite and Sumeric words. The Sumerians, developers of cuneiform script, thrived in Mesopotamia about 3000 B.C.

The tablets, found in the ruins of the ancient palace, are now being translated. They tell of commercial transactions, international treaties, military reports, religious rites and sacrifices and the story of creation and the great flood. This suggests that Ebla was an important commercial and political power in the area around the Red Sea north to Turkey and east to Mesopotamia. In addition, says linguist Giovanni Pettinato, the tablets shed light on the history of the Jewish people and may contribute to an understanding of some controversial parts of the Bible. □

Fish attracted to electric schools

One otherwise nondescript group of African fishes called "mormyrids" possess a stimulating anatomical feature—an electrical system. An electric organ in the tail generates weak currents, and specialized tissues in the brain in turn detect them. This system helps mormyrids find food and dodge predators in the murky rivers and lake bottoms of tropical Africa and helps them as well, a new study shows, to stay in protective schools.

Mormyrids such as the *Marcusenius cyprinoides* (or "parrot mormyrids") that live in tributaries near Lake Chad form schools at night and migrate along the river bottoms in search of worms and larvae. Although vision is probably the major sensory cue in the schooling behavior of most fishes, ichthyologists agree, visual cues are obviously reduced for nocturnal bottom-dwellers.

Animal behaviorist Peter Moller of Hunter College and the American Museum of Natural History in New York decided to study the schooling behavior of these electric fish. He made field measurements, then conducted laboratory experiments at Daga Weir on the El Beid River in Chad.

He first caught young specimens of *M. cyprinoides* (schooling occurs mainly among young fish) then observed three groups of them for several days in a concrete holding tank. He was able to identify five types of group behavior: pursuit, physical contact, slow group movement, parallel lineup and single-file swimming.

Moller then "disconnected" the electrical system in each member of one observation group by surgically severing the spinal cord and its neurons just above the electrical organ in the tail. This operation, Moller writes in the Aug. 20 *SCIENCE*, does not interfere with the animal's locomotion since the muscle nerves are connected to the spinal cord in front of the

surgical lesion.

The fish in the now "electrically silent" group, Moller found, showed less pursuit of and contact with the current-emitting fishes, and seldom participated in slow group movement. Most striking was the total absence of parallel lineup and single-file swimming—quite characteristic of schooling fishes—among the "turned off" mormyrids.

The data, Moller says, suggest that

electric organ discharges provide the basis for schooling behavior by reducing the number of aggressive physical encounters and keeping the fish spaced within minimum and maximum distances. Since schooling is considered, in large part, a visual process in other fish, this study represents another schooling mechanism that is adapted to aid group cohesion and thus survival in dark, murky waters, Moller says. □

Diet scrutinized for drug metabolism

Due to the ever-increasing number of drugs on the market and the propensity of Americans to take them for every ailment, major or otherwise, scientists are scrutinizing factors that might influence the way drugs behave in the human body. First they found that the drug-metabolizing enzymes a person inherits are crucial for an effective and safe passage of drugs through his body (SN: 6/26/71, p. 438). Then they found that if two or more drugs are taken at the same time, unexpected toxic reactions can result (SN: 5/29/71, p. 365). Now they have found for the first time that diet can influence the speed at which drugs pass through the human body, confirming similar animal results.

Alvito P. Alvares, Karl E. Anderson and Attallah Kappas of Rockefeller University and Allan H. Conney of Hoffmann-LaRoche, Inc. studied three young men over an eight-week period. During the first two weeks of the study, the subjects ate their usual home diet. The average American diet is 15 percent protein, 50 percent sugar and 35 percent fat. During the second two weeks, they were kept on a low-sugar, high-protein diet. The composition of this diet was 44 percent protein, 35 percent sugar and 21 percent fat. During the third two-week period, the subjects were put on a high-sugar, low-protein diet. The composition was 10 percent protein, 70 percent sugar and 20 percent fat. The final two weeks the subjects returned to their usual diets.

During each of the test periods the subjects received a drug called antipyrine on day 10 and a drug called theophylline on day 14. The amounts of the drugs in the subjects' bloodstreams were measured up to a few hours after drug administration. Results in all three subjects, reported in the August PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, showed that the two drugs were broken down considerably faster when the subjects were on a high-protein rather than a high-sugar diet. Specifically: The half-life for the drugs during the high-protein diet was 9.2 hours, versus 17.5 hours during the high-sugar diet.

The implications? A high-sugar diet would probably predispose people to greater drug toxicity than a high-protein diet, since drugs would linger longer in the body. In fact, animal studies have

shown that protein deficiency increases the toxicity of certain drugs (SN: 7/1/75, p. 43). However, this might not necessarily be the case. A high-protein diet is known to prime the liver enzymes needed to break down drugs in the body, but sometimes these enzymes metabolize drugs and other foreign compounds to a more toxic rather than to a less toxic state. A lot more must be learned about diet and drug metabolism before scientists can recommend what kind of food people should eat to obtain optimal drug metabolism.

For instance, researchers need to know whether the protein and sugar content of the diet also influences the metabolism of other drugs in people. They need to learn whether the fat, vitamin and trace element content of the diet influences human drug metabolism. Unsaturated fats and some vitamins and minerals appear to keep animals' liver enzymes primed for action (SN: 7/19/75, p. 43). Finally, they need to better understand precisely how different dietary components influence drug metabolism. □

NAS panel member forced to resign

For the first time in its history, the National Academy of Sciences has requested and obtained the resignation of a member of one of its committees for inappropriate conduct and conflict of interest. Pathologist Paul Gross was asked to leave the NAS Subcommittee on Particulate Contaminants, of the Committee on Drinking Water Standards, after documents obtained incidentally in a court case revealed he had leaked committee recommendations to a mining company involved in relevant litigation. Gross, 74, lives in Naples, Fla., and holds a research post at the University of South Carolina.

At issue is the question of whether asbestos fibers can be dumped safely into lakes and rivers from which drinking water is to be drawn. Gross has served as a consultant for the Reserve Mining Co., which dumps iron ore wastes containing asbestoslike fibers into Lake Superior. He once testified on the company's behalf in a lawsuit brought by the Environmental Protection Agency to stop the