

News of Science

Retia Mirabilia of Cetaceans

The typical vascular pattern of the mammalian body comprises a single artery accompanied by one or two veins. In the extremities of lorissine lemurs, some edentates (sloths, certain anteaters, and pangolin), and Sirenia, this simple pattern is replaced by a "blood-vascular bundle." This bundle is a specialized and complex sort of *rete mirabile* consisting of numerous small arteries and veins surrounded by a connective-tissue sheath. The function of such a bundle has long been a mystery. Among terrestrial mammals, it attains its highest development in slow-moving forms and, hence, has been interpreted as a specialization correlated with sluggishness. This explanation, however, does not explain its presence in aquatic mammals.

Similar, although not identical, multi-channeled arteriovenous bundles are found in the fins and flukes of whales. These have been studied by Scholander and Schevill [*J. Applied Physiol.* 8, 279 (Nov. 1955)]. Each major artery is surrounded by a multiple thin-walled, trabeculate venous channel, resulting in two concentric conduits, the warm one being inside. In addition, there are separate superficial veins with thicker walls. On the basis of the anatomical findings and perfusion experiments, the authors conclude that these blood-vascular bundles are concerned with heat preservation. In such a countercurrent system, the warm arterial blood is cooled by the venous blood already chilled in the fin. Thus the heat of the arterial blood does not reach the fin but is short-circuited back into the body via the venous system. Body heat is therefore conserved at the expense of keeping the appendage cold. The efficiency of heat exchange in a system of this sort is related to speed of blood flow. The slower the flow, the more efficient the heat conservation. On the other hand, cooling of the fin during exercise in relatively warm water could theoretically be accomplished by rapid flow of blood into the appendage. Temperature measurements taken on porpoises support the concept that there is heat regulation in the fins.

The authors interpret the analogous blood-vascular bundles in the limbs of

sloths as serving a similar function, since these extremely sluggish animals can barely keep warm even in their warm environment. One wonders whether the same reasoning can be applied to the bundles of the slow lemurs—which apparently are more active than the sloths—and of the pangolin—which is not an exceptionally sluggish animal.—W. L. S., JR.

Peace Pills

Within the last 4 years, tranquilizing drugs have come into wide use for relief from daily tensions and from the special demands of business or professional life. Unlike sedatives, the tranquilizers are supposed to reduce anxiety without loss of alertness. The American Psychiatric Association, although recognizing the legitimate use of such drugs in the psychiatric treatment of certain classes of patients, has taken a stand against their casual use in a statement mailed to its 9353 members.

Something like 35 million prescriptions for the drugs will be written in 1956, according to the APA. The association also cites a recent estimate that among the first ten compounds most frequently prescribed in 1955, three were tranquilizers. The statement issued by the APA said that it was important to obtain scientific data about drugs and warned that the treatment of emotional illness with the tranquilizing drugs involves the obligation of close supervision by a physician familiar with this specialty.

Psychiatrists are not the only scientists investigating the effects of the new drugs on emotional behavior. In a recent effort to use laboratory methods to gain more of the needed data, Joseph V. Brady [*Science* 123, 1033 (8 June 1956)] demonstrated that rats and monkeys under the influence of reserpine will continue to gain rewards by pressing bars during short periods of "emotional stress." Even with this advantage, however, the total number of lever responses for a longer period—one that includes shorter periods of stress—is less than the number achieved by saline control animals, whose responses are momentarily depressed during the shorter periods.

Genetics of the Leopard Frog

When one considers the widespread use of the common leopard frog, *Rana pipiens*, in elementary laboratory study in biology, it is indeed surprising that so little is known about its genetics. Now Peter Volpe [*J. Heredity* (Mar.-Apr. 1956)] has presented the results of some analyses of great interest. The nonspotted variety of leopard frog found in certain populations has been known since 1942 to be a simple Mendelian dominant to the common spotted pattern. A mottled variety found in southwestern Minnesota has been shown by Volpe to be also a simple Mendelian dominant. When the two mutant varieties were crossed in either direction, Volpe obtained 2 mottled : 1 nonspotted : 1 spotted. A complete analysis can be made only if the hybrids can be reared to sexual maturity and backcrossed to the common spotted form; but it seems likely that the three varieties depend on a series of multiple alleles, C^K (mottled) being dominant over C^B (nonspotted), and both of the foregoing alleles being dominant over c (spotted).

The difficulty is that of rearing the frogs in the laboratory from the stage of metamorphosis to that of sexual maturity. It would be interesting to see whether tagged or marked hybrids could be released into one or more ponds containing only the *pipiens* form and could then be recaptured for genetic testing after 2 or 3 years. The experiment might also throw interesting light on some important problems of population genetics; for example, what happens in a population of a given size when one or the other of the mutants is introduced at a specific frequency? Will the fate of the seeded mutant be the same at different levels of seeding and in different sizes of populations? Will the fate be the same in ponds within the natural distribution of the mutant form as in ponds outside of the natural distribution? Will a pond seeded with both the mottled and the nonspotted forms show a superior advantage of either one in competition with the normal spotted variety? Many problems of evolutionary, as well as genetical, interest may be attacked by turning the laboratory out of doors, so to speak.—B. G.

Polio Vaccine Available

The release of a total of 17,172,396 cubic centimeters of poliomyelitis vaccine during June—almost twice as much as was ever before released in a single month—was announced recently by the U.S. Public Health Service. Altogether, 79,058,460 cubic centimeters have been released to date. Commenting on the record production in June, Marion B.

Folsom, Secretary of Health, Education, and Welfare, said:

"I am advised that there are 53 million persons in the top priority group of children under 15 and expectant mothers. Enough vaccine has now been released to provide two injections for three-fourths of this group.

"The period of acute shortage of vaccine now appears to be over in many parts of the nation. In areas where demand still exceeds supply, we may look forward to an easing of the shortage soon if production continues at the present rate.

"I urge parents, physicians, and health officials to cooperate in making maximum use of the increasing supply of vaccine as it becomes available. We should all remember that vaccination in July may prevent polio in August or September—the months when the danger is greatest."

Altogether, states and territories have now been allotted 64,747,305 cubic centimeters; the National Foundation for Infantile Paralysis has received 13,732,134 cubic centimeters; 16,281 cubic centimeters have been licensed for export; and 562,740 cubic centimeters went into commercial channels before controls were established.

Scientists Serve High Schools

In order to determine what efforts are being made by science departments and scientists to maintain specific contact with potential science students, the AAAS Science Teaching Improvement Program (STIP) sent a questionnaire to 809 4-year colleges. A total of 733 replies have been received for a 90-percent return.

The most common method for providing contact between the high-school student and the scientist is on the college campus. Career days are sponsored by 374 colleges as one way to enable students to understand science and scientists. Engineering and/or science expositions are held by 174 colleges. Mathematics or science assemblies are convened by 102 colleges. The assembly programs may be provided by students but commonly involve senior scientists. Science fairs are sponsored by 235 colleges in cooperation with Science Clubs of America, the State Academies of Science, and/or other groups.

Less commonly the approach is of a more individual nature and usually for a longer time. Thirty-eight of the colleges hold workshops for high-school students. These may be held after the junior or the senior year of high school. Fifteen of the colleges give tests for high-school students to aid in the selection of the major field by the student and to give

both the student and his counselors some idea of his chances of success in his chosen field.

Direct contact between the scientist and the student is helpful in dispelling a common notion that scientists are "peculiar." One of the most significant findings of the survey was that scientists are active in student guidance at 423 of the colleges.—I. E. WALLER

Placebos versus Reserpine

Blank placebo pills had the same effect as reserpine, a tranquilizing drug, when they were used to relieve anxiety of patients before surgery, it was reported by three Northwestern University doctors, Roy M. Whitman, assistant professor of neurology and psychiatry, Morris A. Lipton, assistant professor of medicine, and Eva Kavan, former instructor in surgery.

In a "double blind" study with 30 patients, one group received the placebos and the other received reserpine, also called rauwiloid, for 6 days before surgery. About one-half of both groups showed "a significant change in anxiety," whether they received the drug or blank pill, the report said. The pills were identical in appearance, and "neither the doctor, nurse, anesthesiologist, nor patient knew which pill was the real thing."

The study was part of a search to find more satisfactory drugs for use before operations being performed in the Veterans Administration Research hospital at the Northwestern medical center. The report was made in the summer issue of the *Quarterly Bulletin* of Northwestern University Medical School.

News Briefs

■ On the Ishibashi brothers' ranch in Torrance, Calif., plastic film spread on the ground to keep strawberries from touching the moist soil and to prevent the soil from drying out has reduced fruit losses resulting from mold rot by 75 to 85 percent. The Ishibashis felt that plastics might succeed where other types of mulches were prohibitively expensive or did not last long enough. The plastic film, which is specially perforated for this job, is made from Bakelite polyethylene, a product familiar to growers and consumers alike as a material for packaging fruits and vegetables.

■ According to a recent report in the July issue of *Medical Times* by Paul Williamson of Albuquerque, N.M., a newly developed polyethylene tape is superior to suturing in closing wounds. The advantages described are improvement in the rate of wound healing and reduction in the incidence of infection

and scarring. Application of the tape is described as painless, and the tape usually may be freely removed when healing is complete.

■ In an amendment approved 4 June to the U.S. Information and Educational Exchange Act of 1948, Congress ruled that exchange visitors in this country under provisions of the act may not apply for either an immigrant or nonimmigrant visa or for status as an alien admitted for permanent residence until 2 years have elapsed following their departure from the United States. However, the attorney general, if he finds it in the public interest, may waive this requirement on the request of an interested Government agency and the recommendation of the Secretary of State. The title of the U.S. Information and Educational Exchange Act of 1948 reads "An Act to promote the better understanding of the United States among the peoples of the world and to strengthen cooperative international relations."

■ A group of four Stanford Research Institute industrial economists headed by Raymond H. Ewell will aid India in the development of small industries as a part of India's second 5-year plan. The project is being carried out under a contract between the institute and the Indian Department of Commerce and Industry.

■ A step toward meeting the long-felt need for a properly housed National Library of Medicine [*Science* 123, 869 (18 May 1956)] was taken by the Senate on 11 June, when it passed bill S. 3430 as amended. The bill provides for the establishment of a National Library of Medicine in the U.S. Public Health Service, under the supervision of a 17-member board, and authorizes construction of a new building for the library in or near the District of Columbia. The identical bill introduced in the House, H.R. 11524, has been approved by the Subcommittee on Health and Science of the House Interstate and Foreign Commerce Committee and has been sent to the full committee for further action.

■ A new large-diameter deep-sea corer has been developed by Maurice Ewing, professor of geology at Columbia University and director of the Lamont Geological Observatory at Palisades, N.Y. The new instrument has a diameter of 11.5 inches and will penetrate about a foot of the ocean floor. The large sample thus obtained can be subjected to more precise analysis than the cores obtained by the smaller instruments previously available. The corer has been tested in the Hudson River and in 13,000 feet of water off the Canary Islands and is at present being used in the Mediterranean. The