MEDICINE

Muscle Powerhouse Failure in Crippling Seen

➤ FAILURE OF the tiny powerhouses between muscle cells may be the cause of the crippling and sometimes fatal disease called muscular dystrophy, Dr. John W. Harman of the University of Wisconsin Medical School reported at the conference in New York of the Muscular Dystrophy Associations of America.

Muscle cells, Dr. Harman explained, are composed of long, strap-like units which have a specialized capacity for shortening to a small volume of their original size.

"Between these piston mechanisms, which are the power drivers of the muscular contraction, lie small, scarcely visible, bullet-shaped structures which are called mitochondria. They are the energy storehouses of the muscle and receive the foodstuffs and convert them into forms of energy that are used by the contracting cells for their work.

"The strap-like structures subsist and function by employing the energy given to them by the mitochondria and the enzymes which they contain. It is suspected that within these muscular powerhouses the derangement underlying the disease of muscular dystrophy may have its location.

"Careful study," he said, "is therefore being given to the structure and the enzymatic composition of these tiny furnaces from which the muscle obtains its capacity to work. A failure in the formation, transport, or utilization of the proper energy-containing compounds by the mitochondria is a likely cause of the disease in certain muscles."

Science News Letter, October 30, 1954

MEDICINE

Shots of Live Germs Given for Typhus Fever

➤ SOME 150 volunteers in the United States and more than 8,000 persons in Peru have now been given "shots" of living typhus fever germs to vaccinate them against the disease.

This new vaccine gives protection for at least two years and "neither deaths nor truly serious reactions" are to be expected.

The results of trials of the new vaccine were announced by Dr. John P. Fox of the School of Medicine, Tulane University of Louisiana, New Orleans, at the meeting of the American Public Health Association in Buffalo.

Heretofore vaccines against epidemic typhus have been made chiefly from partially inactivated typhus fever germs or from the less virulent germs of murine typhus fever, also known as endemic typhus to distinguish it from the kind that comes in epidemics.

The vaccine Dr. Fox reported is made from strain E of epidemic typhus fever germs known as R. prowazeki. Strain E, discovered in 1943, apparently developed by chance evolution. It has lost its virulence but not its ability to confer immunity on humans.

Tests of the actual effectiveness of the E strain vaccine were made by deliberately challenging the immunity in small groups of volunteers. These persons, after getting the E strain vaccine, were given doses of typhus germs big enough to cause typical typhus fever in unvaccinated persons. The vaccinated did not develop typhus even when given the challenge dose of germs two years after vaccination.

Between 12 and 36 hours after vaccination or nine days later reactions can be expected. These range from local swelling and redness to headaches, nausea and fever. But neither the early nor delayed reactions were suffered by all the vaccinated.

Science News Letter, October 30, 1954

ICHTHYOLOGY

Females of Oldest Fish May Live in Deep Water

➤ WHERE ARE the females of the world's oldest living fish?

To date, only five specimens of the coelacanth, a "living fossil" whose lineage dates back to 300,000,000 years ago, have been caught off the coast of Madagascar. All have been males.

Shedding some light on the whereabouts of the females, Prof. J. Millot, director of the Institute of Scientific Research of Madagascar, in a report to *Nature* (Oct. 9), thinks that scientists may have to go deeper down to find the answer.

"The fact that among the five specimens captured there is no adult female leads us to believe that these may be out of reach because they live at a depth of more than 1,300 feet."

Prof. Millot points out that fishing off the coast of Madagascar has never been at a depth greater than 1,250 feet.

The coelacanth is believed to have given rise to amphibians and to be the "missing link" in man's eventual evolution from sea creatures.

Science News Letter, October 30, 1954

TECHNOLOGY

Machine Eliminates Stacking of Airplanes

➤ AN ELECTRONIC machine to control airplane traffic is going to work at three undisclosed military air bases.

Volscan, as the control system is known, can virtually eliminate stacking up of aircraft over heavily used airports. It takes under its direction incoming aircraft and guides them into the final approach at 30-second intervals.

Invented by Benjamin F. Greene Jr. of the U. S. Air Force's Cambridge Research Center, volscan is a combination of radar, computer and tracking-while-scanning devices. It can control several airports at the same time.

Science News Letter, October 30, 1954

IN SCIEN

DENTISTRY

Football Players Get Fitted Mouthpieces

➤ FOOTBALL PLAYERS of the 12 high school teams in Wyandotte and Johnson counties, Kansas, are getting protective latex mouthpieces made to fit each player at nominal cost from the members of the Wyandotte Dental Society.

Local laboratories process the mouthpieces for the dental society so that the amount of the dentist's office time in making them has been reduced to that needed to take one impression of the upper teeth and to pour one model.

Besides rendering excellent service to the members of the 12 teams, the plan has proved to be a good public relations project for the society.

The project and details on how the mouthpieces are made are reported by Dr. Howard H. Dukes of Kansas City, Kans. *Journal American Dental Association* (Oct.).

Science News Letter, October 30, 1954

PHYSICS

Atomic Scientists Create Professional Group

➤ THE WORLD'S first professional society for scientists and engineers in all angles of nuclear research and technology has been organized at the National Academy of Sciences.

Known as the American Nuclear Society, the group is to foster the advancement of nuclear science and technology. This will be done through interchange of information and ideas in all fields of research involving nuclear techniques.

Its charter members include such scientists and industrialists as Dr. J. G. Beckerley, U. S. Atomic Energy Commission; J. W. Landis, Babcock & Wilcox Co.; Dr. J. A. Lane, Oak Ridge National Laboratory; Dean D. H. Loughridge, Northwestern University; Dr. C. R. McCullough, Monsanto Chemical Co.; J. R. Menke, Nuclear Development Associates, Inc.; Dr. W. G. Pollard, Oak Ridge Institute of Nuclear Studies; Philip Sporn, American Gas & Electric Co.; and Dr. Chauncey Starr, North American Aviation, Inc.

The new organization plans its first technical conference June 27-29, 1955, at Pennsylvania State University, where a "swimming pool" type of nuclear reactor is under construction.

Although nuclear power will be one of ANS's major interests, the uses of radioisotopes in science and industry, the effects of radiation on materials and even radiation-sterilization of foods will be discussed.

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CE FIELDS

CHEMISTRY

Need Yellow Light for Mushroom Antibiotic

➤ AN ANTI-GERM chemical, or antibiotic, can be gotten from mushrooms if extraction and purification is done under a yellow light in a dark room.

This secret to success in getting the mushroom antibiotic is announced by Nancy Atkinson, bacteriologist at the University of Adelaide, South Australia, in *Nature* (Sept. 25).

She had discovered the antibiotic chemical in an edible mushroom back in 1946. However, it was so unstable that she was "defeated" in attempts to concentrate and purify it and, when the mushroom supply ran out, she temporarily abandoned the work.

This year, she reports, there was a good supply around Adelaide of the particular mushroom, *Psalliota xanthoderma.* So she started work again on purifying the antibiotic, using paper chromatography of water extracts of mushroom stems. The amount of activity on the paper, she found, depended on the extent of exposure to daylight during the work.

After experimenting with various light sources, she found that a Philips yellow dark room globe was most satisfactory. Work testing the antibiotic against various disease germs to determine its potential future usefulness as a remedy is now going forward.

The new antibiotic, Miss Atkinson thinks, can now "justifiably and conveniently" be named psalliotin.

Science News Letter, October 30, 1954

NUTRITION

Doubt Role of Sugar As Chief Energy Source

➤ THE IDEA that sugars are the chief source of energy for muscle needs to be revised in the light of studies reported to the medical conference of Muscular Dystrophy Associations of America in New York.

Muscular dystrophy is a crippling disease, always fatal in children. Scientists trying to find ways of conquering this disease are working to learn more about the muscles and their energy requirements, among other things.

Recent development of a technique to measure blood flow through the forearm of man makes it possible to quantitate substances carried to and from this mass of muscle by the blood stream, Dr. Reubin Andres of Johns Hopkins University, Baltimore, reported.

By this quantitative analysis of the blood stream, Dr. Andres pointed out, it is possible to gain knowledge of the chemical processes continually proceeding in the undisturbed muscle cell.

"Muscle, like other tissues of the body," Dr. Andres said, "meets its energy requirements by degrading certain substances. In the course of this degradation, oxygen is consumed by the muscle. It has generally been held that most of the oxygen consumption of muscle occurs during the process of degrading sugars, and that these sugars are the major energy sources of muscle. The present investigations are interpreted to suggest that the older idea is not true, and that sugars may not be the major energy source for muscle.

"The possibilities for future studies using this technique might include: the search for the specific energy source, the effects of drugs and hormones, and the influence of disease states, including the primary diseases of muscle."

Science News Letter, October 30, 1954

GENERAL SCIENCE

Graduate Fellowships Offered in Science

➤ ABOUT 800 fellowships to graduate students pursuing science careers are being offered by the National Science Foundation. They carry stipends ranging from $1,400 to $3,400 a year.

Deadline for post-doctoral applicants is Dec. 20, 1954. Applicants working toward their masters' and doctors' degrees must have the applications in by Jan. 3, 1955. College seniors are urged to apply. Selections will be announced March 15, 1955.

Applicants will be rated on test scores of scientific aptitude and achievement, academic records, and written evaluations by faculty advisers or other qualified observers.

Applicants must be U. S. citizens and must be planning graduate studies in the life and physical sciences. Fellowship receivers, most of whom will be below the post-doctoral level, may attend any accredited non-profit institution in the U. S. or abroad.

Applications may be obtained from the National Research Council, Washington 25, D. C.

Science News Letter, October 30, 1954

GENERAL SCIENCE

Change Draft Status Of Science Teachers

➤ SCIENCE TEACHERS in secondary schools have been put on the list of critical occupations to be used by draft boards in making exemptions to military service.

Heretofore, only college teachers with a master's degree or better have been on such a list, and the losses of urgently needed science teachers in the high schools have been large, due to military service. Science teachers are now in the category with engineers, aeronautical scientists, chemists, physicists and other classes of scientists.

Science News Letter, October 30, 1954

ZOOLOGY

Wallaby Learns to "Lick" Heat Problem

➤ A NEAT way to "lick" the heat problem in Australia's hot bush country has been found by the wallaby.

Dr. George Bartholomew, University of California at Los Angeles zoologist, has just completed a study of body temperature regulation in the marsupial (pouch-borne) animals.

Inventor of the original "spit bath," the wallaby, when hot, licks himself so vigorously that the lower part of his body is dripping with saliva. Evaporation of the saliva promptly cools him off.

Young wallabies acquire the technique while they are still being carried around in their mother's pouch. However, they seldom need to use it until after they leave their snug compartment, as the mother keeps the pouch's temperature comfortably regulated most of the time.

Otherwise wallaby temperature regulation is much like other animals. When cold, they shiver to raise body temperature. By dilating blood vessels they send surges of warm blood to extremities such as feet and tail when the temperature there approaches freezing.

The study in Southwestern Australia was under a Fulbright grant.

Science News Letter, October 30, 1954

ARCHITECTURE

Experimental Farmhouse Aids in Building Study

➤ AN EXPERIMENTAL farmhouse, designed for a dairy farmer's family, has been constructed at Beltsville, Md., by the U. S. Department of Agriculture's Research Center.

Designed and built to aid researchers in gathering more information on specific housing problems faced by dairy farmers, the new farmhouse is now being tested in normal use.

It is an expansible, split-level home, built for a sloping lot. The house, with a total area of 896 square feet, includes a large living-dining area, kitchen, utility room on the lower level, and six steps up, a bath and two bedrooms. A third bedroom can be added later.

The design is suited to either frame or brick. Heating is the modern perimeter type with ducts and registers set in the wall.

The Agricultural Research Center stated that Jack Herrington, the architect, styled it modern throughout, in line with the trend among farm families.

A builder in the Washington area estimated the cost to construct a similar farmhouse would be $9,800, which includes labor, heating unit, refrigerator and range.

Working drawings for the new farmhouse can be obtained from the United States Department of Agriculture.

Science News Letter, October 30, 1954