

MEDICINE

Find Muscular Dystrophy By Body Radiation Count

► MUSCULAR dystrophy can be diagnosed using a whole body radiation counter before the patient begins to suffer any symptoms.

This is suggested by scientists of the Los Angeles Veterans Administration Center and the University of California, Los Angeles, Laboratory of Nuclear Medicine who have conducted a study using a sensitive radiation counter that measures radioactivity throughout the whole body.

Scientists have long assigned a major role in muscle activity to potassium. The study was designed to measure potassium levels in muscular dystrophy patients and in their immediate families.

Potassium occurs in the body in three forms, including radioactive potassium-40. Only a small fraction of total body potassium is the radioactive form, but it always remains in the same ratio to the total amount. Thus measurements of potassium-40 reflect total body potassium levels.

It was found that a muscular dystrophy patient had a significantly lower level of potassium than normal and that the level seemed to correlate with the severity of the disease.

It was also found that some brothers, sisters and children of muscular dystrophy patients had low potassium levels, although they seemed healthy. This suggests that there may be a genetic defect in muscle cells leading to potassium depletion and that such a defect may be related to the muscle disorder.

These individuals will be followed to determine whether or not they subsequently develop muscular dystrophy.

• Science News Letter, 80:304 November 4, 1961

OCEANOGRAPHY

World Ocean Research Proposed by the U.S.

► THE UNITED STATES has taken the lead in proposing a program for intergovernmental investigation of the world oceans to "increase the contribution of oceanography to the general welfare of mankind."

The U.S. plan, contained in a series of six proposals, was considered by the International Oceanographic Commission of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) meeting in Paris. It would place all oceanographic research under the IOC, including data exchange and committees now operating on a regional basis; an oceanographic forecasting network would be established with specific radio frequencies assigned.

Another proposal recommended that all IOC governments fully participate in the International Indian Ocean Expedition "to the maximum possible extent," including the waiving of all national port entry fees, duty or excise on either equipment or fuel and stores for ships of the Expedition.

The program set up by the United States also provides for exchange of personnel

and equipment for specialized training purposes. It was designed so that "participation of Member States can be planned in terms of their capabilities and interests" without placing an undue burden on any one country. However, the United States, England, France and the Soviet Union, the countries with the largest investment in oceanographic research, probably will finance most of the cost of an international program.

U.S. representatives to the IOC are headed by the Hon. James H. Wakelin Jr., Assistant Secretary of the Navy for Research and Development. Other representatives include Rear Admiral H. Arnold Karo, director of the U.S. Coast and Geodetic Survey; Rear Admiral E. C. Stephan, hydrographer of the Navy; Dr. Donald L. McKernan, director of the U.S. Bureau of Commercial Fisheries; and Dr. Roger Revelle, science adviser of the Department of the Interior.

Dr. Revelle is credited with the establishment of the IOC under UNESCO and has played a major role in preparing the U.S. plan for world-wide cooperation in ocean research.

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METALLURGY

Necking Studied But It Is Not What You Think

► NECKING is being studied by an engineer at the University of California, Los Angeles—but it has nothing whatsoever to do with teen-age romance.

To Prof. Francis R. Shanley, necking relates to the strength of materials and deals with a problem that has puzzled engineers and metallurgists for a long time.

When a metal bar is pulled from both ends, like a piece of taffy, in a testing machine, it will stretch evenly for a while, Prof. Shanley explains. But at a certain point in the stretching process, a part of the bar will taper down and finally break at the point of smallest diameter. The thinned-down part is called the "neck" by engineers.

Necking is a fundamental problem in the forming of all types of materials, and plays a part in determining the strength of a material in relation to its weight. Recently, this problem has confronted designers of liquid-fuel rockets, who must keep the rockets' tanks to a minimum weight and still retain enough strength to keep the walls of the pressurized tanks from bursting.

Prof. Shanley has developed a complex theory to explain the necking process, the underlying idea being that the testing machine—or nature—finds it easier to produce a neck than to stretch the material uniformly.

Prof. Shanley feels that he has merely opened the door for widespread research on the problem. He suggests further research such as measuring more accurately what happens just before necking starts, varying the materials' rate of stretching and changing the metallurgical composition of materials.

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IN SCIENCE

EDUCATION

Married Women Teachers Urged to Stem Shortage

► MORE MARRIED WOMEN as teachers is one suggested solution for providing the approximate doubling of the number of instructors needed in the next decade for secondary schools.

The Organization for Economic Cooperation and Development (OECD) meeting in Washington, D.C. agreed the primary obstacle to the needed expansion of education in the OECD countries, which include Western Europe, Canada and the United States, is a serious shortage of teachers.

The only stable solution is a long-term provision for training more teachers, but attracting married women back to teaching is one of the short-term measures suggested. Others are upward revision of salaries, recruitment programs and scholarships for future teachers.

At least a doubling of educational expenditures from all sources will be needed, it is estimated. But the bottleneck is not money but teachers. In the OECD countries in Europe in the next decade there will be 4,050,000 more students in the age 15 to 19 bracket, a 94% increase. These students will need 280,000 more teachers, or a 110% increase.

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ASTRONOMY

New Comet May Become Bright as Halley's Comet

► A NEW COMET, expected to become as bright as the famed Halley's comet, is now flashing across the skies and approaching the earth.

It can now be seen with the naked eye before sunrise in the constellation Leo, the lion.

The comet was named Seki, after its discoverer, a Japanese amateur astronomer who lives on the island of Shikoku.

Calculations made on the comet's progress by Dr. Leland E. Cunningham of the University of California at Berkeley indicated that the Seki comet will be of almost first magnitude by Nov. 13.

During the second week of November, it will pass by the earth and can be seen very low on the southern horizon. It will then have moved from Leo into the constellation Hydra on its southward journey.

Besides Halley's comet, last seen in 1910 and expected visible again in 1986, two other first magnitude comets, Arend-Roland and Mrkos, were seen in 1957.

Comet Seki was first reported on Oct. 11 to Harvard College Observatory, Cambridge, Mass., clearing house for astronomical information in the Western Hemisphere.

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E FIELDS

GENERAL SCIENCE

Few Women Choose Science as Career

► FEW WOMEN choose science as a career, a report by the National Science Foundation shows.

Although women have been broadening their occupational interests during the last few decades, the traditional fields of teaching and nursing still draw the largest number of women in professional careers. Educational institutions are the leading source of employment for those women who do enter science.

The NSF report, "Women in Scientific Careers," contains available information on the training and employment of women in various scientific fields, as well as an analysis of the factors controlling women's selection of and participation in scientific careers.

The report indicates that although women are becoming an ever larger proportion of the total labor force, science ranks far down on the list of professions that they have thus far entered. For example:

Only about four percent of all federally employed scientists and engineers are women.

About seven percent of a total of more than 166,000 registrants in the National Register of Scientific and Technical Personnel are women. The largest field for women in this register was biology and the next, psychology, each having more than 3,000 women registrants.

Copies of "Women in Scientific Careers" are available from the Superintendent of Documents, U.S. Government Printing Office, for 20 cents.

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GENERAL SCIENCE

U.S. Scientific Youth Invited to Japan Fair

► THE SCIENTIFIC YOUTH of America is represented at the fifth anniversary of Japan's Student Science Fair by an honor-winning student entomologist from the newest American state which is also the one nearest Japan.

From Hawaii, SCIENCE SERVICE sent to Tokyo via Pan American as its representative, Ronald Sakimura, age 15, and his exhibit. In Japan he is the guest of the National Council for the Advancement of Science and Education and the Yomiuri Shimbun, a leading Tokyo newspaper which sponsors the Japan Student Science Fair.

Ronald is participating in the Japan fair, Nov. 2-7, by showing his project. This is on nematode-trapping fungi—fungi which trap and consume tiny worms which are present in Hawaiian soils. He identified six species, three of which were not found by

leading scientists, and isolated five of the six.

The exhibit was shown in the 12th National Science Fair-International at Kansas City, Mo., last May. It had won one of the two top prizes this year from the Hawaiian Science Fair. The Fair, organized and supported by the Inter-Society Science Education Council of the Hawaiian Academy of Science, had 5,000 exhibits this year.

Although of Japanese ancestry, Ronald was born in Hawaii and has never been to Japan before. His father is an entomologist, while his mother is a secondary school teacher. Ronald now is a junior at the University High School in Honolulu.

Some 20,000 young Japanese scientists are expected to participate in this year's Japan Student Science Fair. More than 60,000 persons are expected to attend.

Japan sends its two top winners to participate in the National Science Fair-International in the United States each year. The winners in the Japanese Fair will come to Seattle next May.

Young scientists from Taiwan, Okinawa and the Philippines also are attending the Japan Fair as observers.

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PHYSIOLOGY

Exact Time of Ovulation Studied in Monkeys

► EXPERIMENTS with a tiny electric sensor attached to the ovary of a young monkey are expected to reveal the instant in which the egg is released.

This will eventually lead to exact timing of ovulation in humans, it is hoped, and thus throw light on the physiology of reproduction and the problems of infertility.

A total of 75 Rhesus monkeys will be studied. At present only three, at the Bockus Research Institute, University of Pennsylvania Graduate Hospital, Philadelphia, are being studied. The project is under a three-year \$93,826 grant from the U.S. Public Health Service.

The electronic device is surgically attached to the monkey's ovary in preliminary experiments. However, it is planned to construct electronic sensors that can be placed externally on the abdomen, or perhaps inserted within the vagina to check the signals of the internal "broadcasting station" that beeps the instant the ovary releases the egg.

Eventually the investigators hope to develop an external electronic device to check on ovarian activity just as the electrocardiograph checks on cardiac activity.

Dr. Howard Balin, associate in gynecology and obstetrics at the University's Graduate School of Medicine, is the principal investigator. Herbert S. Dordick, an electrical engineer, is co-investigator. Dr. S. Leon Israel, professor and chairman of the department of gynecology and obstetrics, Graduate School of Medicine, and Dr. Vladimir K. Zworykin, president of the Medical Electronic Division of the Rockefeller Institute in New York, are senior associate investigators.

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PUBLIC HEALTH

Bottle Test Shows Contaminated Water

► A SIMPLE bottle test that anyone can do to determine if a water supply might be contaminated has been devised.

It will show whether trace amounts of detergents and other organic materials are present in a river or well. The detection test was devised by George J. Crits of the Cochrane Division of the Crane Company, Philadelphia.

The presence of detergents or soaps in a water supply may indicate if it is contaminated by leakage from a nearby sewer or cesspool.

The test is performed as follows:

A tall, cylindrical bottle, similar to the type used for olives, is half filled with the water sample and stoppered. When the bottle is shaken, the presence of high amounts of detergents or soap will cause a noticeable foam, but small amounts that may still be objectionable do not cause foam. Instead, a thin film forms and travels upward on the side of the glass bottle. Mr. Crits told the American Chemical Society in New York.

"The film rises until it disappears at a height dependent on the contamination in the water," the engineer said. The greater the contamination, the greater the height of the film or ring. No ring forms with distilled waters or most well waters that are relatively free from contamination. However, with most surface waters and polluted wells, various positive ring values are obtained.

A ring measuring three-eighths to one and one-half inches high indicates the presence of three-tenths to three parts per million of detergent in water.

In addition to checking for pollution of ground waters, the test promises to be very useful to operators in testing the effectiveness of removal of organic materials in settling basins and carbon filters.

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EDUCATION

Teacher Shortage Is on the Increase

► THE SHORTAGE of teachers, which faces not only the U.S. but Western European and underdeveloped countries as well, will grow more acute in the next ten years.

The shortage occurs particularly in the fields of science and mathematics, John Vaizey of the University of London, reported. He said the reasons for the increasing shortage were threefold:

1. The population increase.
2. The longer time students spend in school.
3. The switch in interest to science.

Although there is a real shortage of teachers, there is no shortage of students, Mr. Vaizey told a conference on economic growth and investment in education in Washington, D.C., under the sponsorship of the Organization for Economic Cooperation and Development (OECD).

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