

MEDICINE

Tendency to Rheumatism May Be Inherited, Physician Says

ATENDENCY to arthritis, or rheumatism, to call it by its old-fashioned, popular name, may be inherited, Dr. Ralph Pemberton of Philadelphia, told the American College of Physicians. Success in preventing the disease depends on recognizing this fact. Infection and various other factors are the immediate causes of the disease, bringing on the pain and crippling in persons who have inherited or been born with the tendency to arthritis.

Success in treatment of the disease is highly gratifying, Dr. Pemberton said, and suggests unmistakably the possibility of controlling it. At present, arthritis, because of its disabling effects, surpasses tuberculosis as an economic and sociologic burden. When interest in the problem is great enough both among laymen and physicians, and when facilities for caring for arthritis patients in institutions become adequate, control of the disease will be possible, Dr. Pemberton predicted.

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PHYSIOLOGY

Crossed Legs Give Test For Disease of Blood Vessels

YOUR HEART and your foot move to the same rhythm when you sit with your legs crossed. This natural, almost invisible, swing of the foot has suggested to a Baltimore physician a new test for disease of the blood vessels of the legs. A preliminary report of the new test, devised by Dr. Bertram M. Bernheim of Johns Hopkins Medical School, appeared in the *Journal of the American Medical Association* (March 23).

Dr. Bernheim attaches a short rod to the side of the shoe of the free leg.

The pointed tip of this rod rests lightly against the revolving drum of an instrument that traces the swing of the leg. The less the swing, the more serious is the condition, according to his interpretation. The greater and more regular the swing, the better is the condition.

While Dr. Bernheim is not certain of the cause for this, he suspects that the calf muscles spread according to the amount of blood sent to them and then contract again in a rhythm.

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MEDICINE

Breathing Helium Brings Relief to Asthma Sufferers

HELIUM, light-weight gas that lifts airships, can bring relief to sufferers from asthma, painfully gasping for every breath of air, Dr. Alvin L. Barach, of New York City, reported to the American College of Physicians meeting in Philadelphia.

Inhaling a mixture of eighty per cent. helium and twenty per cent. oxygen brought immediate improvement and re-

lief for the shortness of breath to patients who had not been helped by morphine and could not tolerate adrenalin, usual standby for relief of asthma.

The lightness of helium is what makes it effective, Dr. Barach explained. Helium weighs only one-third as much as ordinary air. Consequently the effort required to move the helium-oxygen mixture in and out of the lungs should be

only one-third that required to breathe ordinary air, Dr. Barach reasoned.

Success in the treatment of asthma patients whose smaller air passages were narrowed and patients having obstructions in the larger airways proved this point. While the dramatic improvement he reported was in patients who had not suffered from asthma for very long, Dr. Barach said this treatment would also help cases of long-standing asthma in which fatigue of the respiratory muscles was a factor. The treatment does not prevent or completely relieve the acute paroxysms of asthma and is not intended to displace adrenalin. Its specific function is related to lessening the effort required for breathing, resting the tired breathing muscles and consequently helping them to recover their ability for normal functioning.

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PHYSIOLOGY

Maternal Instinct Aroused by Hormone

MATERNAL instinct is a matter of gland chemistry. It can be aroused in virgins by daily doses, injected under the skin, of a hormone known as prolactin, Drs. Oscar Riddle, Ernest L. Lahr and Robert W. Bates of the Carnegie Institution of Washington reported at the meeting of the American Physiological Society.

They showed fellow scientists moving pictures of young virgin rats that have been treated with prolactin. These virgins retrieve baby rats and care for them in nests as maternally as if they had borne the offspring themselves. On the same screen appeared normal virgin rats and virgins injected with other hormones. These animals pay no attention to the baby rats and make no effort to give them maternal care.

Prolactin, the hormone that arouses the fundamental maternal instinct, is produced by the powerful and important pituitary gland at the base of the brain. Besides arousing the maternal instinct, prolactin stimulates the production of milk in animals that nurse their young and of crop milk in pigeons.

Prolactin has another remarkable action. When injected into adults, it reduces the size of the male sex glands. The largest dose reduced these glands to about 8 per cent. of their original size, Dr. Riddle and associates reported. A

female sex hormone from the pituitary gland, on the other hand, increased the size of the male sex glands up to 65 per

cent. above that of the normal adult size of these glands.

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ASTRONOMY

Rotation of Milky Way Shown For Faint Stars as Well

Study of 18,000 Intrinsically Faint Stars Shows These Dwarfs Take Part With Giants in Rotation

NEW PROOF of the rotation of the galaxy, the system of stars including the Milky Way and all those that we can see in the sky through most telescopes, was presented to the National Academy of Sciences by Drs. Piet van de Kamp and A. N. Vyssotsky, of the Leander McCormick Observatory of the University of Virginia.

Studying the motions across the sky of 18,000 intrinsically faint stars, they demonstrated for the first time that these "dwarf" stars are taking part in this rotation, as well as the bright "giants" with which previous studies of the kind have been mostly concerned.

The galaxy is a vast swarm of stars, arranged in the shape of a watch or a grindstone, with a diameter so great that light travelling 11,000,000 miles a minute takes something like a 100,000 years to cross it. The sun, with the earth and other planets, are part of this system, located some distance from the center.

From study of the brighter stars, most of which are giants, it has been found that the entire galaxy is turning around a center, which is in the direction of the constellation of the Scorpion, a prominent group in the summer evening sky to the south. However, the great majority of the stars nearest to us are dwarfs, and probably they predominate all through the Milky Way. For this reason, the new McCormick Observatory results are important because they show that the galactic rotation is not confined to a few groups of very bright stars but is a general feature of them all.

The researches of Drs. van de Kamp and Vyssotsky will necessitate a revision of the previously accepted ideas that stars of any apparent magnitude are, on the average, more distant if they are in the Milky Way than if outside it. It has been found that for stars of the tenth to twelfth magnitudes the average distances are greater for those 15 degrees either

side of the Milky Way than for those of similar brightness in it. This, it is suggested, is due to the presence of dark obscuring dust clouds in the Milky Way's plane, the presence of which have been indicated by numerous other pieces of work. Such clouds would hide the more distant stars in that direction.

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PHYSICS

New Musical Instrument Played by Light Flashes

A NEW electrical musical instrument called the "Photona" recently went on the air over Station WCAU in Philadelphia. Played with a two-bank piano keyboard, the apparatus produces notes of the musical scale through the loudspeakers by using standardized frequency

impulses of light striking a collection of photoelectric cells.

Inside the apparatus is a series of revolving disks with slots cut radially. They are driven in synchronization by a common belt and pulley drive. Each disk (and there are twelve of them) rotates before a metal screen behind which are an intricate group of electric lights which can shine through small holes in the screen. Finally, in line with the illuminated holes and rotating disks, are twelve photoelectric cells.

In operation, the disks rotate continuously and as the musician presses a given key the light corresponding to it shines through its particular hole. Because of the slots in the disks the light flickers with a given frequency on the photo cell. If the flicker is 256 times a second the photo-cell receives 256 light impulses a second and turns them into 256 electrical impulses each second in the amplifying circuit. And from the loud speakers issues a note with 256 vibrations a second, or middle C of the musical scale.

The "photona" which has a range of six octaves requires 900 six-volt lamps and a maze of wires for the operation of each one. Its tone is said to be different from any other musical instrument.

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The smallest of cattle is the anoa, and the largest is the Indian bison or gaur.

At least one of every five lightning strokes is not a single flash but a rapid succession of strokes.



ELECTRICIAN'S NIGHTMARE

This rear view of the Photona exposes its complicated maze of wiring, controlling the 900 lights and numerous rotating disks that combine with photoelectric cells to produce a modern kind of music.