

MEDICINE

Female Hormones Prevent Strokes

► STROKES are prevented and heart disease deaths reduced 50% when male heart attack victims take small doses of natural female hormones daily.

This was shown in a 57-month study of 421 men who had suffered previous heart attacks. Because the female hormone doses are small, there are no feminizing effects, nor other undesirable side effects, such as loss of sexual drive.

Using small doses of natural female hormones to prevent stroke is the first known treatment other than anti-coagulants. None of the 421 so treated developed a stroke. However, four per cent of the patients in three other groups, treated either with synthetic hormones or inactive compounds, suffered strokes.

The female hormones used were mixed estrogens, called Premarin. The only side effect was a slight breast tenderness.

Arteriosclerosis, or hardening of the arteries, causes heart attacks and strokes. It is the leading cause of death in the country, killing some 700,000 persons a year.

The clinical studies were made by Drs. Jessie Marmorstan of the University of Southern California School of Medicine, Frederick J. Moore and Oliver T. Kuzma of the University of Southern California and Carl E. Hopkins, with John M. Wiener of the University of California at Los Angeles School of Public Health.

Financial support came from the National Heart Institute, the Bella and Andre Meyer Foundation, and the Albert and Mary Lasler Foundation.

• Science News Letter, 82:8 July 7, 1962

TECHNOLOGY

No "Black Box" Aging, Wine Expert Claims

► THERE HAS been no "black box" built that can accept harsh, raw products at one end and pass out premium quality, aged wines at the other, a California wine expert claimed in Berkeley.

Although the slow, uncontrolled and costly traditional methods of aging spirits have prompted research and invention, the problem is too complex for an entire "accelerated" process to solve, Dr. V. L. Singleton of the University of California's Agricultural Experiment Station, Davis, explained.

In a lengthy research article in *Hilgardia*, May, 1962, a University of California publication, the scientists described several of the "black boxes" tried by the wine industry over the years.

One sure-cure aging process involved passing an electric current around, but not through, the wine. It was based upon the supposedly "well known fact" that wines have been materially improved by a flash of lightning, Dr. Singleton said.

Still another "process" required that the bottles be clamped to a radio-like box for treatment. Five out of six experts were claimed to have failed in identifying the

"treated" bottles, but the hoax died a sudden death.

There have been, the wine expert pointed out, several miscellaneous and complex treatments which have aided the wine industry through some stages of aging. But as a whole, the small and gradual changes in production such as correcting clarity, stability and keeping quality have been the real advances in the wine industry, and these have not been made by "quick-aging" processes.

Perhaps, he commented, after much more information has been gathered through sound studies, a quick-aging process will be possible.

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PSYCHOLOGY

Influence of IQ Tests To Be Explored

► THE CONTROL that IQ and other psychological tests exercise over the millions of children in school and over even men and women getting jobs is to be explored. America has become so test conscious and so dominated by the IQ concept that two great foundations have joined in an inquiry.

A \$333,000 grant from the Carnegie Corporation of New York to the Russell Sage Foundation will finance the nationwide study on the effect of standardized tests on the children who take them, on their parents and on teachers.

Children in school take an average of five such standardized tests in a year. This gives each of the 30,000,000 youngsters who take them an objective appraisal of his real ability and what he can hope to achieve in school and in life.

The effect of the results on the child and his ambitions and school life depends partly on his attitude toward the tests, and his belief in their accuracy.

The educators want to find out more about such attitudes held by the children and how knowledge of test score boosts or depresses zeal and ambition. They also want to know how the test scores affect the teachers. Is the teacher inclined to give Johnny a grade on his report card that is in keeping with his test score rather than the work he put in in class?

They want to know whether people attribute Johnny's success and Billy's failure to innate differences in personal characteristics—mainly intelligence—or to hard work and sacrifice. And they want to know what part standardized tests play in this public attitude.

Incidentally, they may find out how it is that a boy can be refused a degree in aeronautical engineering because of failure on an important subject and then later may become a successful test pilot and a nation's hero because he went three times around the earth in orbit.

In charge of the study will be Orville G. Brim Jr., a sociologist and assistant secretary of Russell Sage Foundation, a foundation primarily concerned with the improved use of social science research by the professions.

• Science News Letter, 82:8 July 7, 1962

IN SCIENCE

ZOOLOGY

Shark Attacks Decrease In U. S. Coastal Waters

► SHARK attacks decreased in U. S. coastal waters by one-third in 1961. Only six unprovoked attacks were recorded last year.

Although there were many more attacks (30) by "sea tigers" on a worldwide basis, U. S. swimmers and boaters enjoyed a greater safety. Only one person was killed in this country, some distance from Miami Beach.

Only one provoked attack was recorded by persons who had been fishing, trapping, spearing or pursuing sharks in U. S. waters, the Shark Research Panel of the American Institute of Biological Sciences said in a census report released in Washington, D. C.

Most of the unprovoked attacks last year occurred in the waters surrounding Africa and Australia. None were recorded in Latin or South America.

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BIOCHEMISTRY

Science Talent Winner Pioneers in New Field

► A FORMER honor student has fulfilled his early promise, although in a field that did not even exist at the time his potential was recognized.

Dr. Edward M. Kosower won a Westinghouse Grand Scholarship in the National Science Talent Search conducted by SCIENCE SERVICE when he was a senior at New York City's Stuyvesant High School in 1945, with his study on "Use of the Modified Willgerodt Synthesis."

Now, several degrees and a research grant later, Dr. Kosower has written a major technical book, "Molecular Biochemistry," one of the first in an important new area. Molecular biochemistry is the study of the mechanisms in chemical transformations in biological systems.

The book explores the gap between knowledge of the mechanisms of organic reactions and those of enzymatic reactions.

Principles involved are derived from physical organic chemistry, biochemistry, inorganic chemistry, physical chemistry, spectroscopy and physics. Present developments included are pyridinyl free radicals, charge-transfer spectra, the "chloride effect" on oxygen production in photosynthesis, electron transfer through conjugated systems, biosynthetic pathways to squalene, photochemical reactions of dihydropyridines, and recent aspects of hydrolysis.

Dr. Kosower is associate professor of chemistry at the Long Island Center of the State University of New York, and has held the Alfred P. Sloan Fellowships for 1960-1964.

• Science News Letter, 82:8 July 7, 1962

E FIELDS

PSYCHOLOGY

Special Crib Used To Learn About Babies

► BABIES as young as three months old were studied in a specially designed crib to find out just how early baby starts to explore the world around him—to reach for, touch, handle and taste objects—and whether he will pay attention to movies and sounds piped in to him by loud speaker.

Preliminary results of the experiments were reported in *SCIENCE*, 136:1054, 1962, by Drs. Harriet L. Rheingold and John A. Cooley of the National Institute of Mental Health, Bethesda, Md., and Dr. Walter C. Stanley of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me.

In the experiments, baby is strapped in a canvas baby-seat. When his waving hand touches a stainless steel ball, mounted on a rod nearby, a counter automatically records the event and a movie is briefly shown on a screen before baby. At the same time, sound, on a closed-loop tape system, also starts.

Seeing the brief movie served as a reward to the young infant just as a piece of banana does to the experimental monkey. Movies of people and of objects were tried, but the babies seemed to enjoy most pictures of brightly colored bits of paper moving over black velvet background.

Most four-to-six-months-old babies would work in the apparatus for at least eight minutes without fussing. When they started to fuss, the experimenter would rock the canvas seat by means of a pedal on the floor. If baby cried, he was taken out of the apparatus at once.

• Science News Letter, 82:9 July 7, 1962

VETERINARY MEDICINE

African Red Tick Completely Eradicated

► COMPLETE ERADICATION of a disease-carrying African red tick has been accomplished by U.S. Department of Agriculture scientists less than two years after the first parasites were discovered.

The red tick, *Rhipicephalus evertsi*, was found in the fall of 1960 at Tampa, Fla., Hudson, N. Y., and Boca Raton, Fla., on zebras imported from Africa.

The last infestation was finally stopped, with the killing of the last tick, at the 135-acre wild-animal compound near Boca Raton.

The tick is known to carry several animal diseases, including cattle tick fever and east coast fever. Its life cycle makes it difficult to control. It is a two-host parasite; the young attach themselves deep in the inner ear while the adults attack the area between the hind legs. USDA veterinarians who co-operated with officials of the two states ex-

plained that the ticks could have spread to our native wild and domestic animals, making eradication impossible. Spraying the compound and surrounding areas with DDT prevented the spread of the organisms.

Inspection of the wild animals was the most difficult part of the eradication program. For safe handling, the animals had to be shot by a hypodermic dart carrying a temporary paralyzing agent, the scientists reported in *Agricultural Research*, 10:11, 1962.

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BOTANY

Vitamin-Deficient Plant Developed by Student

► THE FIRST higher green plant unable to live without additional vitamins or amino acids has been developed by a graduate student at the University of Chicago.

Until now mutants naturally deficient in essential compounds have only been known in microorganisms, bacteria, fungi and algae.

Dr. Morton W. Miller developed a bryophyte, or moss, which has the same characteristics. The plant, *Marchantia polymorpha*, is considerably higher than algae on the evolutionary scale.

Dr. Miller's techniques will permit genetic studies of a type unavailable before. He found that several cultures of the plants could only survive if placed on a diet of vitamin B-6. Others needed amino acids or other vitamins to live. The surviving plantlets were grown on a wide variety of compounds during intricate experiments.

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TECHNOLOGY

Telephone System Helps Doctor Itself

► "NOW TELL ME, what's ailing you today?"

Not a simple question for most people, but a new telephone system and its self-prepared "dictionary" can diagnose the system's ills.

An engineer at Bell Laboratories, Sih Hsui Tsiang, has "aided" an electronic switching system in preparing a gigantic summary and diagnostic method for locating mechanical breakdowns using the "knowledge" of the machine itself. The dictionary was written for the complex control unit, with some 6,500 transistors and 45,500 diodes. To prepare the dictionary, Mr. Tsiang had the system programmed to make over 900 different tests on each of 50,000 simulated failures.

Between calls, in thousandths-of-a-second intervals, a failing machine would call on a duplicate unit to run a diagnostic check and print out the results on a teletypewriter.

Maintenance men could quickly look up the faulty component in the new dictionary and insert a replacement, Mr. Tsiang reported at the American Institute of Electrical Engineers' meeting in Denver, Colo.

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SPACE

Anti-Missile Radar Studies to Be Made

► THE DEVELOPMENT of an anti-missile radar (instead of anti-missile missiles) may be possible as a result of a new wind tunnel.

Radar's effectiveness in detecting missiles under various simulated entry and flight conditions also can be studied in the new plasma jet tunnel at Purdue University's School of Aeronautical and Engineering Sciences, Lafayette, Ind. By simulating re-entry conditions from orbital flight in the tunnel, investigators hope to be able to solve the puzzle of how to prevent the radio communications blackout experienced by Astronauts John H. Glenn Jr. and Scott Carpenter.

Looking to the future, Purdue researchers hope to solve the problems of entry into atmospheres such as that of Venus long before the actual flight.

The tunnel is under the direction of Prof. George M. Palmer and is the result of four years of basic research.

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GEOLOGY

Wildcat Chances Slim For Striking Oil

► THE CHANCE of a wildcat driller striking oil in the United States is one big gamble. Only one out of every ten wells drilled in 1961 produced oil or gas.

Statistics compiled in the *Bulletin of the American Association of Petroleum Geologists*, 46:725, 1962, show that only 745 out of 6,909 wildcat wells hit paydirt. Less than three percent, or 2.7 out of every 100, were profitable.

A total of 10,992 exploratory holes were drilled, about 18% of these producing some oil or gas. More than 10,000 miles of drilling pipe were used.

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VETERINARY MEDICINE

Important Advance in Stopping Animal Disease

► AN IMPORTANT step toward the development of a vaccine for foot-and-mouth disease was reported in Stanford, Calif.

A highly concentrated form of the foot-and-mouth disease virus has been prepared in an attempt to make a potent vaccine, Dr. Rodes Trautman of the U.S. Department of Agriculture's Plum Island (N. Y.) Animal Disease Laboratory told the American Chemical Society's National Colloid Symposium.

Foot-and-mouth disease is very active in Mexico, South America, the Middle East and parts of Europe. The ulcerous disease affects cattle, swine and sheep.

USDA researchers are trying to prepare a vaccine from killed virus, because evidence from studies with polio vaccines shows that such a vaccine will be very effective, Dr. Trautman said.

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