

PHYSIOLOGY

Life Begins On Spring-Like Coils

LIFE begins with spiral springs, it appears from researches of Dr. W. D. Francis of the Botanic Gardens of Brisbane, Australia. (*Science*, Feb. 10).

Dr. Francis has made minute examinations of the protoplasm of various kinds of cells, ranging from bacteria to onion cells, and states that a spiral structure is characteristic of all. He also cites support for his thesis found in the published work of other investigators.

This spiral, spring-like structure of protoplasm, he declares, explains the great elasticity of this living substance.

Science News Letter, February 25, 1939

RADIO

Radio Tube for Altimeter Generates a 14-Cm. Wave

A PRACTICAL radio tube generating an ultra short-wave but five and a half inches long—short enough for the radio echo altimeter now under development to show pilots how high they are above the ground and to warn them of other planes nearby—is announced by two engineers of the General Electric Company, W. C. Hahn and G. F. Metcalf.

Its waves, a fourth as long as the waves now used in experimental echo altimeters, can be directed like the beam of a searchlight, the two engineers said. Waves as short as a single centimeter—about two-fifths of an inch—can be generated by a tube working on the same principle. The shortest wave received on a home radio set is about five meters, or more than 15 feet.

The tubes can also be used for guiding ships through dense fogs by enabling them to measure the distance to land or other vessels.

Science News Letter, February 25, 1939

PATON RANCH

Situated on a mountain stream in the foothills of the Big Horn Mountains. Here a limited number of guests are cordially welcomed.

It is a region of great geological and historical interest. Marine fossils, dinosaur bones and Indian implements are found nearby.

Guest cabins are comfortable and attractive. Food is good. The use of a saddle horse is included in the weekly rate.

Write for illustrated folder with map.

WILLIAM PATON

Shell

Wyoming



LIKE A SPINET

Laurens Hammond, inventor of this new electric musical instrument, watches as his player demonstrates how it is operated.

ENGINEERING—MUSIC

Electric Musical Instrument Imitates Orchestra Pieces

In Appearance Like an Old-Fashioned Spinet, Novachord Will Make Possible Entirely New Types of Compositions

NEW types of musical compositions, employing tones never heard before as well as the tones of more than one instrument for a single player, are now possible through development of a highly versatile electrical instrument—the Novachord.

Looking for all the world like an old-fashioned spinet, it made its bow in Washington, D. C., by pouring forth the varied notes of a piano, violin, Hawaiian guitar, harpsichord, clavichord, trumpet and French horn.

The Novachord uses vacuum tubes instead of piano or violin strings or the pipes of a wind instrument. It was invented by Laurens Hammond, inventor of the Hammond electric organ, which likewise uses electric currents to produce its music instead of the familiar banks of pipes.

Requiring only to be plugged into a

household light outlet, the Novachord is smaller than a grand piano. It contains no pipes, reeds, strings, hammers or vibrating parts. It has a keyboard of 72 notes which are, however, played exactly like a piano and has the regulation piano sustaining pedal and a pedal for controlling volume.

Punching the keyboard and using the other controls determines the type of electric wave generated in the vacuum tubes. This electric wave is then converted into sound in much the same method as a radio.

Its imitating abilities it owes to the fact that the person playing it can change at will the two chief varying characteristics which give each musical instrument its identity, it was explained. A group of controls mounted on the front panel above the keyboard makes this possible.

An instrument's distinctive sound is