



**FELS RESEARCH INSTITUTE**—This is a model of the structure which will house 80 new laboratories for a long-term study of the physical, mental and emotional development of human beings from conception to maturity. The building was recently dedicated.

## ELECTRONICS

## Earth Affects Reception

Variations in the electrical charge, or ionization, influence the wavelengths used in sending out radio broadcasts and may keep a broadcast from getting through.

➤ NEW evidence that the magnetic field of the earth causes changes in the number of electrically charged atoms in the highest layer of the earth's atmosphere, 250 miles up and of importance in sending and receiving radio broadcasts, has been advanced.

These changes are due both to energy from the sun and that obtained from here on earth, T. N. Gautier of the National Bureau of Standards stated at the joint meeting in Washington of the International Scientific Radio Union, American Section, and the Institute of Radio Engineers.

Variations in the electrical charge, or ionization, influence the wavelength used in sending out radio broadcasts. Sudden changes sometimes keep a broadcast from getting through.

In the lower layers of the atmosphere, 75 miles or so above the earth, there is only a slight day-to-day fluctuation at a given place. But in the highest layer this fluctuation averages 10%. Changes as great as 30%, 40% and even 50% have been noted.

Because of local variations, it is not feasible to use conditions recorded at one

place for making day-to-day forecasts of radio conditions in another, distant region.

At Washington and San Francisco, ionization of atoms in this highest layer tends to increase and decrease at the same time. But near the equator, ionization at Huancayo, Peru, for instance, may increase while it is decreasing at Christmas Island in Polynesia. The local cause of these variations is therefore probably geomagnetic, Mr. Gautier stated.

The total eclipse of the sun last May gave astronomers an opportunity to compute how fast ions in the upper air recombine. The cutting off and restoring of light during the eclipse was, for research purposes, actually a rapid sunset and sunrise, A. H. Shapley of the National Bureau of Standards told the meeting.

Atoms in the highest layer of the earth's atmosphere were not as much affected as was expected, he pointed out, whereas the density of electrons in the layer 75 miles up, dropped to about 37% of its usual density. At nighttime this ionization goes down even more.

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## GENERAL SCIENCE

## Fels Research Institute Dedicates New Laboratory

➤ WHEN the mother of an unborn baby smokes, the baby's heart beats faster.

At least one out of seven babies examined hiccup before birth; this may be due to lack of oxygen.

Babies that move around a lot before birth have the highest scores on baby tests after birth.

These and many other facts about the development of babies and older children are being gathered at Yellow Springs, Ohio, in a long-range research program of the Fels Research Institute for the Study of Human Development under the direction of Dr. Lester W. Sontag. A new laboratory of 80 rooms devoted to this research was dedicated in October.

A group of 130 children are being studied from about four or five months before birth until they are well into their teens. The study has now been going on for 18 years, although the number of children under observation has increased from less than 20 in the first year to the present 130.

Among the many factors of growth and the influences on growth being observed are: bone development as shown by X-ray, growth in size, nutrition, blood pressure, heart rate, allergies, illnesses, accidents, emotional adjustment, and mental development.

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## PSYCHOLOGY

## Loss of Strength After 25 Indicated by Tests

➤ YOU begin to lose your strength at the age of 25. That is when "old age" sets in, it appears from measurements of hand strength made on 552 men industrial workers by Dr. M. Bruce Fisher, of Fresno State College, California, and Dr. James E. Birren, of the U. S. Public Health Service when both were on duty at the Naval Medical Center, Bethesda, Md. (*Journal of Applied Psychology, Oct.*)

Strength increases up to the middle twenties, these tests show, and then goes steadily down. By the age of 60, the average loss of strength amounts to 16.5%. There is, however, considerable overlapping among different age groups.

Lack of exercise cannot be the explanation for the loss, the investigators feel, because all the men were actively engaged in the same sort of work.

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