

stallation of a rubber-surfaced playground is now on trial in Akron, Ohio, at one of the city schools.

In this new surface, ground-up rubber replaces the conventional crushed slag in an asphalt mixture. Crushed stone is used as a foundation. Over this is spread a "hot-mix" asphalt. This base is then covered with a half-inch of ground rubber, which is rolled to impregnate the rubber particles into the asphalt.

The material is somewhat similar to that

used on the so-called rubber roads installed in the Netherlands before the war, and later in England. Five test sections of such roads are now being laid in the United States. There is an important difference: the playground surface is entirely free of abrasive particles.

The rubber-surfaced playground installation was made by the Portage Bituminous Company. Goodyear Tire and Rubber Company supplied the rubber.

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San Francisco by Julius H. Hagenguth of General Electric.

The G. E. scientist is engineer in charge of the company's High Voltage Engineering Laboratory at Pittsfield, Mass., and he described results of experiments on lightning stroke damage to aircraft conducted through several years in collaboration with the National Advisory Committee for Aeronautics.

Lightning is not a serious hazard to properly protected planes, he indicated, but non-metallic planes, unless well shielded with a network of wires or other protective coating, are subject to damage from even minor lightning strokes of the order of 20,000 amperes, which may make the plane inoperable, he said.

Subjects investigated during the study were listed as the burning of holes in the skin and metallic parts of planes, damage to fuel tanks, breaking of safety glass in windshields, effect of current flow through ball bearings of the control systems, effect of lightning on the pilot's vision and other possible damages.

The principal effect to a metal plane's skin from a continuous stroke was found to be a small hole burned in the metal. Although the type of metal appears to have little influence on the effect, he said, the holes differ in physical appearance.

Concerning effects of lightning flashes on the vision of a pilot, he stated that the pilot must be looking at the exact channel of the stroke to be affected at all, and the probability of such an occurrence is very small. He reported on the results of an investigation with artificial lightning on observers' eyes protected with special goggles. From 29 to 47 seconds were required before sight was restored to the protected eyes. For others a longer time might be required. But, he added, the threat of blindness is not enough to advise pilots to wear goggles.

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#### PSYCHIATRY

## Hormone for Mental Ill?

► PATIENTS with the serious mental disease, schizophrenia, may at some time in the future be among those who will benefit from the present search for new sources of cortisone, powerful new weapon against arthritis and rheumatic fever.

Latest search for bigger sources of this chemical include a U. S. Public Health Service-Department of Agriculture expedition to Switzerland and Africa to look into plant sources of a starting chemical for manufacture of cortisone.

Because the supply of cortisone is so very small at present, it undoubtedly will be a long time before schizophrenic patients generally will be treated with it. And it may not prove successful in this disease.

But the outer rind, or cortex, of the adrenal glands which is the body's normal source of the hormone is known to be involved in schizophrenia. The part of the body-mind mechanism which fails under stress, resulting in schizophrenia, is the mechanism whereby the adrenal gland cor-

tex normally responds to stimulation by a hormone from the pituitary gland in the head. In schizophrenia this mechanism goes wrong and the adrenal cortex fails to respond. Drs. Hudson Hoagland and Gregory Pincus of the Worcester, Mass., Foundation for Experimental Biology have discovered.

They discovered this by giving injections of the pituitary gland hormone, called ACTH, to schizophrenic patients, normal persons and patients with less serious mental illness termed psychoneurosis. The schizophrenic patients did not respond to the pituitary hormone until they had been given three and four times the amount that brought response in normal and psychoneurotic persons.

Cortisone itself may or may not be effective in schizophrenia. But when larger supplies of it and other, related chemicals are available, the problem of this widespread mental disease may be much nearer to solution.

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#### ASTRONOMY

## Pole Star Is "Temporary"

► POLARIS, our pole star, is only a "temporary" occupant of that position.

We call Polaris, or alpha Ursae Minoris, the pole star because the northern end of the earth's axis happens to point nearly towards it. But the earth's axis "wobbles" so that other stars have been and will be pole stars.

About 5000 years ago when the pyramids were built in Egypt, Thuban, a star in the constellation of Draco, the dragon, was the pole star.

Around the year 13,000 A. D., our pole star will be Vega, in the constellation of Lyra, the lyre.

The movement of the earth's axis, called "the precession of the equinoxes," takes about 25,800 years to trace out a circle. Polaris at present is about a degree away from the exact line of the axis, but is getting closer to it all the time. About the middle of the next century, it will be

nearest, and then it will move out of line again.

We think of Polaris as a single star, but actually it is a small stellar family. To the naked eye, it is seen as one star. Through a good telescope, a faint companion star is seen, and the brighter one is revealed as a triple star.

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#### AERONAUTICS

## All-Metal Planes Safe From Lightning Strokes

► LIGHTNING strokes are practically harmless to flying airplanes with all-metal "skins", while wooden or plastic planes might suffer damage by lightning penetrating the outside covering to reach engines and metal parts within, the American Institute of Electrical Engineers was told in

#### BIOCHEMISTRY

## New Chemical Weapon Tested Against Cancer

► A LONG-NAME chemical which has produced small but useful improvement in some cases of cancer was described to the First International Congress of Biochemistry held in Cambridge, England, by Prof. J. S. Mitchell of Cambridge University.

The chemical—tetrasodium 2-methyl 1,4-naphthohydroquinone diphosphate—was injected in large doses into the veins and muscles of 240 patients with various types of advanced malignant tumors. Some of the patients also received relieving doses of X-rays, but regression and degeneration in one type of cancer cells, adenocarcinoma, was produced using the chemical alone. Prof. Mitchell said that the chemical has low toxicity.

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