PHYSICS

Scientists Obtain Sample of Air 13 Miles Above Earth

TINY evacuated glass vials the size of medicine droppers are being used to trap samples of the air 13 miles in the stratosphere, according to the report of Prof. F. A. Paneth and E. Glückauf. (*Nature,* Nov. 2)

The evacuated glass tubes are sent aloft from the upper air section of the Kew Observatory on small sounding balloons; broken at a predetermined height, they catch a sample of the atmosphere and then are sealed up again after fifteen seconds.

The object of the tests is to check the kind of gases which make up the stratosphere at heights where the compositions will be fairly stable and not disturbed by the winds creating turbulence at lower levels.

Extremely sensitive chemical analysis is used to measure the amount of helium gas present in the sample, for the sample contains only a few cubic centimeters altogether. An accuracy of one per cent. in a total volume of two cubic centimeters is attained, it is claimed.

First finding of the work disclosed that at a height of 13 miles the stratosphere air contains eight per cent. more helium than at the earth's surface.

Because of the fact that air is a mixture of gases the composition of the atmosphere at great heights should vary with the altitude.

The best way of checking this fact, report Prof. Paneth and his colleague, would be to measure by chemical analysis the hydrogen content of the air in the stratosphere. The proportion of hydrogen is too low, however, to enable the use of any present methods.

The next best indicator possible is the helium content.

To reach altitudes greater than twelve miles with the equipment, weight must be kept down, and as a result only small samples of the air can be taken. The sample apparatus is dropped to earth on a small parachute.

It is found that up to heights of 11.18 miles (18 kilometers) the mixing of the gases has not yet given place to diffusion but at 13.05 miles (21 kilometers) eight per cent. more helium exists than is found at sea level.

Much more research is needed on the problem, state the scientists, urging cooperation. Six cubic centimeter samples are requested from workers in better climates in other parts of the world.

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MEDICINE

Stomach Ulcer is Symptom of General Abnormal Condition

STOMACH ulcer is only a symptom of a more general abnormal condition, Dr. Alton Ochsner, professor of surgery at Tulane University School of Medicine, told the American College of Surgeons.

Some people may be predisposed to ulcers by their constitutional make-up, or the tissues of their body may be especially susceptible to ulcer formation. In these persons, the development of stomach ulcers may be precipitated by abundant secretion of the stomach juices, by over-acidity, by focal injections elsewhere in the body, or by injury to the tissues of the stomach and digestive tract.

These conclusions as to the cause of stomach ulcer are based on lengthy research by Dr. Ochsner and his associates, Drs. Mims Gage and Kiyoshi Hosoi, and on researches by other workers in the United States and Europe.

No method is known at present for overcoming the factors that predispose to ulcer, so the only choice is to avoid conditions which tend to bring on the trouble in predisposed persons.

Persons subject to ulcers must change their habits of living for the course of their lifetime, the Tulane investigators advise, pointing out that while surgical treatment may be of value in some complications resulting from ulcer, it will not change the nature of an individual predisposed to ulcer.

Among the habits that must be avoid-