Atmosphere Loses "Roof"

THE "ROOF" of the atmosphere, where the stratosphere begins, is lost completely when the long, desperately cold night of the Antarctic winter settles down, Arnold Court of the U. S. Weather Bureau told the meeting. This winter disappearance of the tropopause, as the lower boundary of the stratosphere is known, has never been reported from the Arctic, despite very many measurements taken in Arctic regions. None of the Arctic stations, however, is as close to the North Pole as Little America is to the South.

The tropopause is defined as the level at which temperature ceases to decrease with greater altitude. Normal summertime height in the Antarctic is about nine kilometers (5.6 miles), with a temperature of —50 degrees Centigrade (58 degrees below zero Fahrenheit). Above that level the temperature in the stratosphere rises again, reaching a steady point at about —40 degrees Fahrenheit.

Under Antarctic winter conditions, however, the temperature keeps right on dropping as the radiosonde balloons explore higher and higher, detecting no tropopause at all. Lowest temperature recorded was —80 degrees Centigrade, or 112 degrees below zero Fahrenheit.

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MEDICINE

Common Unrecognized Disease May Be Cause of Lung Ills

Causes Tiny Limestone Formations in the Lungs and Is More Prevalent in Areas Near Appalachian Plateau

A COMMON but not yet recognized disease has been shown by U. S. Public Health Service scientists to be the cause of tiny limestone formations in the lungs previously thought due to tuberculosis.

Because physicians have taken these tiny spots shown up on X-ray plates to be due to tuberculosis lesions that have been cured, the new findings will probably cause a change in medical diagnosing of many cases.

Curiously, the disease is highest in areas where there are extensive limestone and chert formations, that is, in areas adjacent to the Appalachian Plateau.

These observations, made by other scientists, aroused the Public Health Service to make an independent study. It selected Ross County, Ohio, an area adjacent to the Plateau, where lung calcification is common, but tuberculosis fatalities not above ordinary. Rural families were selected in order to rule out as far as possible contacts with tuberculosis outside the household.

More than 200 persons in 44 farm households were X-rayed and tuberculin tested. Of 253 persons effectively X-rayed, 125 showed the limestone formation in the lungs — but none had significant tuberculous lesions.

Of 235 who were tuberculin tested, 194 were negative. Fifty-six persons with negative tuberculin tests show lung calcification. The studies were made by Dr. B. J. Olson, passed assistant surgeon, Dr. W. H. Wright, chief of the division of zoology, and M. O. Nolan, associate zoologist, all of the Public Health Service.

The existence of an unrecognized disease of very common occurrence is suggested by these investigators. It appears to produce the lung lesions closely resembling the X-ray picture of primary tuberculosis. They believe, therefore, that the finding of lung calcification particularly in tuberculin-negative persons should not be assumed to be evidence of tuberculosis infection.

With tuberculosis apparently ruled out, the Public Health Service scientists next considered the ascaris as a possible cause of the lung calcifications. Ascaris is a tiny, parasitic worm, which in the larval stage may damage the human lung. Careful study, however, failed to prove or disprove that ascaris was guilty.

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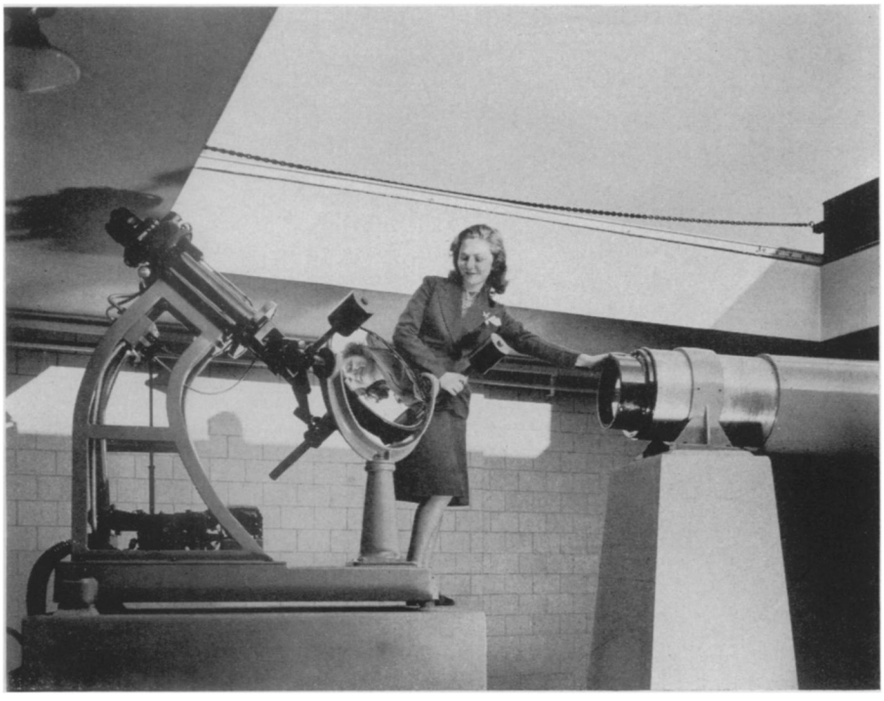

TELESCOPE FOR PITTSBURGH PEOPLE

It is this mirror which locates and follows the stars being viewed with the new siderostat telescope. The reflection is carried to another room where it is viewed.

ASTRONOMY

People's Observatory Dedicated in Pittsburgh

THE PEOPLE of Pittsburgh now have a telescope all their own. The new $30,000 People's Observatory of the Buhl Planetarium will be used by the public and not by professional astronomers. Its siderostat telescope is the second such instrument in America.

The observatory itself is half outdoors, where the telescope is, and half indoors, where the star-gazers do their looking in

steam-heated comfort. The telescope tells its own story because a special sound system brings a running description of the view of the heavens.

Unlike the conventional telescope, the viewing end of the siderostat stays still while the 18-inch mirror locates and follows the stars being viewed. The idea of the siderostat telescope was first proposed some 80 years ago by the French scientist, Leon Foucault.

Dr. Harlow Shapley, director of the Harvard College Observatory, delivered the dedicatory address.

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DENTISTRY—NUTRITION

Tooth Decay and Pyorrhea Linked to Lack of B Vitamins

Dental Decay Found To Develop in Dogs Lacking Filtrate Factor of B Complex That Is Still Not Understood

TOOTH DECAY, one of the commonest of dental diseases, may be due to a deficiency of some of the vitamins in the B group, it appears from laboratory experiments reported by Dr. Hermann Becks, professor of dental medicine at the Hooper Foundation for Medical Research, University of California, and Dr. Agnes Fay Morgan, professor of home economics at the University.

Dogs on a diet lacking one of the B vitamins developed tooth decay, normally absent in dogs, Dr. Becks found. The B vitamin lacking was the filtrate factor. Its function is still unexplained.

When the dogs' diet was deficient in nicotinic acid, the animals developed pyorrhea and severe bleeding of the gums. A third, or control group, on a balanced diet, developed no decay or pyorrhea.

Dr. Becks makes no attempt to fit his findings to human tooth decay since he worked only with dogs.

"On the other hand," he points out, "clinical experience has already produced excellent results with certain vitamin B fractions in the treatment of Vincent's disease, an infection of the mucous membrane, and other inflammatory diseases of the mouth. Ulcer formations of the tongue and inside the cheek have been successfully treated by the administration of nicotinic acid."

Dr. Becks said that the experiments provide a most encouraging link between carbohydrates and dental decay.

The body converts carbohydrates into sugars. It is well known that vitamin B is necessary for the correct assimilation of sugars. However, a large percentage of the foods of the modern diet have the vitamin B removed in processing.

This leaves the body, including the teeth, without protection against the harmful effects of sugars which do not contain vitamin B.

Dr. Becks and other research dentists have shown that there is a direct relationship between tooth decay and a bacillus, called Lactobacillus acidophilus. The number of bacilli found in the mouth has been found to be in direct proportion to the amount of sugars and carbohydrates consumed, that is, sugars and carbohydrates which have the vitamin B removed in processing.

Dental decay, like the common cold, is one of the unsolved problems. The American Dental Association has provided a fellowship for dental research at the National Institute of Health, research arm of the U. S. Public Health Service, to help solve this problem.

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ARCHAEOLOGY

Timber Cut A.D. 217 Gives Oldest Building Date

TIMBER that Utah Indians felled with stone axes back in A.D. 217 provides a new date for America's ancient history—the oldest building construction date in the Southwest yet undetermined by science.

Antiquity of the historic piece of building wood is reported by W. S. Stallings, Jr., of the Laboratory of Anthropology, Santa Fe, after comparing the sequence of annual growth rings in the timber with the famous tree-ring calendar that scientists have evolved to date Indian ruins in this part of America. (*Tree Ring Bulletin,* July).

The timber was part of a pinyon pine that grew more than a century and, from center to outer bark, has tree rings representing the years A.D. 91 to 216. Indians of the Basketmaker Two period of ancient America used this pinyon piece in roofing a storage pit in du Pont Cave, where a group of them lived near what is now Kanab, Utah.

Exploring this old Indian settlement 21 years ago, for the Museum of the American Indian in New York, archaeologist Jesse L. Nusbaum hid away some pieces of the building wood, thinking they might be scientifically valuable some day. His foresightedness was rewarded when scientists reported success in matching and overlapping patterns of annual growth rings of trees to form a chronology for dating Indian ruins of the area through many centuries.

When opportunity offered, Mr. Nusbaum returned to the cave and dug out of his squirrel-like cache the five pieces of Indian timber he had hidden. Just one—the piece of pinyon pine—has provided tree-rings that can be read well enough to show when the Indian builders lived in the cave and constructed, or repaired, their store pits for food.

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MEDICINE

New Weapon Against Germs Obtained from Mold

A NEW substance capable of stopping the growth of a wide variety of disease germs, including those of typhoid fever, dysentery and cholera, has been obtained from a mold, probably belonging to the genus *Aspergillus,* Dr. G. A. Glister, of the University of Oxford, reports. (*Nature,* Oct. 18).

In test tube experiments the new substance was effective in a dilution of about 1: 200,000. It has a wider range of antibacterial activity than penicillin, germ-killing substance from another species of mold recently isolated by Dr. A. Fleming, of St. Mary's Hospital, London, and already shown to have value as a remedy for germ-caused diseases.

Use of the newest mold chemical in treating patients is not mentioned in the report, but the test-tube experiments indicate that it may be a weapon against not only the germs successfully attacked by penicillin but also against those of the gram-negative group which include the germs of Shiga dysentery, typhoid and paratyphoid fevers, and cholera.

Whether the substance is related to the germ-killer found in the mold, Aspergillus flavus, by an American scientist, Dr. E. C. White, of the Johns Hopkins Hospital, is not yet known.

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