ASTRONOMY

Glass for Largest Telescope Disk Begins 10-Month Cooling

Pouring of Seventeen-Foot Diameter Mass Accomplished At Corning With Only Slight Mishap

LADLING out molten white hot glass, four hundred pounds at a time, like soup from some infernal caldron, workmen at the Corning Glass Works, Corning, N. Y., poured what they hope will be the world's largest telescope mirror.

Dozens of famous scientists and hundreds of other visitors, saw the twenty tons of glass poured into the seventeen foot mold in which it will cool until ten months have passed. Not until then will it be known whether the event was really successful. Despite the most careful preparations, there is always the chance that the large mass of glass may crack while it is cooling.

One mishap occurred during the pouring, but Dr. John C. Hostetter, director of research of the Corning Company, expressed the belief that it would not be serious. The mold in which the glass was poured has its bottom covered with numerous cores, making it look like a city of Eskimo snow houses. These cores were covered with molten glass in order that the finished disk will not have a solid back but a series of ridges. This permits the disk to be made much lighter than if it were solid glass and the holes formed where the cores project upwards are to be used for supporting the mirror. After about half the glass had been poured into the mold, several of the cores worked loose from their moorings on the bottom of the mold. When the doors to the fire brick "beehive" covering the mold were opened to admit more ladles of glass, they could be seen floating about on the surface of the glass inside. Dr. Hostetter said that this would not affect the success of the mirror although it was unfortunate.

As soon as the pouring was completed, the loose cores were fished out of the taffy-like mass. The whole disk will be allowed to cool without them. After cooling, this part of the glass will be solid and then holes will be drilled corresponding to the places where the cores would have been.

After the glass was poured into the mold, the entire mold was lowered on four screws into the cellar below. Then it was moved about forty feet and lifted from below into the annealing oven. The bottom of the mold and the sides and top of the oven are lined with electrical heating elements which will be gradually turned down.

After successful cooling, the disk will be sent to Pasadena, Calif., where several years will be required to grind it to the accurate dish shape required to pick up the rays of starlight and focus them accurately fifty-five feet above. The grinding and building of the telescope will be done in the shops of the California Institute of Technology. So far the exact location of the finished telescope has not been determined, but it will doubtless be on a mountain top in southern California.

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ANATOMY

Growth Spurt Made When Right Height Reached

BOYS and girls start their adolescent spurt of growing when they have reached a certain height rather than at a certain age. This finding was reported by Dr. Carroll E. Palmer, of the U. S. Public Health Service and the Johns Hopkins School of Hygiene and Public Health, at the meeting of the American Association of Anatomists in Philadelphia.

Dr. Palmer analyzed annual measurements made during a period of four to seven years on about 2,500 elementary school children between the ages of 6 and 14 years.

The adolescent acceleration of growth begins, apparently independent of age, when girls and boys reach an average height of 50 and 53 inches, respectively, he found. From the age of six years to the start of this adolescent growing spurt there is practically no association between the average gain in height and that height already attained by the child.

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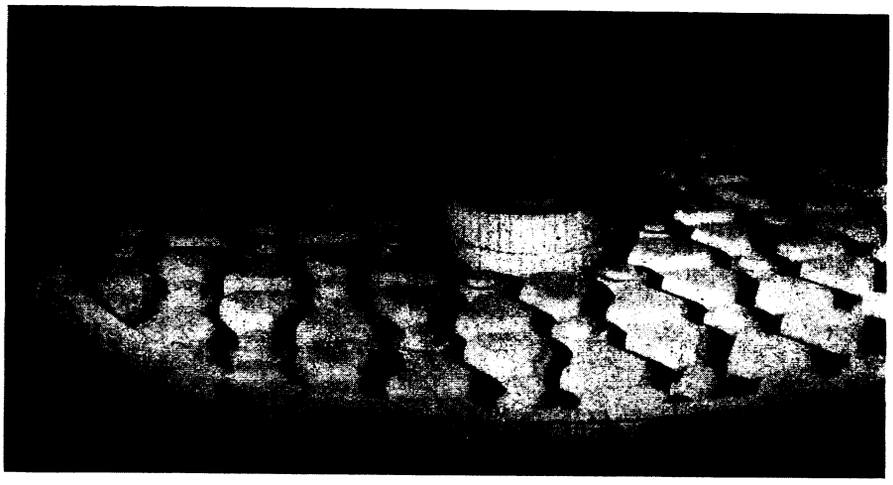
GEOLOGY

Buried Hundreds of Years, Log Not Petrified

WOOD buried in travertine, the material which forms the famous hot springs terraces of Yellowstone National Park, apparently does not petrify. Dr. C. Max Bauer, park naturalist of the Yellowstone, is authority for this statement.

The park headquarters development at Mammoth Hot Springs is located on old hot springs deposits, laid down many hundreds of years ago. CWA workmen digging a trench to lay a new water main came upon the top of an old tree, eighteen inches in diameter. This was discovered three feet below the surface. Dr. Bauer states that while the exterior of the log had rotted and disappeared, the interior was remark-



READY FOR MOLTEN GLASS

The mold into which glass was poured for the world's largest telescope mirror is pictured in casting position. The "bee hive" furnace has been rolled back.

ably well-preserved and the tree, although hundreds of years buried, was not petrified.

The upper portion of the imprint in the rock is that of a decayed top, indicating that the tree must have been dead before the deposits covered it. A limb about eight inches in diameter originally extended more than ten feet into the formation, as shown by the cavity still in evidence.

At another place a feather, resembling the gray wing-feather of the modern nutcracker, was found two feet deep in the travertine.

The hot springs terraces at Mammoth Hot Springs are built up by the hot waters which deposit the travertine, or carbonate of lime, as they flow out of the springs. Under favorable conditions the travertine is deposited very rapidly, objects left in the hot waters as they emerge from the spring showing a substantial coating in a day or two.

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MEDICINE

Sera Processed to Keep Longer at Full Strength

New Method Uses Rapid Freezing and Vacuum Sealing; Proteins, Enzymes and Similar Products May be Treated

DOG-TEAM and airplane dashes to Alaska with diphtheria antitoxin or serum for fighting other diseases will become a thing of the past as the result of a new development reported to the American Chemical Society meeting in St. Petersburg, Fla., this week.

A method and apparatus which makes it possible to preserve for a very long time such biological products as diphtheria antitoxin and anti-typhoid serum has been developed by Drs. Earl W. Flosdorf, Stuart Mudd, John Reichel and Harry Eagle of the University of Pennsylvania School of Medicine. Tests indicate that by this new method the sera can be kept much longer than usual without any lessening in potency at temperatures as high as 120 degrees Fahrenheit. This will be invaluable for shipping and storage of serum in the tropics, it was pointed out.

A much wider exploration of the uses of human convalescent serum for prevention and treatment of disease is now possible and such studies are being carried on in Philadelphia, he continued.

"Heretofore, convalescent serum from one epidemic, if drawn at time of optimum potency, deteriorated on storage until needed for the next epidemic. If not drawn until needed, a serum of inferior potency was obtained. It is now possible to draw the serum at time of optimum potency and, by subjecting it to the process to be described, keep it in its original condition until such time as it may be required for use.

"The results on measles, the only disease for which clinical results are as yet available and which will be reported by others, are very encouraging.

"Proteins, enzymes, and many other biological products have also been successfully processed. The method should prove to be of use generally in the field of biological chemistry, both for purposes of preservation and concentration."

The method of preparation involves freezing sterile serum at 100 degrees below zero Fahrenheit and rapidly removing the contained water under high vacuum. The containers are then sealed off under vacuum by a method similar to that used in manufacturing radio bulbs. In this way the serum can be kept in a sterile condition in vacuum.

When the serum is needed for use, sterile distilled water is admitted with a needle and syringe by plunging the needle through the rubber stopper into the container. The serum, which quickly dissolves, may then be drawn into the syringe and is ready for injection.

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Rhodium, an attractive white metal, is gaining vogue in Germany as plating for inexpensive jewelry.

Merely girdling or felling trees affected with heart rot will not eradicate the disease, says a plant pathologist, because fungi causing the rot will live in the dead stumps and trees for more than five years.

ARCHAEOLOGY

Art Masterpieces Found Preserved by Mud

TWO GREAT carved altars, masterpieces of prehistoric American art, have been discovered at the ruins of Quirigua, Guatemala, by Earl H. Morris, archaeologist of the Carnegie Institution of Washington. The Institution stated that the stone altars date to a very early period of Mayan history.

On each altar block, an unknown Indian Phidias sculptured the large form of a human being in distorted posture, elaborately clad and wearing a large and complicated headdress with face mask. The remaining surface of the slab was used to record a long and delicately wrought inscription in Mayan hieroglyphs, with serpent motifs around the margin. Both altars are very large, one being eleven feet by twelve and one-third, and almost two feet thick.

Mr. Morris made the discovery while tunneling under a carved stone monument, in hope of finding a cache containing things of archaeological interest. The backwash of the Montagua River, nearby, had deposited thick mud over the lower portions of the city ruins, covering the altars and preserving them from centuries of weathering.

Mr. Morris is representing the Carnegie Institution in a joint project with the Guatemalan Government to re-erect the fallen monuments of Quirigua and clear the site for preservation and study.

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ZOOLOGY

Rare White-Shouldered Bat Acquired by Museum

A SPECIMEN of the centurio bat, a creature so rare that in the hundred years it has been known to science only a dozen have been taken, has been captured by the Leon Mandel Guatemalan Expedition of the Field Museum of Natural History, according to word received in Chicago from its leader, Karl P. Schmidt. The animal has white patches on its shoulders, which suggested to the Spanish scientists who first studied it the white epaulets worn by centurions of ancient Roman legions.

Another animal obtained by the expedition is a flying squirrel species so rare that only two or three other specimens are known in all the world's zoological collections.

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