

PHYSICS

Aluminum-Coated Mirror Aids Optical Instruments

► OPTICAL instruments using reflectors, such as some telescopes, will produce clearer images by use of new aluminum-coated glass mirrors with the metal on the front face. There are many other uses for the new reflector.

This new mirror has just been revealed by Libbey-Owens-Ford Glass Co. It is now in production by the Liberty Mirror division of the company. It is designed particularly for use in a long line of scientific equipment ranging from submarine periscopes to television receivers.

Putting the reflecting aluminum coating on the front surface of the glass assures a single reflection. When the coating is on the rear, as in ordinary mirrors, there is a double reflection: a bright one from the coated rear surface, and a dim one from the front surface of the glass itself. In conventional uses, the double reflection is harmless; in scientific instruments, it gives a slight undesirable blur.

In the manufacturing process employed in making the new mirrors, a method called thermal evaporation, a coating of hard quartz is deposited on the aluminum to insure durability. The film is found to withstand extreme temperatures from minus 60 degrees Fahrenheit up to 200 degrees. It is resistant to moisture and salt atmosphere.

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ETHNOLOGY

Aymara Indians of Andes Are Worst of Worriers

► THE WORLD'S worst worriers are the Aymara Indians, who live on a 14,000-foot-high plateau in the Andes, near Lake Titicaca. Some of their fretful customs are described by Harry Tschopik, Jr., anthropologist of the American Museum of Natural History, who has just returned with his wife, an archaeologist, after living in one of their villages for seven years.

Life is hard in the bleak, barren, wind-swept Aymara country, and their hardships seem to be reflected in the mental attitude of the people. They "appear not to like anybody, including each other." They worry constantly about the immediate future, and try to learn by divination the outcome of such commonplace things as going to market or raising potatoes. When a person dies, he gets

"blamed" for becoming a permanent absentee from his work. Children are coddled and petted until they are about three years old, but then are considered ready for such jobs as herding pigs.

Witchcraft is very common, both the black and white varieties. A woman of the village hired a professional black witch to "put a hex" on the Tschopiks. Both became ill shortly thereafter, which was of course credited to the witch's magic powers by the Aymara, who subjected them to a strict boycott. To make it possible to continue working there, the Tschopiks had to hire a white witch and go through a tedious "de-hexing" ceremony. Then the woman who had started the trouble lost face and left town.

About the only fun the Aymara ever get seems to be from drinking "tinka" at funerals and on holidays. Formula for tinka: one quart alcohol, one quart water, one handful coca leaves (source of cocaine), one handful cigarette butts. Taken straight, without chaser.

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ASTRONOMY

Poland Receives Gift Telescope from Harvard

► A FAMOUS Harvard telescope that has photographed over 100,000 stars has arrived in Poland as a Harvard gift, to become the chief instrument of a new observatory at the birthplace of Copernicus, famous astronomical pioneer.

Dr. Harlow Shapley, director of Harvard College Observatory, announced that the famous eight-inch Draper telescope has been received in Torun, Poland, by Prof. S. Dziewulski, leading Polish astrophysicist.

A major step in restoring Polish observatories destroyed by war, the Draper photographic doublet instrument was specially rehabilitated and equipped for an important program of Polish research on star colors, temperatures and chemical compositions.

The telescope will be the nucleus of the new Copernicus observatory at Torun, where Nicholas Copernicus was born. Copernicus is the astronomer whose theory put forth in 1543 placed the sun and not the earth at the center of the system of planets.

At Harvard the Draper telescope provided spectrograms of 100,000 northern stars for the late Annie Jump Cannon's famous ten-volume Draper catalog of spectral classes, positions and brightness.

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IN SCIENCE

AGRICULTURE

Floods Killed Ragweed With Corn Destruction

► FLOODWATERS that ruined millions of acres of lowland corn did at least one good thing along with all the evil they wrought. They also killed millions of acres of ragweed, whose pollen is the chief cause of hayfever in this country.

Tall ragweed flourishes best on muddy riversides subject to frequent flooding that prevents more permanent types of vegetation from getting a foothold. It also grows densely on the neglected patches of land in odd corners of railroad yards, around city dumps and on low-lying wasteland generally. Low ragweed is a dominant cornfield weed, along with cocklebur, which is perhaps the No. 3 hayfever pollen producer over most of the Midwest.

Along with the lowland cornfields, the wasteland habitats of the ragweeds have been drowned out, sometimes being under water continuously for weeks. Like the lowland corn, the lowland ragweeds have been either killed outright or so retarded in their growth that they will hardly blossom and produce pollen this summer.

This destruction of hayfever weeds on the lowlands will be at least partly offset by their greater growth in upland cornfields where continuous rain prevented effective cultivation during the spring weeks. Now this corn is too high to cultivate and the ill weeds grow apace.

Just what the final balance sheet of ragweed acreages will be there is no way of guessing now. It should be interesting, however, to compare this year's daily pollen counts with those of more nearly normal years.

The weedy cornfields will, of course, produce huge crops of ragweed seed and cockleburs to plague farmers and folk with sensitive noses next year and for several years thereafter—for part of the seeds of these troublemakers always lies dormant for from one to five years. By the same token, the riverside areas that bear no ragweed crops this year will have them in 1948, from the dormant seed now lurking in the soaked soil.

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CE FIELDS

ENGINEERING

Automatic Refrigeration Process Uses Ammonia

► A HOUSEHOLD refrigerator using calcium chloride, ammonia and heating gas, developed in Germany and said to be relatively inexpensive and satisfactory, was revealed by the U. S. Department of Commerce.

The liquid ammonia is the refrigerant. It passes within the cabinet through an evaporator where it is turned into a gas by the heat from the food in the box. It then goes through cells of solid calcium chloride where it is picked up by the chemical and condensed into a liquid again. The heat given up is removed by a mechanical blower.

The gas heat is used whenever the calcium chloride becomes saturated with the ammonia. It is turned on and off automatically. The heat vaporizes the ammonia and forces it into a condenser where it becomes a liquid to start anew through its circuit. The whole operation is automatic. No time switches are needed to control heating or other action.

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MEDICINE

Big Molecules May Cause Hardening of Arteries

► A NEW IDEA of the cause of high blood pressure and hardening of the arteries, one of the major causes of death, is suggested by a report from four South African scientists to *Nature* (June 28).

Big, inert molecules that flood the blood circulation might be the cause. They might be molecules of protein or of sugars or of a combination of fat and protein.

Africans with pellagra started this idea in the minds of Drs. J. Gillman, T. Gillman, J. Mandelstam and C. Gilbert of the University of the Witwatersrand at Johannesburg.

These Africans and others who were not suffering from pellagra developed a condition called cytosiderosis. Large quantities of iron pigment were deposited in their livers. Big, inert molecules which could be traced because of their iron content, were found to leave the liver in the bile. They were then absorbed by

the intestines and spread by the blood circulation.

The flooding of the circulation with these big molecules can result in a number of "extraordinary" reactions, the doctors found. Among these is hardening of the arteries.

The Johannesburg scientists are now trying to learn whether big molecules play a similar role in hardening the arteries of persons who do not have the pellagra and cytosiderosis in which the role of big, iron-containing molecules was discovered.

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PROSTHETICS

VA Exhibits Artificial Parts of Body for Use

► AN EXHIBIT of spare parts for the human body, to be used something like a sample showroom or library, was opened in Washington by the Veterans Administration this week.

A "reference exhibit of prosthetic devices" is the technical name for it. It will be permanent and is the only one of its kind in the world.

Here is how it will work:

Someone needs a spare part. It might be a leg or an eye or even hair for the head. He or his doctor, by consulting this reference exhibit, can find the one best suited to his needs. If he is a veteran, he can get the device through VA's "free choice of appliances" policy. If he is not a veteran, he gets it by an order to some private firm that makes it. By consulting the reference exhibit, he will be spared the trouble and sometimes disappointment of shopping around from one firm to another to find the best device for him.

Manufacturers also will use the reference exhibit to aid them in producing new or better devices.

Artificial arms, legs, hearing aids, aids for the blind, plastic eyes, wigs, cosmetic hands, spare parts for the face, wheel chairs, crutches and canes are among the 1,000 items, more or less, in the exhibit.

It took more than a year to assemble the exhibit. Members of the prosthetic appliance industry aided by contributing 95% of the items at no expense to the Government.

Experimental models, as well as those now in manufacture, are included. These are not available to veterans, though some may become available when they get past the experimental stage.

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ACOUSTICS

Even Heartbeat Disturbs Soundproof Room's Silence

See Front Cover

► THE QUIETEST place on earth may be the ultra-soundproof room shown on the cover of this *SCIENCE NEWS LETTER*. Even a heartbeat breaks the silence. It was constructed by Bell Telephone Laboratories, Murray Hill, N. J., for acoustical research.

Walls, ceiling and sub-floor are lined with saw-tooth wedges of fiberglass to a depth of five feet. The working floor resembles the hitting surface of a tennis racket. It is made of high-strength steel cables only eight-hundredths of an inch thick, strung under high tension in two-inch mesh from the walls. The netting can support tons of equipment.

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SOIL CONSERVATION

Raindrop Splashing Starts Cycle of Soil Erosion

► FLOOD DAMAGE, though measured in terms of hundreds of millions of dollars, is by no means the only harm that the diluvial "forty days and forty nights" of rain wrought in the Midwest. Upland fields escaped inundation, but enlargement of old gullies and opening of new ones are obvious evidences of the terrible toll taken by water erosion.

Gullies are the final, catastrophic stage in the erosion cycle. Its beginning comes with the fall of the first raindrop on unprotected soil. Studies by W. D. Ellison, hydraulic engineer of the U. S. Soil Conservation Service, show that first stage in water damage to naked soil comes with the innocent-looking splashing of raindrops.

A raindrop is a triple enemy of bare soil. It is a plunging projectile that knocks soil particles loose. It is a solvent for plant-nourishing elements. It is a means of separating fine silts from heavier sand-grains, and humus from mineral particles in the soil's complex structure.

There is a special word for that latter process, that deserves to become as familiar a warning-sign as the word erosion. It is slightly longer, but easy to pronounce: elutriation. Soil subjected to elutriation by raindrop splashing loses value "in place", as contrasted with the damage due to erosion, which involves the actual removal of the soil. There is much elutriated soil in the Midwest this summer.

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