

## OPTICS

# Mirror Can Be Window Too

➤ PEEKHOLES in apartment doors are no longer necessary. A window pane that is a mirror from the outside can be used instead. To the person on the inside it is clear glass.

This transparent mirror is now in production and available for civilian uses. It was developed early in the war and served many war purposes, particularly to meet aircraft demands for high-quality instruments. It was developed in the mirror division of Libbey-Owens-Ford Glass Company.

The treated glass functions as a reflecting surface when seen from one side, and simultaneously as a window when viewed from the other. The treatment is called a "molecular bombardment" with a special chrome alloy through thermal evaporation in a high vacuum. The reflecting surface is the one that is metal-coated.

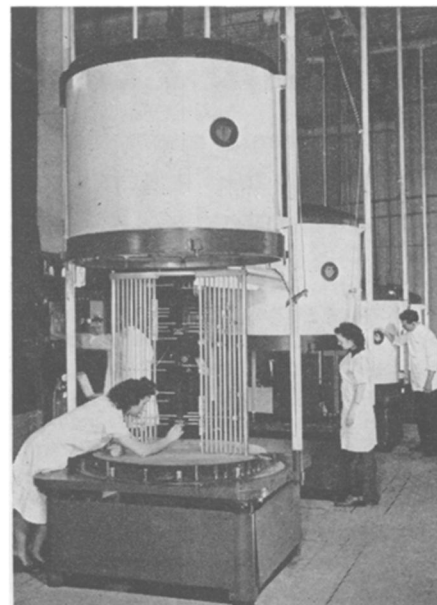
Key to the transparent mirror's per-

formance is the almost incredible thinness of the film of chromium alloy applied. It is four ten-millionths of an inch thick. While constituting an effective reflecting surface, it is so thin that clear photographs can be taken through it.

In making the mirrors the glass to be coated is placed around the insides of a vacuum chamber, and the chromium particles are suspended on a filament in the center. After powerful pumps have created a very high vacuum in the chamber, an electric current is passed through the filament. The current instantly evaporates the metal, molecules of which dash with the speed of light to the glass. They cling so tightly that they can not be removed by scrubbing.

Glass can be similarly coated with silver, gold, aluminum, lead and other metals. The transparent mirror is suitable for use in many applications where one-way observation only is desired.

*Science News Letter, December 7, 1946*



**MIRROR-MAKING** — Thermal evaporation chambers are used to surface glass in the laboratory of Libbey-Owens-Ford Glass Co. for use as mirrors and windows at the same time.

## MEDICINE

# Cancer Can Be Avoided

➤ ALTHOUGH the cancer problem is extremely complex and far from being solved yet, medical scientists have learned some of the conditions under which cancer may arise. Some of these can be avoided or corrected. To that extent, therefore, there are ways of preventing or avoiding cancer.

In the case of skin cancer doctors can give fairly positive advice. Persons past middle age, for example, and those who have an aging skin are warned to avoid sunburn. Those who have warts, moles and any sores that are slow healing are urged to consult a doctor to make sure the condition is not one which may develop into cancer.

"The removal of all precancerous lesions (sores) of the skin will save many a life from cancer," Dr. Frank E. Adair, of Cornell Medical College, declared at a meeting at the New York Academy of Medicine.

Workers in gas service stations and oil plants, he continued, have brought to cancer specialists a new group of skin cancers of the hand. This occupational disease is due to the fact that the workers neglect to scrub the tar, oil and gasoline from the backs of their hands. These

irritating chemicals remaining on the hands frequently produce skin cancer.

To doctors, Dr. Adair gave a warning that X-rays and radium applied to human skin have far greater danger than is generally recognized.

Drinking plenty of water may help prevent cancer of the bladder. A common cause of this cancer is the presence of stones and precipitated urine crystals. These produce a chronic irritation of the bladder lining, much of which could be prevented by acquiring the simple habit of drinking large amounts of water.

*Science News Letter, December 7, 1946*

## NUTRITION

## Many Protein Sources Can Substitute for Meat

➤ WITH THE COST of meat so high, some of you may be wondering which meat substitutes come closer to giving the same food value as meat. Fish and poultry are the same as meat; and cheese, milk and eggs furnish the same quality of protein, though you may need to eat more of these than you realize to get the same amount that a quarter-

pound portion of meat would furnish.

One-half cup of cottage cheese furnishes one-fourth of the day's ration for a moderately active man as recommended by the National Research Council. One ounce of American cheddar cheese and one cup of pasteurized milk each furnish one-tenth of the day's requirement for the moderately active man.

From one-quarter of a pound of pork weighed as purchased, you get one-fifth the day's protein requirement for the moderately active man. Liver, beef, veal, lamb and poultry furnish one-quarter of the day's allowances per quarter pound each.

If you score the day's ration for the moderately active man at 100, six slices of bread furnish 18% of the protein allowance. Dry peas and beans each furnish 6% per ounce. Even potatoes help. One medium Irish or sweet potato furnishes 3%.

These figures are from a food value chart prepared by Grace Steininger and Evelyn Lorenzen and published by the New York State College of Home Economics at Cornell University. Besides giving information on protein values, this chart provides a simple way of scoring the nourishing value of the entire day's diet for each member of the family.

*Science News Letter, December 7, 1946*