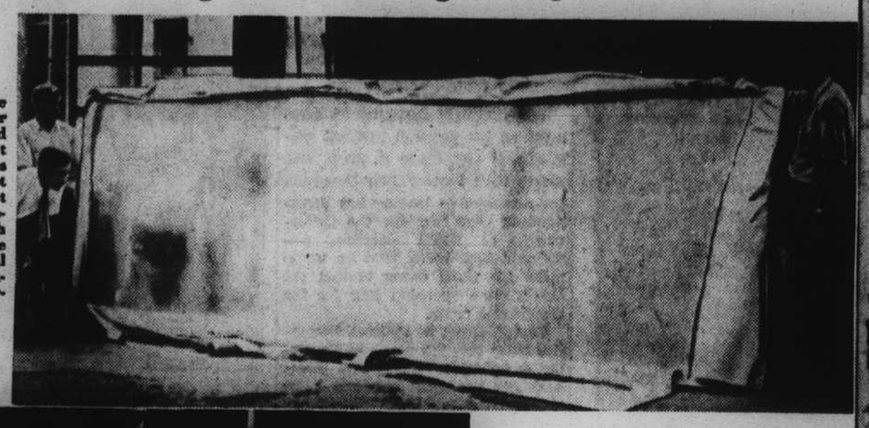
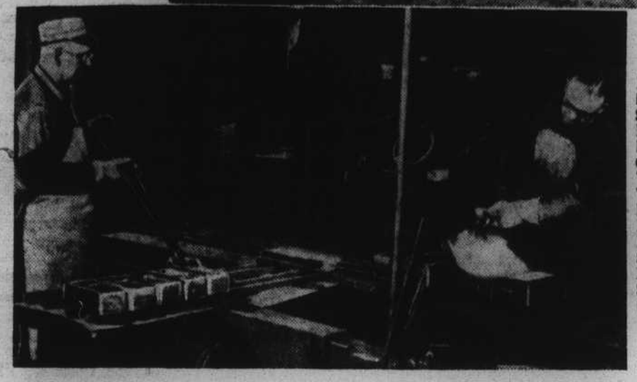
Latest Facts from Science, Mechanics and Invention

The NEW AGE of SILVER

How the Precious White Metal Is Becoming an Important Medium of Exchange and Finding Many Industrial Uses.



Right: A Huge Sheet of Silver Which Is Claimed to Be the Largest Ever Made. It Is Nearly 19 Feet Long, Five Feet High and One-Eighth of an Inch Thick and Is to Be Used as Material for Making Chemical Manufacturing Equipment.



Left: Melting Down Silver Which Is Cast Into Ingots and Conveyed to Vaults Where the Bars of the Metal Are Neatly Stacked in Piles, as Shown at the Right.

SILVER threads among the gold in the national financial fabric are becoming of increasing importance as a result of the government's recent act of nationalizing the precious white metal, which is also finding many new and various uses in industry. The American government is paying a net price of 50.01 cents an ounce for stores of bulk silver which, it has been estimated, may amount to as much as 150,000,000 ounces. All such silver must be turned over to the government within 90 days of the executive order. The nationalization order does not apply to the silver of which household and commercial articles are made.

Never before has silver played so indispensable part in daily life as it does today. Despite the discussion about silver and its use as money, only about eight per cent of the silver consumed in the United States in 1933 went into coinage. The balance is used for innumerable purposes in science, industry and the arts.

What is believed to be the largest piece of fine silver ever fabricated is shown in one of the accompanying illustrations. It measures 18 feet nine inches in length by five feet in height and has been rolled to a thickness of one-eighth of an inch.

The dependability of silver for a variety of industrial purposes makes it economical to employ it in many instances in place of base metals. When worn out or damaged, the silver can be reclaimed further to reduce costs. Silver resists the action of certain acids and is strong and exceedingly durable. Of late it has been used quite extensively for food containers and helps to preserve food.

Large quantities of silver solders are used in the manufacture of refrigerating apparatus. The locomotive searchlight is made more efficient and powerful by the liberal use of silver reflectors. The precious metal is used in parts of certain railroad switches since it is strong and unaffected by wide changes of temperature and thus serves to safeguard the lives of millions of people from one end of the country to the other. It proves so durable and little affected by shock and vibration that it is extensively employed in the form of silver solders and brazing alloys in building airplanes, aboard battleships and in motor cars.

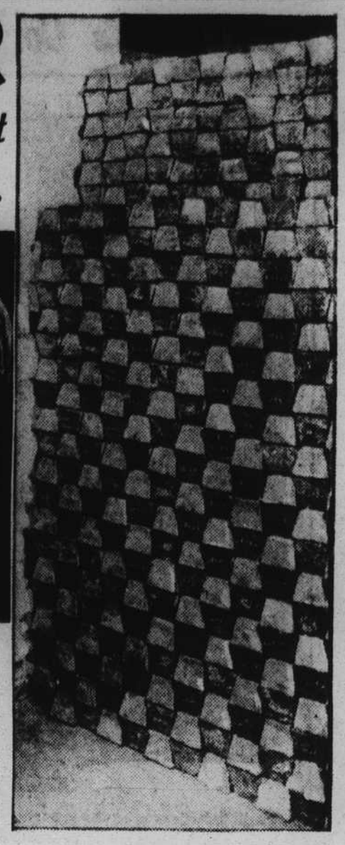
Tons of silver yearly now go into the making of silver solders and brazing alloys. A new brazing alloy recently developed is meeting wide-spread success for non-ferrous metal work and its uses are spreading rapidly. It has been found when melted that these silver alloys penetrate to every microscopic crevice of the metals to be joined together. The joints made are usually stronger than the metals themselves. Silver is also used in the manufacture of delicate instruments for a very great variety of scientific purposes.

Silver is used as bearing metal in bearings operating without any lubricants, especially for revolving machinery used in high-vacuum equipment. The silver bearings are said to possess very smooth running properties and make it possible to dispense with the undesirable evaporation of lubricants which takes place in high vacuum.

Silver is also used in making musical and medical instruments.

The greater part of all the silver consumed is made into beautiful sterling silverware which is used universally in homes, and today more silver than ever before is being used for this purpose. The trade has been stimulated recently by the rising price of silver.

Enormous quantities of silver are utilized to making the moving pictures and photographs. A large amount goes into the making of mirrors, and photo-engraving consumes large quantities annually.



How Roses Are Now Canned

CANNED roses are the newest of all the many articles packed in air-tight containers.

The rosebush is first pruned to a proper size to fit a standard container, usually about 15 inches. That portion of the box which is to contain the roots is coated with tar to retain the moisture.

Applied at the correct temperature and with a sufficiently thin coating, ordinary paraffin can preserve an entire season's growth of choice roses. After scores of tests it was found that the plants could be successfully treated with hot paraffin at temperatures ranging from 165 to 180 degrees.

Only a fraction of a second is needed to dip the plants. The hot paraffin does not come in contact with the roots, which are wrapped separately in wet peat moss. As a final operation the box is closed and hermetically sealed to form an air-tight container.

A Bouquet of Canned Roses Preserved in an Air-Tight Container to Withstand Severe Climatic Conditions and Rough Handling.

Clothes Made of Woven Glass

"BRITTLE as glass" seems to be losing at least a portion of its truth in the light of the current tonnage production of shatter-proof glass, glass silk and glass wool.

The surprising flexibility of the various grades of glass fiber is obtained through a combination of filament size, glass batch composition, and manufacturing method. The extent to which these fiber products have been developed is indicated by the character of their glass cotton.

The material, as described in the Industrial Bulletin of Arthur D. Little, closely resembles bulk cotton in physical appearance and "feel." It is composed of glass fibers, one to two inches long and averaging one ten-thousandth of an inch in diameter.

Glass silk is slightly larger in fiber diameter than glass cotton, and differs from both glass cotton and glass wool in its mass form, which in turn results from the method of production. Both the latter are made as a loose tow in which the fibers are at most only a few inches long, and are much interlaced in at least two directions.

Glass silk is produced as a series of parallel fibers of practically continuous lengths. In this condition it may readily be worked by the long-fiber textile processes, and converted to yarns and fabrics.

Glass wool is available in a closely controlled range of sizes, from fine wool of approximately five ten-thousandths inches in diameter to a comparatively coarse fiber 10 to 15 times this size.

The finer grades are used at present largely for heat insulation. In that structural field glass wool is completely fire-and-vermin-proof, while the resiliency and length of the glass fibers practically eliminate the tendency to settle and leave open spots at the top of the insulated space as so frequently occurs with short-fibered mineral wools, especially where vibration is present. Acoustically the insulating value of this material is excellent.

Did You Ever Hear a Book Talk?

EQUIVALENT to a restoration of the lost sense of sight talking books are opening a new world to the blind as the result of a recording invention which makes records playing one hour on a side perfectly feasible. The long-promised "talking book" which is now brought into the realm of reality is recorded on two 16-inch disks resembling phonograph records and is made to talk by use of a machine constructed on the general lines of a talking machine.

An average novel of 65,000 words is recorded on the two disks which "talk" themselves out in a little more than two hours.

A Talking Book Contains an Average of 65,000 Words and Talks for Two Hours.

Studying Diseases by Cold

ELECTRIC refrigerators are being used in a study of physiological adaption to cold, which is expected to give some information on the anemias.

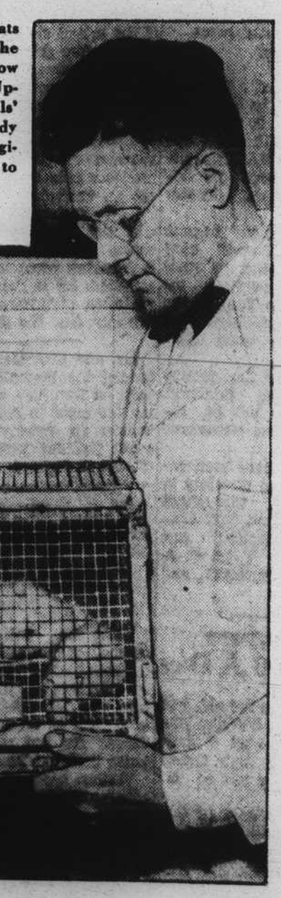
Doctor Ira A. Manville has recently completed a study of the effect of rarefied atmosphere on the blood count in red corpuscles and hemoglobin. These studies were made through a medium of rats subjected to various diets and given an exposure to rarefied atmospheres, approximating eighteen to twenty thousand feet above sea level, as reproduced in a decompression chamber which Doctor Manville developed for the purpose.

The rats are placed in an electric refrigerator under various temperatures and are exposed for periods of approximately four to six hours.

Incidentally, the data resulting from these experiments may provide reasons for believing that victims of pernicious anemia die literally by freezing to death. The low body temperatures developed in this manner cause a paralysis of the nervous functions that results in death.

The refrigerator being used by Doctor Manville in these experiments has a special glass door so that the doctor can observe the reactions of the rats during the experiments and an accurate record of temperatures in the cold compartment can be kept.

Doctor Manville's experiments are expected to contribute more information about the conditions regulating the production of red corpuscles and hemoglobin and may be of value in the treatment of various anemias. As a result of his tests Doctor Manville hopes to develop a new method.



Refrigerating Rats to Determine the Effects of Low Temperatures Upon the Animals' Blood in a Study of the Physiological Adaption to Cold.

Photo by Courtesy of Westinghouse

"Unbreakable" Plastic Material

Demonstrating the Unbreakable Plastic Material Which Is Molded Into the Figures of Manikins and Many Kinds of Novelties.

MAKERS of show-window manikins, dolls and other molded figures which have been made of a fragile plastic material will be interested in the invention of a new substance designed for this purpose, which, according to the inventor, is unbreakable.

Motion-picture studios are said to have found this new plastic substance so well adapted to their use that they are planning to use it in making "doubles" of movie actors for both long shots and "stand-ins."

This material, whose composition is a secret, is claimed to be as light as papier-machine and to have both the durability and the flexibility of rubber.

Airplane Driven by Man-Power

INDIVIDUAL airplanes propelled solely by man-power are proposed by Herr Haeszler, a German expert, who is advocating the awarding of prizes for a new flying sport. He suggests in "Flugsport" the construction of a large glider of very light weight and clean lines. Within the body of this glider there would be place for a man in a reclining position, with his feet on bicycle pedals. The pedals would drive an airplane propeller through a chain and sprocket.

The man-powered machine would be launched into space just like an ordinary glider by rubber shock cord methods. Then the legs of the man would set the propeller in motion and he would be able to stay aloft for a flight of say 1,000 yards. The aircraft would be so designed as to be stable, and the only control necessary therefore would be the rudder control, effected through a hand-operated steering handle inside the body of the glider.

To fly at minimum power the weight of the man and the glider must be low, the area of the wings so large that the flight is very slow, and the man himself must be a superlative athlete.

Scientific investigations have shown that a trained runner can achieve 1.4 horsepower for an instant, and average 1.2 horsepower for five minutes. If a glider could be built weighing only 300 pounds (man included) and with a wing area of 400 square feet, then the minimum power delivered to the propeller, according to the Scientific American, would have to be 1.04 horsepower. The speed of flight would be 24 feet per second. This would be postulating a very efficient wing, and practically no resistance for the rest of the aircraft.

John J. Montgomery was the first American exponent of the art of flying in an engineless aircraft. Fifty years ago he built his first glider, consisting of two wings, each being 10 feet long and four feet, six inches wide. The pair of wings had a total surface of 90 square feet. They were placed tandem fashion and joined by a framework from which a seat was suspended. The wings were curved and arched sidewise like those of a seagull.

The glider was equipped with a horizontal tail which was elevated or depressed by means of pulleys. Lateral balance was accomplished by motion in the seat.

A Cross-Section Drawing of Man-Driven Aircraft Showing How the Propelling Power Is Developed by Pedals.

Why a Dew Pond Never Goes Dry

THE method of making a dew pond is to dig out the earth to a depth of five feet in the centre, sloping upwards to the sides. The hole is then lined with clay and covered with straw. The straw is covered with lime, but this lime must not touch the clay lining. A secret substance which is said to be known only to two bachelor brothers living in England is mixed with the lime. Then a layer of earth is hammered down to make the bed of the pond. After that the pond is left to fill itself, which takes about six months.

The scientific explanation is that the layer of dry straw insulates the earth below and prevents heat from passing up to the water in the pond. Thus the water remains cold, causing the moisture-laden night air to part with its water. Naturally, the heat of the day must cause evaporation of the pond water, but this only increases its coldness and further facilitates condensation.

The outstanding fact about old dew ponds is that, despite the longest drought, they never go dry. Many are situated in exposed positions and are used daily by cattle and sheep, but in the face of the most prolonged rainless spells, when larger ponds and rivers in the valleys are drying up, they remain full and apparently undisturbed.