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A paper bag for shipping 50 pounds of potatoes was another prize winner. This replaces wooden crates and burlap bags previously used. Lower freight rates and less weight loss due to shrinkage are among the advantages.

A corrugated box for shipping airplane rudders, formerly packaged in crates or wooden boxes, won recognition as an aid to keeping essential light airplanes in operation.

An airtight transparent bag for transporting frozen fish fillets won a prize. Grocers are able to keep this fish package next to other foods without danger of contaminating them with fish odors.

A new bacon package allows the housewife to slit it open quickly and remove a few slices when needed, while the grocer does not need to wrap the package when it is sold.

A new cheese package makes it practical to sell high-grade cheese in a ten-cent retail size. The package consists of a pliofilm cup formed when hot cheese is flowed into the mold.

Another prize-winning new idea in food packaging is a bread package that consists of two half-loaves separately wrapped. In one combination half a loaf of white bread is twinned in the new package with half a loaf of wheat bread.

A new macaroni package uses a new method of closing the package when only part of the amount is used at one time. Lifting one tab opens the hexagonal carton, which is simply closed by pressing the end back in place.

Even ink is dispensed in new dress. The bottle is shaped so that the small hand of a school child can grasp it safely while pouring, and the bottle never "gurgles" and spurts out its content.

Pies can now be made with a very crisp, crunchy crust, thanks to a new pie package that protects the pie even when stacked on the counter.

A new medicine bottle, thanks to a new design recognized in the competition, saves 44% of the space on the shelf occupied by the standard, round bottle, although it is only slightly taller.

Merchants actually ask to have their windows "broken" when they see a soft drink display which looks as though a pretty girl had just stepped through the window glass. The illusion is accomplished by lithographing "cracks" as well as the girl on a transparent sheet and putting the sheet over the real glass of the window.

Science News Letter, April 18, 1942



NEW DEMAND

The war has brought with it the need for new sorts of packages. Here are packages for dried human blood plasma and the apparatus for restoring it to liquid form.

AERONAUTICS

Underground Quarries Shelter British Aircraft Factories

Modern Lighting Was Installed and Walls Painted To Bind Dust But It Was Unnecessary To Widen Space

UNDERGROUND stone quarries begun 2,000 years ago in Roman times now are giving sanctuary to British aircraft and war industry factories under constant threat of Nazi air raids.

The story of how two of these factories were set up underground is told in a recent issue of the British journal, *The Aeroplane*, (March 6) just received here.

In the first site surveyors, guided by quarrymen who alone knew the planless cities of darkness, made their blueprints for a factory to be artificially heated, ventilated and lighted. One surveyor who strayed from his party was lost for two days. When the quarry was mapped, workmen and electricians swarmed through the cool, dark corridors and the ancient stone, once chipped by hand, now yielded to swift pneumatic drills.

Except for adding another million

cubic yards of space and strengthening supports, engineers made their factory comply to the quarry. It was unnecessary to widen or straighten the streets and avenues. Walls and roofs were painted yellow to bind the fine dust which could damage precision machinery.

Elevators and escalators were built for factory workers and machinery, fluorescent lights installed, ventilators built and canteens and lavatories provided for.

This site is now nearly complete. Six hostels, each quartering 1,000 men or women, are planned, and married quarters for another thousand. The latter will be little bungalows, built in pairs. There will be front and back gardens, even lawns.

The second underground factory is now complete. It is entirely air-conditioned, and the temperature kept from

60 to 65 degrees Fahrenheit. The main canteen, or restaurant, is above ground, but a small room for making tea is underground, and tea is served on trolleys to men and women at work.

Feature of this factory is the Control Room, built in an old seepage pit. It is linked to all parts of the factory by

telephone, loudspeaker and microphone. Hourly production records are made, and by a glance at the charts the managing director can check any section.

In both underground factories, irreplaceable machines and skilled workmen are safe from the most severe bombing.

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PHYSIOLOGY

Excessive Acid in Nerves May Cause Altitude Ills

When Nerves Are Too Acid, They Discharge Excessive Quantities of Acetylcholine Which Affects Muscles

EXCESSIVE acidity of the nerves may be responsible for a host of serious ailments, including the dangerous condition that overcomes high-altitude flyers and mountain climbers, Dr. Robert Gesell, of the University of Michigan, announced at the meeting of the Federation of American Societies for Experimental Biology in Boston.

The acid nerve condition which may be responsible for pilot failure in high-altitude flying without oxygen cannot be counteracted by the soda bicarbonate or other alkaline powders which the layman takes for his so-called acid stomach. Excessive alkalinity of the nerves may cause just as much trouble as excessive acidity, but it cannot be corrected by taking lemon juice. Neither

acids nor alkalis that people could take into their stomachs would change the acid or alkaline state of the nerves. To change nerve acidity requires injections directly into the veins of the very powerful alkalizing or acidifying chemicals.

The degree of acidity or alkalinity of nerves that makes the difference between health and serious illness is actually rather small. But the shift from just the proper balance to excessive acidity or alkalinity of the nerves may influence all body processes, including breathing, heart action and digestion, Dr. Gesell believes.

When the nerves are made too acid, he discovered, they discharge excessive quantities of the chemical, acetylcholine. It is this chemical, many scientists be-

● RADIO

Saturday, April 25, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Frank C. Hibben, of the Museum of the University of New Mexico, will talk on discoveries in Sandia Cave.

Tuesday, April 21, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

Mrs. Katherine Fowler Billings, New England Museum of Natural History will describe "Prospecting for Gold in West Africa."

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

lieve, which causes a muscle to move in response to a nerve impulse. Sometimes muscles go on moving long after the nerve impulse has ceased. A familiar example is the trembling that follows prolonged or excessive physical exertion. Epileptic fits are attributed by some scientists to the same mechanism, which is called the after discharge. The theory is that the nerves continue to release acetylcholine which, as it piles up in the muscles, keeps them contracting. Excess acid, Dr. Gesell's experiments show, is responsible for this condition.

Why the nerves become too acid or too alkaline is not entirely known. Too little oxygen and too much carbon dioxide apparently can cause acidity, and the reverse can cause alkalinity. Increasing nerve alkalinity, Dr. Gesell found, facilitates the destruction of the nerve chemical, acetylcholine. This might lead to paralysis. A kind of convulsion accompanied by muscle cramps, called tetany, and coma or unconsciousness, are other conditions which may be explained on the basis of acid or alkaline nerves, Dr. Gesell believes.

Working with him on the experiments were Prof. Charles R. Brassfield, Elwood T. Hansen and Arnold Mason, also of the University of Michigan.

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WYOMING

Fish in its mountain streams. Ride horseback thru its hills and canyons. Find Indian relics and marine fossils in this region of great historical and geologic interest.

The Patons welcome a limited number of guests at their ranch home in the Big Horn country. Cabins are comfortable, food good and horses gentle.

Write for illustrated folder with map

Paton Ranch, Shell, Wyoming



BOXED AIRPLANE PART

This airplane rudder is partly packed and ready to slip into its carton for transportation to the assembling plant.