Do You Know?

A *new* bullet has a needle point for better penetration.

Mexico has large-scale plans to improve its *citrus* industry.

Cinchona plantations started in the Belgian Congo are expected to be producing *quinine* this summer.

Bad-smelling gasoline fumes may be eliminated by using *chestnut bark* tannin acid in the refining process.

Two-thirds of the world's people are normally engaged in *agriculture,* feeding themselves and the remaining one-third.

Kelp, or giant seaweed, is now collected on the west coast of Scotland in increased quantities to produce iodine and wrapping materials.

South Pacific island coconut palms furnish not only the meat and the milk of the nut but also a large *end bud* or "cabbage" that can be used as a vegetable, either cooked or raw.

Italians in 1911 dropped bombs on Arab tribesmen at Bengasi, Libya; this was probably the first use of airplanes for *bombing,* although balloons had been used earlier.

Swine hoofs, a waste product of packing plants, can make a good protein supplement for animal feeding when finely ground and mixed with other protein food.

A new *fuel tablet* for soldiers to heat their food is a synthetic compound known as trioxane, with a binder to hold it in solid form; one flat one-ounce tablet will heat a meal in about seven minutes.

Magnesium fires may be controlled by sprinkling coal tar pitch on them because the pitch softens and seals out air; water and other ordinary fire extinguishers make magnesium fires more intense.

A new plastic *fireproof upholstery* developed by a rubber company is reported as mandatory equipment in all new American combat vessels; it is unaffected by climatic temperatures and resistant to oils and gasoline.

MEDICINE

Ultraviolet for Studies

New light on the problem of mental disease may be gained from the glow of fluorescence. Certain disturbances may be linked with metabolism of porphyrins.

➤ THE SOFT glow of fluorescence may throw new light on the problem of mental disease, it is suggested by a report to the journal, *Science,* by Dr. Heinrich Kluever, of the Otho S. A. Sprague Memorial Institute, University of Chicago.

The glow of parts of the central nervous system when placed under ultraviolet light passed through a special filter betrays the presence of certain catalysts known as porphyrins. It is a light of a particular wavelength, 625 millimicrons. The detector is so delicate that it shows up a porphyrin when it is present in a concentration of only one part in one billion.

Dr. Kluever concludes as a result of his research that there is a possibility that certain nervous and mental disorders may be linked with a disturbance in the body's metabolism concerned with the handling of these porphyrins, which are the breakdown products of hemoglobin. He is now studying the amounts and distribution of porphyrins in patients with various illnesses of the central nervous system.

The following are some of the facts of Dr. Kluever's research, reported in *Science* (June 30) and in the *Journal of Psychology* (April), that may be of particular significance in the study of mental diseases:

In only one organ in man, monkeys and numerous other animals is there clear indication of porphyrins. That is the central nervous system.

The porphyrins are strongly affected by light. Although the distinctive fluorescence is still present in white matter taken from the brain or spinal cord of a dead animal after it has been boiled for 20 minutes, put in liquid nitrogen for two hours, irradiated with X-rays, or kept for 77 days in the dark, nevertheless 30 minutes in sunlight will destroy it. Dr. Kluever cites a previous discovery that 0.125 milligrams of coproporphyrin will kill mice exposed to light and that death comes even more quickly with other porphyrins.

This extremely light-sensitive substance is found in the optic nerve.

The distinctive fluorescence of porphyrins was found in all of the 19 different species or genera of mammals studied by Dr. Kluever, but was absent from the seven species of amphibians he studied. This probably means that it is exclusively characteristic of the mammalian and bird nervous systems.

It is present generally in the olfactory tract (odor sense) of the pig and dog, but weak or even absent in that of the monkey.

Science News Letter, July 15, 1944

CHEMISTRY

Three-Ply Plastic Gives Airmen Added Protection

➤ A NEW THREE-PLY plastic sandwich sheeting gives added protection to American airmen flying in pressurized high-altitude planes by acting as a self-seal, closing holes made by enemy bullets and flak, permitting maintenance of essential air pressure within the cabin. Solid, clear plastics usually shatter beyond repair when struck by a bullet in low temperature and under high pressure.

The new plastic consists of a single layer of polyvinyl butyral resin sandwiched between two layers of methyl methacrylate resin, the latter being known commercially as Lucite. The commercial name of the new plastic sandwich is Lucite-Butacite.

The new laminate, manufactured by E. I. du Pont de Nemours and Company, is transparent and readily adaptable to a variety of mounting techniques permitting design of enclosures, such as turrets, so that obstructing metal parts and ribs can be eliminated from the line of vision.

It is also expected that airplanes operating at lower altitudes will benefit from the new plastic because of the added safeguard against the shattering of enclosures in collisions with birds and against rupture from the impact of ice flying back after forming on the propeller.

At present the entire output of the sheeting is allocated for direct war use.

Science News Letter, July 15, 1944