

MEDICINE

Blast Injuries in War May Cause Clot on Brain

► **BLAST INJURIES** from the concussion effect of a nearby shell, bomb or underwater explosion may cause a blood clot on the brain that would relegate the victim to chronic invalidism or discharge from the service as a case of war nerves, Lieut. Comdr. Walter D. Abbott, Lieut. Floyd O. Due and Lieut. William A. Nosik, of the U. S. Naval Reserve, report. (*Journal, American Medical Association*, Feb. 27.)

The condition is unlike that likely to be found in injuries sustained in civil life and may be overlooked unless physicians and surgeons are watching for it, the Naval surgeons warn.

An operation to remove the blood clot or the accumulation of spinal fluid in the space between the brain and its outer covering membrane remedies the condition. The patient may be out of bed on the third day after operation and may return to active duty within six to eight weeks.

"We have observed a number of blast injuries sustained in action," the surgeons report. "They are the result of injury by a nearby exploding bomb on ship or land or may be the result of a concussion wave subsequent to a sinking ship or a depth bomb while the patient is in the water."

The victims lose consciousness for a few minutes or a few days after the concussion. They have persistent headaches, which are worse at night or when they exert themselves. Their memory is poor and they are irritable and unstable. They may have slight facial palsy. When the blood clot or accumulation of fluid on the brain is suspected, careful neurologic and psychiatric examination will make the diagnosis clear.

Science News Letter, March 27, 1943

CHEMISTRY

Yellowing of Paper Not Due to Light as Supposed

► **YELLOWING** of papers is not directly due to light as commonly supposed, but to heat and old age, experiments by Dr. H. F. Launer and W. K. Wilson of the National Bureau of Standards show.

All lignin-free papers, even yellowed sheets 250 years old, became whiter when exposed to light. Newsprint, which contains lignin, is about the only kind that

the light rays discolor.

Under war conditions, however, many other kinds of paper may be expected to turn yellow from light. Use of chlorine for treating papers has been restricted and not all the lignin is being removed from paper fibers.

Stability tests on various kinds of paper when exposed to light, revealed that new cotton rag was the most stable, followed in order by refined sulfite paper, old cotton rag, soda-sulfite mixtures and newsprint. Deterioration of newsprint was greatly reduced by neutralizing it with baking soda.

The print that you are reading also protects the paper from the effects of light, the scientists discovered.

Experiments were conducted at average room temperature and humidity with the light source simulating daylight passing through a glass window.

Science News Letter, March 27, 1943

POPULATION

Baby Production Up Since Start of the War

► **LATEST** note on the war's effect on production at home appears in a Metropolitan Life Insurance Company report of a sudden upswing in baby births in September and October, 1942.

This "evidently reflects the outbreak of the war with the Pearl Harbor episode in December of the preceding year," the editor of the company's Statistical Bulletin comments.

The usual spring and summer peak in baby births was wiped out by the war, it appears from data now available on births each month for five large cities, New York, Boston, Baltimore, Washington, D. C., and New Orleans. Monthly figures are not yet available for the entire nation.

The daily average of births in these cities shows a strong upward movement beginning about September, 1942, and continuing almost unbroken to the end of the year, with no sign of any arrest in the upward trend. In December the figure for these cities was almost 80% above that for the same month in the period 1938-1939.

Expressing natural curiosity as to whether the upswing in births in the last months of 1942 will continue into the early months of 1943, the editor points out that "the recent very high level of the birth rate can obviously not continue very long under present war conditions."

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IN SCIEN

ASTRONOMY

Unseen Stars Discovered By Disturbing Effects

► **DISCOVERY** of two small unseen bodies by their disturbing effect on the visible components of double star systems has been announced by Dr. K. Aa. Strand of the Sproul Observatory, Swarthmore College, Pennsylvania. Dr. Strand, who recently announced the discovery of the first inter-stellar planet in the binary system of 61 Cygni, finds that these new objects are faint stars of small mass, rather than planets.

As in the discovery of 61 Cygni C, detection of the invisible components through the use of photographic observations much higher in accuracy than the usual visual micrometer measures.

One of the faint components found in the system of the star Mu Draconis is a yellow dwarf star with a mass equal to six-tenths that of our sun. Its presence was revealed through the wavy motion, 3.2 years in length, of one of the visible components.

The other object is in the system of Xi Bootis, as shown by an irregularity of 2.2 years. The mass of this faint star is only one-tenth that of the sun, or about 100 times that of Jupiter.

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PHYSICS

Giant X-ray Machine Nears Completion; Has War Uses

See Front Cover

► **THE** giant 130-ton electron accelerator being built in the General Electric Research Laboratory is now nearing completion. It will generate X-rays up to 100,000,000 volts.

Evaluation of such high voltage X-rays for the examination of thicker metal sections than can now be studied by means of X-rays, will be one of its most important war functions.

The lower part of the huge alternating current magnet is shown on the cover of this week's **SCIENCE NEWS LETTER**. It is made of slabs of steel spaced apart for cooling.

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CE FIELDS

CHEMISTRY

Radio Waves Spot Weld Lumber with Special Glue

► SPOT WELDING with glue increases supplies of usable lumber through a new high-frequency radio process announced by chemists of I. F. Laucks, Inc.

Much narrow waste stock, produced when logs are squared off, can now be economically joined into wide boards for which there is a big war demand. A special cold-setting type of glue, developed by the chemists, is smeared along the edges of the boards. Then heat produced by high-frequency radio waves sets the glue in spots about 18 inches apart.

The new method employs only momentary pressure, eliminates clamping and does away with heating the whole glue line.

General setting of the glue line takes place after the boards have been stacked, thus cutting down the time the boards must be in the gluing machine.

Former methods of utilizing narrow stock were complicated by hand methods or expensive machinery. Availability of the high-frequency radio equipment for the new process is now dependent, however, on approval by the WPB priority division.

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ASTRONOMY

Dr. Harlow Shapley Heads Group to Honor Copernicus

► DR. Harlow Shapley, director of Harvard Observatory and president of the American Academy of Arts and Sciences, has accepted chairmanship of a national committee now being formed to facilitate plans for commemoration of the 400th anniversary of the death of Nicholas Copernicus, great Polish astronomer, the Kosciuszko Foundation announced.

Copernicus, often called the father of modern astronomy, originated the Copernican system of astronomy with the sun as the center of the solar system, which revolutionized man's conception of the universe.

Dr. Shapley and the committee will guide a nationwide program of scien-

tific demonstrations, academic exercises and lectures honoring Copernicus on May 24, the date of his death.

A meeting of tribute in Carnegie Hall, New York, with Dr. Shapley presiding, will climax the commemoration. Jan Ciechanowski, ambassador of the Republic of Poland to this country, will take part in the program.

The Kosciuszko Foundation, named in honor of the Polish patriot and American Revolutionary war hero, is sponsoring the Copernican Quadricentennial as one of its wartime endeavors to keep alight Poland's torch of knowledge, fired by that nation's contributions to science and intellectual freedom.

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CHEMISTRY

Potassium in Fertilizers Tested by Radioactivity

► RADIOACTIVITY is now being used to determine the amount of potassium in fertilizers and other mixtures. The new method may completely replace the old chemical analysis method, until now the only general method in use. This is a laborious task taking hours to complete. The radioactivity method requires but a relatively short time and is claimed to be accurate.

Radioactivity is a property possessed by certain substances, such as radium, of giving off spontaneously special rays or radiations that are invisible to the eye but which will pass through materials through which ordinary light will not pass. Potassium mixtures and compounds possess this property to a slight degree. In the new method the quantity of potassium present is determined by the intensity of the radioactivity of the mixture. The radioactivity is weak but is measurable by extremely sensitive modern physical instruments.

The new method is the result of work by two scientists, Dr. R. Bowling Barnes and Dr. D. J. Salley, of the American Cyanamid Company. A report on it has been published recently by the American Chemical Society.

In the new method an instrument known as the Geiger counter is used. It was developed to measure radioactivity. The sample of the mixture containing potassium is dissolved in water, with or without the assistance of an acid, and introduced into a special glass cell which surrounds the Geiger counter tube. The tiny impulses caused by the radioactive changes in the potassium atoms of the sample actuates the counting apparatus.

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CHEMISTRY

Plastic Lithographic Plates Now Used by Army

► PLASTIC lithographic printing plates, made from polyvinyl alcohol resin, are reported to be in use in the Army for printing colored maps and other military documents, and in mobile field printing units. Their use saves from three to eight times their weight in critical aluminum and zinc.

The development came about through the use of polyvinyl alcohol as a coating on zinc to improve the printing quality of the metal. It became apparent that the actual printing was from the plastic and not the metal, and that other material could as well be used for the base as zinc and aluminum.

In the new plate the base is paper impregnated with the polyvinyl alcohol resin which gives it the required strength and stability. It is waterproofed with a coating of another resin. Two sheets are then laminated to form the base, and the printing surface coated with the polyvinyl alcohol resin.

Creation of the printing image is the same as with metal. The resin plastic is sensitized with bichromate of ammonia. It is exposed to light, treated with the developing ink, developed in water and etched, and is then ready for use in the press.

The development of this plastic for lithograph printing plates was carried out in the laboratories of the Du Pont Company, and the plates are made by a Boston company. The Army at present has preempted the entire output, but it will be available at a later date to the printing trade it is expected.

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AGRICULTURE

More Nicotine Needed; May Grow New Tobacco Types

► SURPLUS tobacco will have to be used, or new types grown, to solve the estimated 300,000-pound shortage of nicotine needed this year for insecticides and for the nicotinic acid used to fortify white flour and treat pellagra.

One possibility is the growth of *Nicotiana rustica*, a species of tobacco not used for smoking in this country, which contains about twice as much nicotine as ordinary tobacco. This has long been grown experimentally in various parts of the country.

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