

MILITARY SCIENCE

Simple Invention Tests Trigger-Squeeze Progress

► OF PRESENT practical importance is a simple invention on which patent 2,325,599 was issued to Paul Fidelman of New York. It is a small attachment for the trigger of a rifle with which the raw recruit is learning the difficult art of squeezing the trigger slowly and smoothly, instead of nervously jerking it.

A small metal slide behind the trigger is part of an electric circuit that keeps a buzzer sounding. In the middle of the slide is a piece of nonconducting material that interrupts the circuit briefly during the critical moment when the hammer falls. If the trigger is jerked there is virtually no break in the buzz, but if it is given the proper slow squeeze there is an appreciable pause. The instructor can thus tell how his pupil is getting along.

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PUBLIC HEALTH

Health of U. S. at War Continues to Be Good

► "AMERICA at war continues in good health," statisticians of the Metropolitan Life Insurance Company report in a summary of mortality experience of its millions of industrial policy holders in the 19 months since Pearl Harbor. (*Statistical Bulletin*, July).

In 1942 the mortality was the lowest ever recorded for any year. Although the monthly death rates have been higher each month this year than for the preceding year, the rate for the first six months of 1943 is only 7% higher than for the same period in 1942 and appreciably lower than in any year before 1938. Aside from the mounting toll of war deaths the only other unfavorable features are the higher-than-ever-before death rates from cancer, cerebral hemorrhage and diseases of the heart and arteries.

Gasoline rationing has rolled back the auto accident death rate to 11.6 per 100,000 population which is about what it was for the first half of 1922, and 37% below the first half of 1942.

American women, now playing an important role in war production, are healthier than ever. In the two years before our entry into the first World War the death rate among the company's women industrial policy holders was 13 in every 1,000 of ages 15 to 74

years, while in the 1940-1941 period it was less than half that, seven per 1,000.

Married people, the statisticians find, live longer, this being especially true for married men. At ages 30 to 44 years the death rates among married men are just about half those among the bachelors. Between 1929-1931 and 1939-1941 the death rates declined somewhat more rapidly among the married than among the single at ages under 40 years.

Those whose marriage is broken by death, however, experience a mortality even higher than those who remain single. Here again the men are slightly worse off than the women.

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AERONAUTICS

Navigators Should Be Required to Hold License

► ALL AIR navigators should be required to pass a uniform examination and hold a Federal license, believes Kerry Coughlin, Chief Navigator for Consairways, San Diego, Calif. He realizes that the navigator's responsibility today is multiplied every time the range of our airplanes is increased.

Pilots, co-pilots, and flight engineers are licensed by the Civil Aeronautics Authority; radio operators must receive their license from the Federal Communications Commission; but the navigator—often called "Charts" by the crew—is still an unlicensed specialist. Yet it is he who must answer the all-important question, "Here is our objective, how do we get there?"

The navigator is a relative newcomer to air flight. Before the war, pilots going overseas usually had to do their own navigating. Ships flying cross-country normally did not bother with intricate celestial computations, thanks to radio beams and beacons.

The number of aircraft flown overseas by the Air Transport Command has jumped 1200% in the past year, recently pointed out General H. L. George of the ATC, under which Consolidated Vultee is operating its Consairway Division.

Navigators chosen for training at Consolidated Vultee are required to pass a strenuous test in dead reckoning and celestial navigation (a test equal to a second-class navigator's examination), and show unusual ability to learn. The airplane navigator must master not only marine navigation, but learn to deal with a third dimension—depth.

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IN SCIEN

PUBLIC HEALTH

Public Health Service Announces 16 Fellowships

► THE U. S. Public Health Service has just received funds from the V. K. Kellogg Foundation for 16 additional fellowships in health education. Each fellowship carries a monthly stipend of \$100 for 12 months plus tuition and leads to a Master's Degree in Public Health. Studies may be pursued at Michigan and Yale in addition to the University of North Carolina, where 20 fellows are already training.

The object of these fellowships is to train health educators to meet the present shortage of such personnel and an anticipated demand in the future in both this country and abroad. Placement after training is anticipated. The new fellows will start their training with the fall term at the respective universities. Applications and other pertinent material must be in the office of the Surgeon General, U. S. Public Health Service, Washington, D. C., on or before Sept. 4.

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INVENTION

Fruit Jars Easily Sealed By Side Seal Closure

► FRUIT JARS for home and factory canning may be covered and sealed by what seemingly is a device never before used. It is called a "side seal glass closure" and was developed by the Hartford-Empire Company, a manufacturer of glass machinery. The company is offering the design of this new glass closure freely to the industry as a contribution to the war effort.

A pliable plastic material is used as a gasket to fit around and slightly above the top of the jar. When rubber becomes plentiful again, either natural or synthetic rubber gaskets may be used instead of the plastic. The rim of the g. cover is slightly bevelled on the inside. When the cover is placed over the jar and gasket and firmly pressed, it compresses the gasket and causes the projecting upper edge of it to mold itself over the top edges of the jar. Glass does not touch glass at any spot. The seal is perfect. The top is easily pried off when the jar is to be opened.

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CE FIELDS

MEDICINE

What It Costs to Be Born In a Hospital Figured

► BRINGING advance financial warning the stork usually fails to give, statisticians of the Metropolitan Life Insurance Company offer the \$2500-a-year-man the following facts on what it will cost to have his offspring born in a hospital: (*Statistical Bulletin*, July).

If the mother goes into a ward, the total cost will be \$185, of which \$75 is the hospital bill, \$75 goes to the housekeeper or maid (if she can get one) when she gets home, \$25 is for the minimum layette and \$10 for incidentals.

For semi-private room service the total cost will be \$325, the extra being an additional \$25 on the hospital bill, \$100 for the physician's fee, and an increase of \$10 for the incidentals.

If Grandpa elects to help defray the costs for having his grandchild born in private room status, the total will be \$450, made up of \$150 hospital bill, \$150 physician's fee, \$75 for housekeeper, \$25 for layette, and \$50 for incidentals.

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AGRICULTURE

Maple Syrup Yield Doubled When Grazing Was Stopped

► MAPLE SYRUP yield from a large grove in Ohio was doubled last spring, after the former practice of letting livestock graze under the trees had been discontinued for three years, Prof. Paul B. Sears, head of the botany department at Oberlin College, reports (*Science*, July 23).

Three years ago, Miss Elaine Hoff, a graduate botany student at Oberlin, began her study on about 225 acres of maple "bush," containing a total of 125 trees. During two years a general improvement of the "woodsiness" of the area was noted—more wildlife, and an increase in seedlings. There were some indications of increased sugar yield, but it was difficult to obtain precise data.

"During the season just ended, however," states Prof. Sears, "the 1,425 trees which were protected from grazing produced an average of nearly one quart of syrup per tree against approximately one

pint per tree from other groves in the neighborhood which have remained pastured. Furthermore, the unpastured area produced a yield of 40 barrels of sap after flow had ceased in the pastured woodlands. Previous to protection, the sap flow was no better than that of other pastured groves in the area. The 1943 yield represents an increase in gross income of \$570 for the unpastured area. The area, rented for pasture, would have brought in less than half this amount. While this test may not be conclusive, it is certainly significant, particularly in view of the fact that one of the most serious sources of economic waste in the North Central States is the grazing of woodlands and consequent destruction of undergrowth, including seedlings."

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MEDICINE

Nylon Used to Filter Plasma for Transfusion

► SUCCESSFUL use of nylon to filter blood and plasma for transfusions is announced by Dr. S. Brandt Rose of the Philadelphia General Hospital (*Science*, July 23).

Stored blood and plasma in the banks ordinarily have sodium citrate added to it to keep it fluid. In spite of this, barely detectable clots and clumps of fibrin and gelatinous material may form in the blood or plasma. These are potentially dangerous to the patient getting the transfusion, so surgeons usually filter the stored blood or plasma before transfusing it.

Cotton gauze, fiber glass braid, stainless steel screens, glass beads, and, most recently, a viscose rayon cloth have been used for this purpose.

Nylon filters have the advantage of removing all clots without clogging. This is probably related to the fact that the nylon filaments are very smooth with round cross sections. Watery solutions spread over their surface without much absorption.

The nylon filter does not shed lint as cotton gauze does. It is simple to clean, assemble and sterilize under steam. Ordinarily nylon would be cheap enough so that the filter bag could be thrown away after one use, but since this is now a critical material, Dr. Rose and collaborators wash and re-use the bags repeatedly. Each of their filters has been used at least 25 times.

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AERONAUTICS

Reports Jap Pilot Quality Not Rapidly Deteriorating

► REPORTS of a rapid deterioration in the quality of Japanese fliers are hit by Maj. Gen. Claire L. Chennault (who ought to know if anyone does) in *Air Force* (Aug.), official service journal of the U. S. Army Air Forces. There is some shading off, he admits, but not much.

"The Japanese pilots you will face over China," he tells new men reporting to him, "are only slightly less skilled than those we fought two years ago. The Japanese seem to have speeded up their training program to meet the demands of combat. As a result, their newer pilots lack the polish of the older Chinese veterans."

All Japanese pilots are good gunners, he adds, and the 20-millimeter cannon they carry are larger than the machine-guns with which most of our combat planes are armed. But they are shorter-ranged than our .50-caliber weapons.

Japanese planes are still built of good materials, Gen. Chennault continues, but the workmanship is not up to the standard of the materials. Extreme lightness of construction, too, renders maintenance difficult. A few hits wreck a Zero beyond hope of repair, whereas American planes may fly back from missions all shot up but are back in the air again after a few hours in the hands of our expert service crews.

For Chinese fighter pilots Gen. Chennault has only the highest praise. They fought the Japs to a standstill even before the outbreak of war in Europe, as long as their planes held out. One Chinese pilot got three bombers on his first two flights as a night fighter.

"Chinese pilots have plenty of nerve and are superior to the Japanese in individual combat," the general declares. "They have better judgment and headwork in rapidly changing situations. The Japanese are better in formation work."

"Six years of invasion have sowed bitter seeds of hate in China. The Chinese will never stop fighting until the Japanese are driven from Chinese soil."

"One of the reasons for China's resistance to the Japanese lies in the fact that every Chinese has something he considers worth fighting for. Even the poorest coolie with only a mud hut will fight to keep it. You can never conquer a nation like that."

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