

playing hockey, and one vase is decorated with a picture of two girls balancing on a see-saw.

Babies had feeding bottles made of pottery, though of course these could not be equipped with rubber nipples. These bottles were shaped rather like small teapots, with short side spouts, some of them smoothly rounded into nipple form. One of the bottles has a clay pellet inside, presumably so that the nurse could rattle it for the infant's amusement after it had been emptied.

Rattles for babies are usually hollow figures of terra cotta, with pellets inside. Prof. Klein remarks that these seem rather too fragile for a baby's own handling, and may possibly have been intended for the nurse to shake, attracting the child's attention.

*Science News Letter, August 19, 1933*

## SURGERY

## 1,000,000 Operations In United States Every Year

**O**VER a million surgical operations a year are now performed in the United States, with few resulting deaths. This high figure was cited by Dr. George Crile, well-known surgeon of the Cleveland Clinic, in a report to the American Association for the Advancement of Science.

Telling what has been achieved in the past century and what lies ahead in the next, Dr. Crile said that one hundred years ago there were no surgical dressings. The X-ray was undiscovered. There was no skin grafting. Tonsils were not removed. Brain tumors were not disturbed. There were no operations to remove gall stones. Infection was not controlled. Working without anesthetics, the surgeon of a hundred years ago had to depend on a swift knife and hot iron, a steady hand and quick intuition.

"It was," said Dr. Crile, "the art of a swordsman rather than of a scientist."

Surgery has become more conservative and no longer does its chief work amputating limbs and cutting violently into human anatomy. Today, Dr. Crile said, every organ and tissue in the body is subjected to surgery, and the work is so delicately and precisely done that shock, hemorrhage, and infection are remarkably reduced.

A prediction that there will be fewer operations in the coming century was made by the surgeon, who said that biochemistry and biophysics will tend to supplant the surgeon's scalpel.

*Science News Letter, August 19, 1933*

## ORDNANCE

# "Boat Tail" Bullets Improved For Use in American Weapons

**T**HE BULLET is foolish; the bayonet alone is wise.

This aphorism is credited to a Russian general of the Crimean War period. It may have had some truth in it then, for those were the days of the earliest large military use of rifled firearms—guns as clumsy and heavy as the old-fashioned smoothbore muskets they had barely replaced, which threw thumb-size slugs of lead rammed uncertainly down their throats on top of a handful of black powder that made so much smoke as to blind the soldier when he tried to aim his next shot. Certainly the general's point of view became that of Russian military men generally, for Russian troops even in these Soviet days still conduct all maneuvers with bayonets fixed.

But bullets have been learning a thing or two in the past hundred years; they aren't as bullet-headed as they used to be. In a recent article in *Mechanical Engineering*, Major Glenn P. Wilhelm of the Ordnance Department, U. S. Army, tells of the past century of progress in making bullets wiser.

One hundred years ago, he says, the standard military smoothbore musket could just be depended upon to hit a man at 100 yards. Today's military rifle can hit the same target just as easily at 1000 yards; and in the hands of a sharpshooter and with special ammunition and sights it will turn the trick at 1500 yards.

A century ago a soldier was doing

very good shooting if he could put ten consecutive shots inside a three-foot circle at 100 yards. Today's expert rifleman, shooting at that short range, puts all ten into a three-inch circle; and targets have been turned in that had all ten shots apparently through the same single hole.

One hundred years ago a musket could be fired once in two minutes. With the latest semi-automatic military rifle a soldier can deliver 100 aimed shots in the same two minutes.

The terrific increase in deadliness of fire is due largely to improvements in arms and ammunition, for although today's soldier has a better mechanical education he almost certainly is no stronger or quicker than his great-grandfather who "fit the Redskins" at Tippecanoe.

The latest thing in making American military bullets wiser is giving them what is called the "boat tail." This means tapering their rear ends to approximately the same shape as the stern of a boat, instead of leaving them flat and square across as heretofore. This lets the air close in around them as they slip through it; the old square base created a partial vacuum that pulled back on them and decreased their velocity and hence their flatness and accuracy of flight.

This trick, originally worked out by the French, was quickly adopted by the Germans during the World War when they found the advantage in range it was

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giving their enemies. The U. S. Army ordnance scientists have been experimenting for a long time to get a boat-tailed bullet suitable for American weapons, for the French ammunition, in spite of its virtues, had some offsetting faults. Now they have found what they were seeking, and the great stocks of rifle and machine-gun ammunition held in reserve against the possible war everybody hopes will never come will be loaded with the most highly educated bullets that have been evolved to date.

*Science News Letter, August 19, 1933*

To make quicker tests of how weather affects roofing and water proofing materials, engineers now use artificial rain, sunshine, cold and heat.

Three silver crowns studded with jewels were among the royal treasures recently found by archaeologists in Egypt when they explored a tomb of about 600 A. D.

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## MILLIONTH OF A SECOND

an address by

**Dr. J. W. Beams**

Professor of Physics at the  
University of Virginia

To be given Friday, August  
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Standard Time over stations  
of the Columbia Broadcast-  
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under the auspices of  
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### BACTERIOLOGY

# Bacteriophage Recruited For Fight Against Disease of Fish

**S**ALMON and trout are to get their share of medical treatment according to recent bacteriological work. Dr. Charles Todd has reported in *Nature* the possibilities of wiping out the disease of furunculosis, an affection which yields skin ulcers and attacks the internal organs. This disease has caused a high mortality in salmon streams and it is proposed to eliminate it—at least in restricted waters—by means of a specific bacteriophage.

The bacteriophage is an element, specific in each case to some special strain of bacteria and which is deadly to that strain. Its nature is still in dispute. Whether it is a chemical product of the bacteria, or an animate form which preys on the germs, is debated. It is agreed, however, that the 'phage comes into evidence only after the bacterial "sponsor" has been at work. At any rate, it serves a highly practical purpose in actually killing off the strain with which it is allied.

Dr. Todd has isolated a bacteriophage which is very active against the germ (*B. salmonicida*) causing the salmon disease. This has been found in samples of several rivers throughout England. The strength of the 'phage is tested by applying it to cultures of the bacteria. Very soon the deadly element "eats holes" in the growth, and,

in large enough amounts, may annihilate the culture.

Healthy salmon are known to carry the disease, and therefore mortality is not a gauge for its occurrence. Dr. Todd suggests a test to measure the presence of the disease by examining the drain-water from a hatchery. If this water had been put in phage-free, any traces of the bacteriophage in the drain would indicate that the infection was present in some of the fish.

This work was performed at the National Institute for Medical Research.

*Science News Letter, August 19, 1933*

### ASTRONOMY

## Year's Second Eclipse Is Far Distant

**T**HE SECOND eclipse of 1933 will be seen from points in Europe, Africa, Asia and Australia on August 21, when the moon passes between the earth and the sun, producing a solar eclipse. But unlike the much advertised eclipse of last August, this one is attracting practically no scientific attention. This is not because of its inaccessibility, because often astronomers travel halfway around the earth to observe one.

When the moon passes in front of the sun this time, it will be farther from the earth than usual, so that its apparent diameter will be a little smaller than that of the sun. As a result, a ring of sunlight will be seen around the dark disc of the moon, even where the eclipse is most complete. This is called an annular eclipse.

The path over which the ring of sunlight is seen, will begin at sunrise in the Sahara Desert, will pass eastward across Palestine, through Baghdad across Afghanistan, through Delhi, thence southeastwards through Burma, Borneo and North Australia, ending at sunset on the east coast of Queensland. The sun will be seen partially eclipsed over all of Asia and Australia, northeastern Africa and central and eastern Europe.

*Science News Letter, August 19, 1933*

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