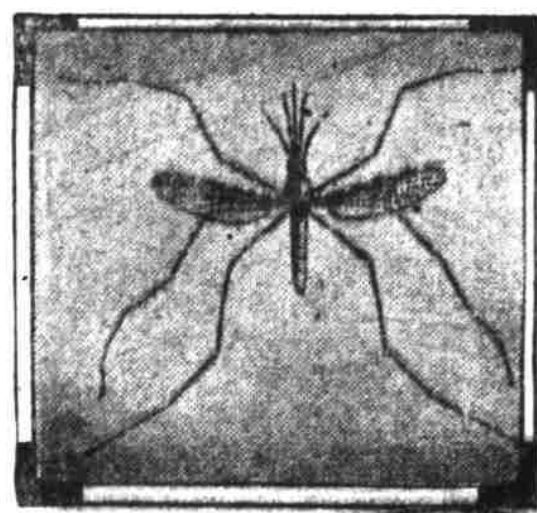


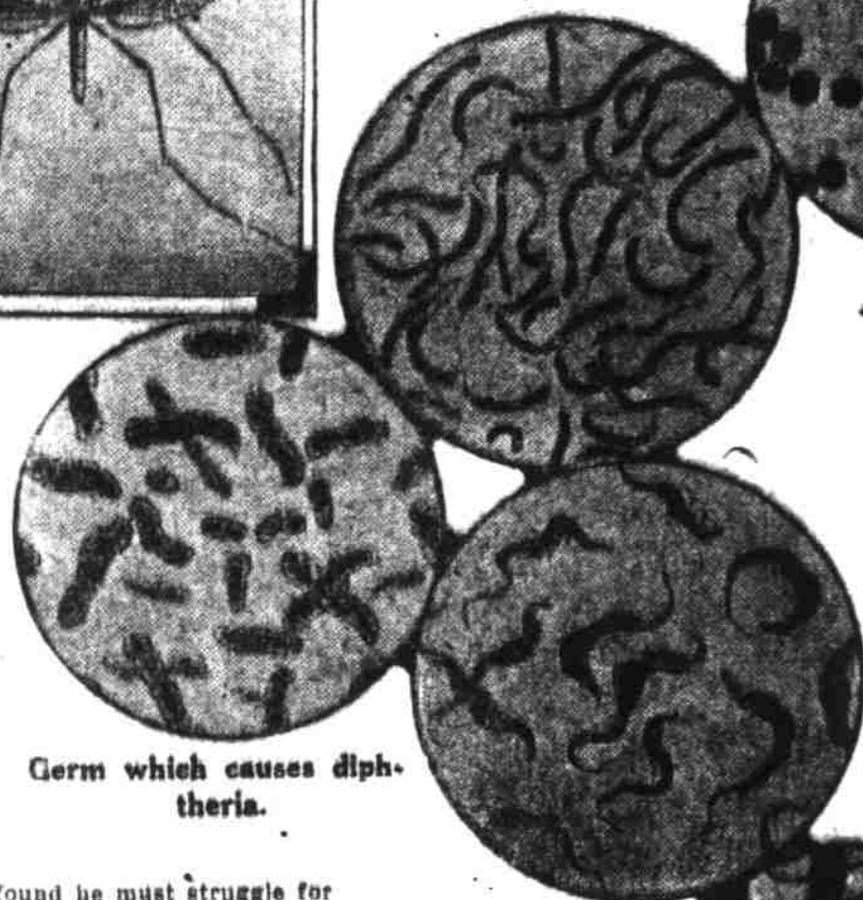
SCIENCE AND NEAR-SCIENCE UP-TO-DATE

Man's Most HIDEOUS ENEMIES, Often Invisible, Literally Seek to Devour Him—How Science May Conquer Them



Anopheles, carrier of malaria.

To the right—Streptococcus, which attacks soldiers' wounds.
Below—Bacilli of cholera.



Germ which causes diphtheria.

Bacilli of sleeping sickness, the terrible disease of central Africa.

SINCE man found he must struggle for existence he has realized that to continue the struggle he must prove himself the superior of his enemies—that the struggle is a "survival of the fittest." From the time man began to drive the wild animals from the earth he has fought the enemies that sought to attack and devour him.

Man has conquered his visible animal enemies, but now finds that he has almost overlooked his greatest enemy—the vast army of small animals and vegetable growths which seek literally to get within his body and devour him.

These enemies are all parasites—that is to say, creatures that do not earn their own living but live off others.

Derive Name From Shape.

The parasites are divided into several groups. One of these groups is called bacteria, which means rods, because their shape is that of a rod. Many of the bacteria which most closely resemble the rod in shape are called bacilli, and bacteria of a round shape are called cocci.

The most deadly enemy is the tubercle bacilli. A tubercle is simply a little lump found on that part of the body attacked by the bacilli. When these bacilli obtain a foothold in the body the victim suffers from tuberculosis. This bacillus is very common and attacks fish, reptiles, birds, beasts and men.

It usually gains entrance to the body in the food, often hiding away in milk or meat. It is usually killed when meat is well cooked or the milk boiled. If the human system is in good condition the bacilli often meet an early death when flooded by that precious acid, hydrochloric acid, which the stomach secretes.

Many of the bacilli, or germs, as they are often called, can only attack man when they find a place on the body where the outer thick skin has been torn apart. Some of the most painful of sores and in-

flamations come from the streptococcus, which now is well controlled by science, but which attacks wounds and is always a hard germ to kill.

Though the tubercle bacillus causes more deaths than any other of our enemies, it is the little protozoan which, entering the blood, creates the most illness. The disease it causes has many names, including tertian fever, ague and malaria. It is usually known by the last name, which in the Italian language means "bad air." It is thought this name was given because the germ is found in low countries where the air is often humid and depressing.

Germ Carried by Mosquito.

The animal parasite, by eating up the red cells of the blood, causes the patient to become weak and pale. For years this disease was fought with quinine, the only known drug which will of itself kill a germ.

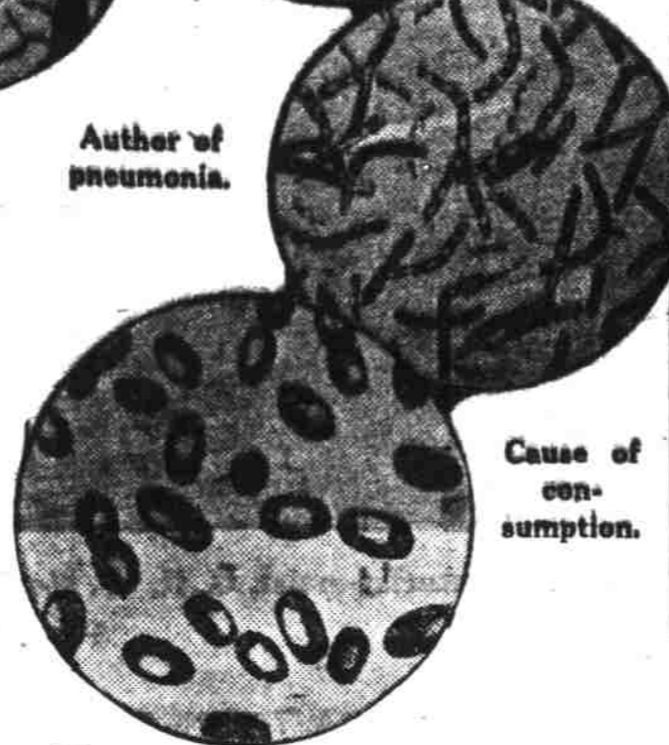
It has been found that the germ is always carried by the female anopheles, a mosquito, who bites at night and leaves the germ in her victim's body.

The best way to drive the anopheles from the earth is to drain all low ground where it breeds and exterminate its offspring. This has been done in Panama and Suez and made possible the construc-



The author of typhoid.

Author of pneumonia.



Cause of pneumonia.

The curse of Asia—plague germ.

tion of the canals. Yellow Jack or yellow fever, so named from the wretched color of its victims, has been driven out by this method, since it is carried by the stegomyia, a species of mosquito.

Typhoid fever is a disease that kills many people every year, but sends hosts to death in war times. It is due to a bacillus that leaves man's body and gets into water which other people drink.

This danger can be guarded against by watching the water supply, but it is found

extra parts, etc., have been designed to accompany submarines, but it is pointed out that they, being visible, attract attention to the presence of the underwater fighters and are also very liable to seizure.

The latest plans call for submerged oil and supply tanks to be sunk in inlets, where they may be securely anchored safe from the ravages of a storm. It is claimed that these tanks may be sunk in the waters of an enemy in times of peace and that their contents will be as useful years later as if stored on land.

The tanks are constructed with large air chambers which are emptied when the container is sunk. In time of war a submarine, desiring a fresh supply of fuel, anchors near the submerged tank and sends down a diver, who attaches an air hose to the empty tanks.

A half hour's pumping of air into the tanks and the container rises to the surface and supplies are taken from it. If the



The scourge of Serbia—the typhus louse.

that the fifth fly also spreads the bacillus which breeds typhoid, and this has given rise to the "swat-the-fly" campaign.

The most deadly of acute diseases that

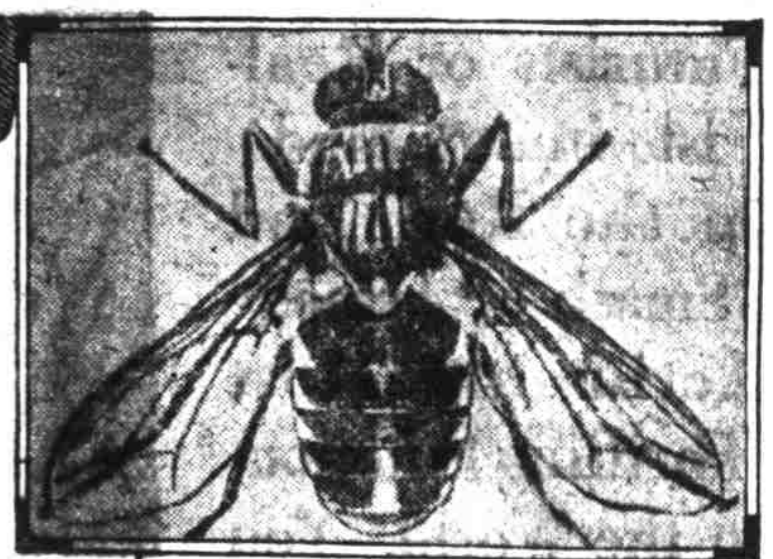
Sketch shows the carrier of plague—a flea that lives on rats or humans.

attack grown-up people is pneumonia, or inflammation of the lungs. In this case the bacilli is known as the pneumococcus. It seems to live, without doing any harm, in the mouths of many people. But when these people catch cold, and especially if they drink alcohol, their natural defenses are weakened and the pneumococcus penetrates into the lungs and, rapidly breeding, soon kills.

Bacillus Chokes Children.

The diphtheria bacillus is a common enemy to children, whom it cruelly kills by choking them or sometimes by poisoning the muscle cells of their hearts. This disease has been fought with some success by introducing a toxin, or group of enemy bacilli, into the infected person's system. They kill off the diphtheria bacillus and are in turn killed by the human body.

For ages a terrible fever known by many names has raged in many places



Terrible tsetse fly that carries the author of sleeping sickness.

of the earth, especially in slums and insanitary surroundings. This fever is known as typhus. Many people believe it to be the same disease as typhoid, but it is entirely different.

It is estimated that typhus has killed more than 100,000 people in Serbia this year—vastly more than those killed by the guns of the Austrians.

To date there is no remedy for typhus, nor is there preventive medicine as in the cases of typhoid and plague. Nor is there a curative drug, as in the case of malaria, nor injections of vaccine, as in diphtheria or tetanus, often called lockjaw. The enemy has never been seen, according to authorities—is probably too small to be seen. But the transport of the bacillus has been discovered.

As in the case of bubonic plague, this transport is a louse. The typhus louse is a vile little insect that lives upon the human skin and in the underclothing of anyone it can. In itself it is only a nuisance, causing itching and scratching. But often it carries the unseen parasite of the typhus fever which gains an entrance to the human body by leaving the louse. The scourge can be driven out only by driving out the lice from a country or camp.

Sleeping Sickness Rarely Cured.

A queer, tiny animal, called the trypanosome, gets into the blood and causes sleeping sickness, an almost incurable disease. Scientists found that this animal was transported by a fly called the tsetse fly.

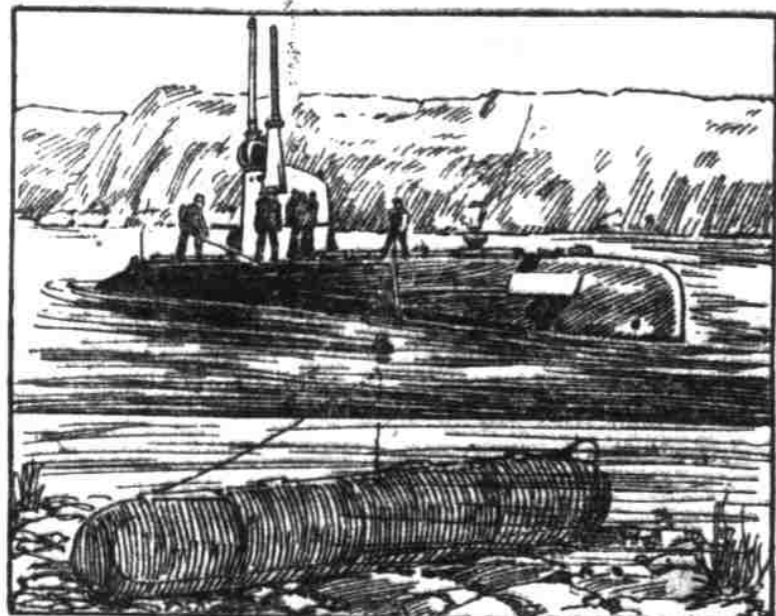
All knowledge of the germ world dates from the remarkable discoveries of a Frenchman named Louis Pasteur, who will always be honored as one of the foremost scientists of history, for it was he who evolved and proved as a law the theory that germs are the greatest living dangers man must overcome in his fight for existence.

Sunken Tanks as Storehouses for Submarines

THE recent launching of submarines designed to permit a great cruising radius brought naval experts face to face with a new problem—a system of supply stations which would promote the submarine from the class of auxiliaries to that of battleships.

The battleship can carry supplies and coal or oil sufficient for many weeks and also has the advantage of the coilers and supply ships which are a part of every fleet.

But the submarine of the future will be designed to act alone, a solitary ranger in the course of commerce, quite able to es-



Submarine raising supply tank.

cape should it meet with a superior enemy. Supply boats with ammunition, oil,

Astrology Says Stars May Aid You Next Month

DECEMBER will be a month of executive accomplishment, business activity and violent action in all lines save in the domestic life. Sagittarius, governing the beginning of the month, will dominate, causing great movements of ambitious men. The Domain of Fire will rule,

offsetting the influence of the moon in Virgo and Libra, which makes vain efforts to produce quietude and repose.

It will be a good month in which to undertake enterprises of financial importance. The House of Jupiter will make the period one of greatest moment to

rulers, kings and all men in high executive position. Vigor and violence will center around the seats of the mighty. Strong passions and emotions will sweep over the whole world, but leaders of men will be stern and unmoved, since the serenity of mind held by Jupiter will not be unseated by the bodily hysteria of Sagittarius.

Wee Animal Delights in Fighting Huge Snakes

PERHAPS the greatest tracker in the animal world is the mongoose or ichneumon, the latter name being derived from the Greek and meaning "tracker out."

While he moves and acts like a weasel, the parallel goes no further, however, for he seems to have a strong strain of the hyena and he is wild, brave and fierce.

He is found largely in Africa and India, especially in the latter country. There he has achieved fame for his daring in attacking and killing snakes. The cobra and many other deadly serpents may make human life wearisome in India, but the mongoose is the master of the snake tribe.

A battle between the two is fair, for each desires to eat the other. The snake seeks to bite with his fangs, poison and eat his victim at leisure. The mongoose has only his teeth as a weapon, but he is blessed with a greater alertness and speed than the snake.

When the snake seeks to dart out his head and "strike" with his fangs the little mongoose deftly leaps aside, and then, almost in the same movement, launches himself upon the reptile and if his aim is good, as it usually is, he crushes the snake's skull in his jaws. It is said that the fearlessness of the mongoose is one of his best weapons.

The mongoose and the dormouse are two of the things the venom of the cobra cannot easily kill. The mongoose even after being bitten will eat the serpent's head, poison glands and all.

The mongoose is right where he is; he may be misplaced. That is what we found in Jamaica. Great rats, monsters which might have broken away from the Pied Piper's charm, were eating up all the sugar cane, ruining the planters, imperiling the fortunes of the islands. After other



Mongoose attacking the deadly cobra.

experiments had been tried, mongooses were introduced. There followed a terrible time for the rats. In three years not a rat was left in the island.

But in India the mongoose is precious almost beyond price. There poisonous snakes kill every year over 20,000 of our fellow men.

Were YOU Born in December?

IF YOU are wondering why men who are born in December are fearless and determined and women who own the twelfth month for nativity are both passionate and chaste, cease wondering. Astrology has the answer.

It is a great month to be born in—December. The men are executives of business and of enterprise, the women are executrix of the home. The men are free

and easy of address, open of heart, honorable and decisive. The women are deeply religious, noble of purpose and devoted to their families. As mothers they are deeply affectionate, but more just and given to adoration of abstract justice than are women of other signs. They are ready to send their sons into battle for their countries in times of war, even though it means heartbreak and death for all concerned.