WHAT IS DEATH?

A PHYSIOLOGICAL VIEW.

To say that death is the separation of soul and body, is to give what sounds like a theological rather than a physiological definition. Yet this is the final definition that is reached by Dr. Leon Meunier, after treating the question strictly from the physiologist's point of view. While thus acknowledging the existence of the soul, Dr. Meunier, who writes (in Cosmos, Paris, November 18) on "The Causes and Mechanism of Death," asserts that the soul and body can not separate until certain physiological conditions are fulfilled, and his endeavor is to ascertain and describe what the nature of these conditions is. Most modern physiologists tell us that these conditions differ, according as the organism in question is composed of a single cell or of a complex union of cells; some go so far as to deny that the one-celled organisms can properly die. With a union of cells, such as man, they tell us that the combination may die while many of its elements live on, and they recognize two kinds of death—cell-death and body death. Dr. Meunier asserts, on the authority of the most recent thought and investigation, that these are one in essence. He says:

"When we study the phenomenon of death, the only true variety—that found among living organized beings—we must first, to get an idea of its mechanism, study it among simple unicellular organisms. Some writers have asserted that these have a kind of immortality.

"Professor Weismann, of Friburg, has thus formulated this opinion: Death, he says, is not a primitive attribute of living matter; it is of secondary origin. There are animals that never die; for instance, infusoria and rhizopods and in general all unicellular organisms. An ameba divides into two almost equal parts, each of which continues to live and later divides again, so that there is never any corpse. Death appears only among pluricellular organisms with differentiated cellules [and is then] based solely on utility. . . . Used-up individuals must give place, for the good of the species, to healthy ones. Hence we must regard death as an opportune institution, not as a necessity of life."

This view of Weismann's, which has become quite celebrated among students of biology, has called forth a great deal of comment. It is asserted by a French critic, Dr. Ferrand, to be founded on an error of observation. Says Dr. Meunier, citing this author:

"M. Maupas, in his investigation of the multiplication of the ciliated infusoria by fission, has shown that the reproduction of these organisms by fission, extended though it may seem to be, has its limits; sooner or later it gives rise only to imperfect individuals which are incapable of perpetuating themselves without recourse to a process comparable to that of fecundation among pluricellular beings, and Delbœuf, who has discussed these facts in the Revue Philosophique, has shown how little value must be attached to them."

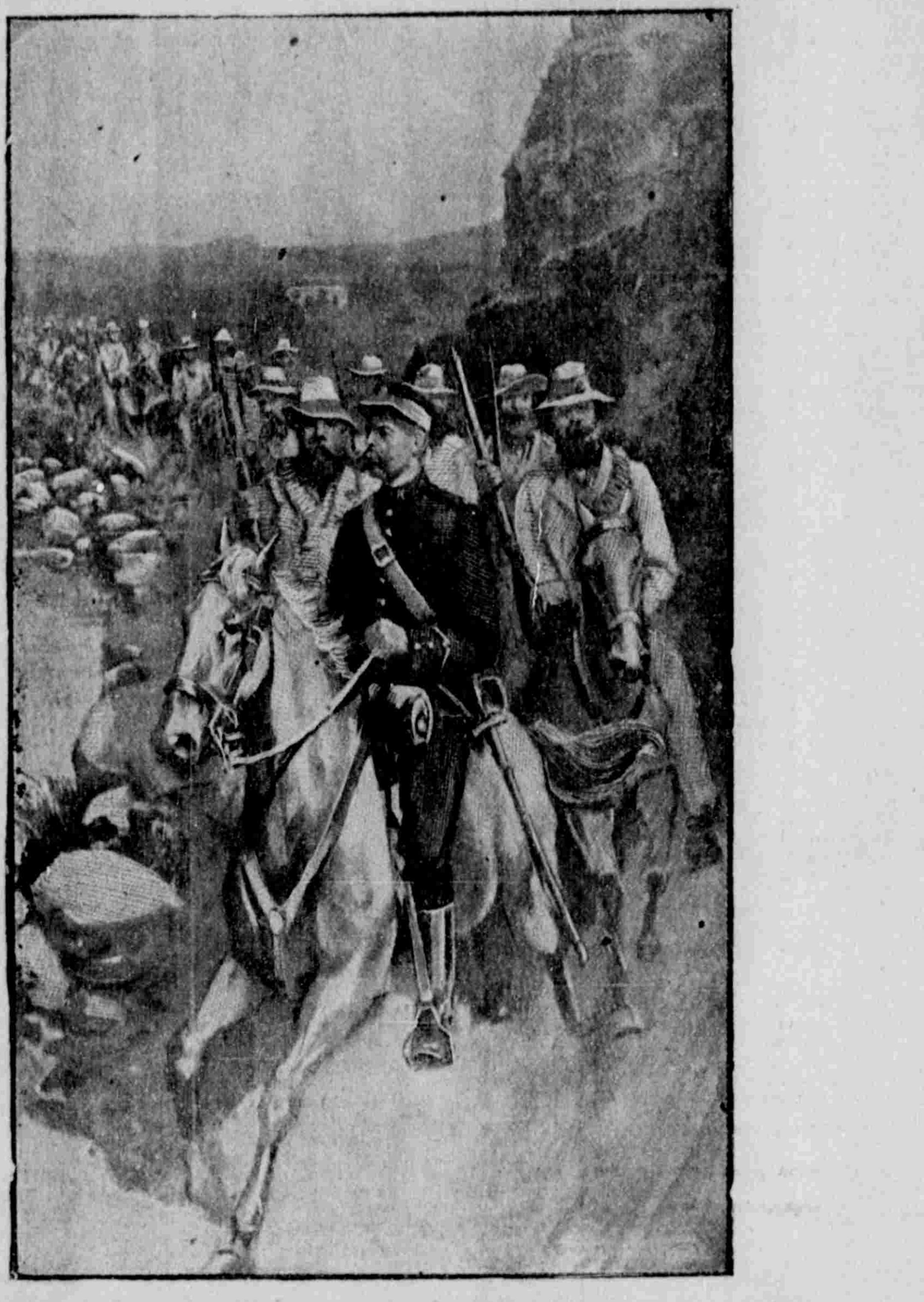
In man and other higher organisms, the author goes on to say, death is a destruction of coordination among the cellular elements. These elements do not die at the same time and may even take up an independent course of life. The classical assertion that death must take place through heart, lungs, or brain is inexact, Dr. Meunier tells us. Suppression of the functions of any one of these organs may indeed cause death, but only when prolonged. As to the unicellular organisms, they die with the destruction of their correspondence with the nutritive elements in the surrounding medium. This may be lost by the action of chemical, physical, or mechanical agents. The most frequent general cause of death in animals is the poisoning of the cells by the nutritive medium. According to Dr. Barth, a recent writer, this may take place in various ways. For instance, the blood may not be able to bring to the cells the matter for their renovation, because of inanition or indigestion; in other words, assimilation does not take place. Or, owing to lung, or heart trouble, oxygen in sufficient quantities is not brought to the cells, and poisoning by carbonic oxid takes place. Again, failure of nutrition may result in the accumulation of all sorts of waste products in the tissues, preventing the throwing off of useless substance from the cells. This may result from injury to the large glands, such as the liver or the kidneys. Thus the mechanism of death can always be traced back to one source, both in the simplest organisms and in the highest, namely, cell-poisoning. Dr. Barth is quoted on this point as follows:

"Modifying the usual formula, we may say then: Death is the result of an arrest of cellular nutrition, the protoplasm either becoming incapable of giving rise to the double movement of assimilation and disassimilation, or the medium in which the cells exist undergoing modifications that render exchanges impossible.

"The arrest of nutrition is a general phenomenon that is applicable to all creatures. With all it takes place by one of the two mechanisms indicated above, but in the higher organisms it is produced in more and more complex conditions, corresponding to the increasing complexity of the apparatus charged with keeping up the activity of the protoplasm and with the renovation of the organic environment."

Dr. Meunier makes the following comment in closing:

"As the catechism teaches us, death is characterized by the separation of soul and body; but we must recognize the fact that it begins with a conditions of the organs that renders them incapable of following and manifesting the will of their master. Life may be only suspended; death becomes definitive when the cellular elements, profoundly altered, are positively unable to obey any longer."—Translation made for The Literary Digest.



BRINGING UP BOER REINFORCEMENTS.

GASES WEAPONS OF WARFARE.

Shells that Would Freeze an Entire Army—Paralysis and Heart Failure Carried in Bombs—Battles that Would be Won and Lost By Enforced Sleep—Queer Reservation Made by the United States and Great Britain at the Peace Conference.

The British find themselves in a peculiar position in their warfare with the Boers. England at The Hague signed an agreement not to use balloons for the launching of projectiles and explosives. The Boers, not having been represented at the Peace Conference, are not bound by any such agreement, but if they should resort to measures of this kind Great Britain has an ace up her sleeve that would be highly effective in ending the game.

When the clause dealing with gases came up for discussion the British representative agreed to their abolition in war, but later on when the various articles came up for signature, Captain Mahan, representing the United States, and Sir John Fisher, Great Britain, refused to sign.

In the face of the uses to which certain deadly gases can be put, this decision is, to say the least, curious. A chemist, well known to some of the war departments of the leading European nations, tells us that the resources of modern chemistry are quite equal to the abolition of war altogether.

WOULD FREEZE THEM SOLID.

"I could supply," he says, "a fusee shell made of glass, encased in oak, sheathed in brittle steel, charged with carbonic acid liquified by 70 atmospheres of intense pressure. It works as follows: The concussion provokes the explosion of the various cases—glass, oak and steel—and the return of the liquid to its natural gaseous condition. An enormous volume of carbonic gas rushes into the surrounding space. Being much heavier than the atmosphere, it displaces and drives the air before it in every direction, and a fearful cold of hundreds of degrees below zero is produced within a radius of 40 to 60 yards from the point of impact."

If the size of the shell be increased this area becomes larger. Another feature of this fiendish invention is that carbonic acid gas, by reason of its great weight, remains in the one spot for hours; any one attempting to pass through one of these frigid zones would not only be killed instantly, but frozen into a solid mass. Suppose that a town of 2,500 acres in extent was to be taken. Instead of engaging in a tedious and ineffective bombardment, all that would be necessary would be to direct against the doomed city one hundred ton batteries of small range.

These could be electrically synchronized and fired at precisely the same moment. In one minute after the discharge there would not be one living thing, down to the tiniest animalculae, in that city; and any one entering it for a space of 12 hours would be likewise instantly killed. This invention has one great recommendation—no hospitals, no wounded, no pain, no surgeons. A shell filled with nitrate of amyl would instead of killing by intense cold at once, suffocate all within the area of influence by increasing the beats of the heart three and four fold. A man with a 60 pulse would have the beats from 80 to 240. As a natural consequence, every blood vessel in the body would break.

PUT THEM TO SLEEP.

England did not wish to make use of these inventions, but the records of the conference show that they retain the right to use a gas which would put the entire city to sleep. Just what this gas is no one knows, but the inventor and certain high officials of the war department.

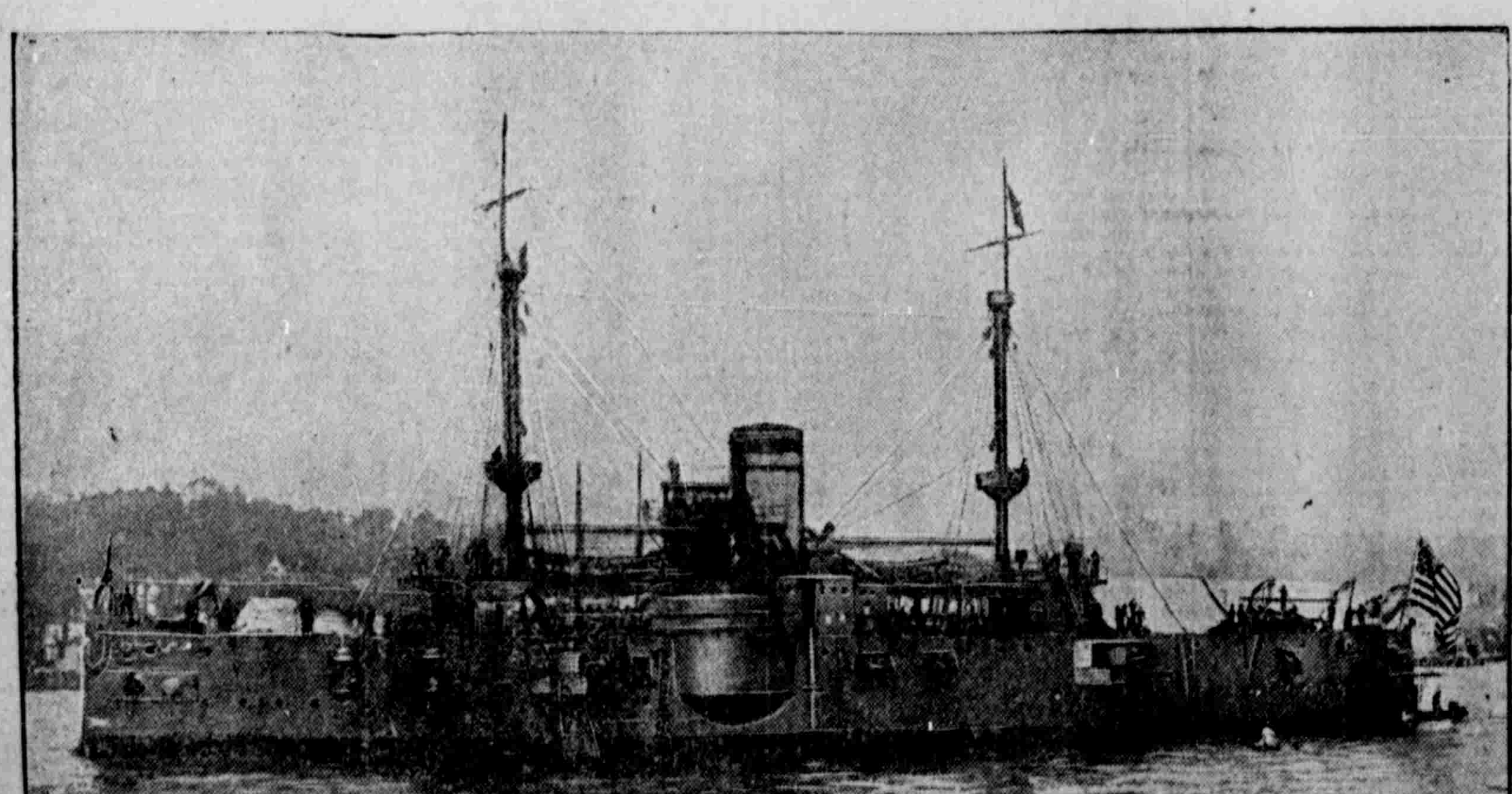
It is difficult to see how an army could be lulled into slumber without the oxygen in the atmosphere being destroyed, but the resources of chemistry are so vast that it would be idle to indulge in any guesses on the subject. Another thing which appears curious is that, as the object of this gas was not to kill, but to render unconscious, what possible objection could be offered to its use?

If its introduction had been generally sanctioned the whole art of war would soon be revolutionized. Disputes could then be decided by battles in which the loss of life would be small. The implements of war would remain practically the same, but the object of either side would be to hurl shells which, exploding, would immediately plunge the entire army in insensibility.

If both succeeded, operations would have to be suspended till the warriors came to, and this might be repeated again and again till one side failed. Whichever army eventually won, the result could be secured without loss of life. Why 24 powers out of 26 should have agreed at The Hague not to resort to asphyxiating gases, and yet decline to interdict submarine boats, is astonishing.

If they argued for the exclusion of asphyxiating gas on the grounds that its use would injure the martial spirit of an army, something, although not much, might be said for such an argument. But the members of a Peace Conference could not decently say anything in favor of martial spirit; and, that being so, it does seem inconsistent that the very body who voted against the use of asphyxiating gases should yet legalize submarine boats, able to sink in an instant the strongest ironclad made.—Cincinnati Enquirer.

BATTLESHIP TEXAS IS BRINGING TO AMERICA THE MAINE DEAD.



Captain Sigsbee, who commanded the Maine when that warship was blown up in Havana harbor, is in command of the Texas which will start from Cuba on Tuesday for Old Point, carrying the remains of the victims of Spanish treachery. The coffins will be transferred at Old Point to a train for Washington. A plot has been selected in Arlington cemetery and here the maine dead will be reinterred with appropriate ceremonies.

COMING CENTURY IN AFRICA.

The twentieth-century Africa promises startling contrasts when compared with the Africa of the nineteenth century. With an area four times as great as that of the United States, a population of 150,000,000, a soil and climate capable of infinite variety of production, a rapidly expanding commerce, and the greatest known supplies of ivory, gold, and diamonds, its development under the modern methods which are now being applied to it is practically assured. The home of the oldest civilization, it is the last of the continents to yield to the touch of the newest civilization. But yesterday enveloped in the darkness of mystery without and ignorance within, it is today illuminated by the search-light of modern methods; and as its importance and attractions are being recognized, with this recognition must come development. With two million Europeans scattered over its vast area, acquainting themselves with its natural conditions and requirements, with the steamer, the railroad, the telegraph, and the telepnone carrying light and knowledge and civilization to its darkest corners, Africa cannot long remain unknown or unknowing.

It was only after the explorers—Livingstone, Speke, Stanley, and others—had discovered, through persistent and heroic efforts, that there existed vast navigable waterways above the falls near the mouths of the great streams which flow from the interior, that European nations awoke to the physical and commercial possibilities of Africa; and then, in a twinkling, the Dark Continent was seized upon and divided up, and became, as by magic, a vast European "hinterland." Between 1884 and 1898 an area two and a half times the size of the United States, and containing a population of 100,000,000, was parcelled out by an agreement of the European powers. At present scarcely a foot of African territory remains unclaimed.—Africa: "Present and Future," by O. P. Austin in the December Forum.

A SURE CURE FOR CROUP.

Twenty-five Years' Constant Use without a Failure.

The first indication of croup is hoarseness, and in a child subject to that disease it may be taken as a sure sign of the approach of an attack. Following this hoarseness is a peculiar rough cough. If Chamberlain's Cough Remedy is given as soon as the child becomes hoarse, or even after the croupy cough appears, it will prevent the attack. It is used in many thousands of homes in this broad land and never disappoints the anxious mothers. We have yet to learn of a single instance in which it has not proved effectual. No other preparation can show such a record—twenty-five years' constant use without a failure.