

circulation; 3, the heart is only joined on at one end after the manner of an appendix. It is also possible that the new heart may find no connection at all in the common blood stream and build for itself a new circulatory system.

Stohr also learned that the heart is extremely jealous of its functions. When a new heart was implanted in a body where there was already one, without being properly oriented, they got along about as well as two roosters in one barn-yard. The two hearts battled for the blood stream. If both were fortunate enough to obtain enough blood there was no danger to their existence and both developed. In most cases, however, the original heart being first on the spot gained supremacy over the new heart and the development of the latter ceased.

In some cases the new heart proved stronger and little by little destroyed the weakening heart originally there. When a new heart was first implanted in an embryo salamander it was noted that development was at first distinctly arrested on the side where the implantation was made. But after several weeks symmetry was again established and normal development apparently occurred.

CONTAGIOUS HEALTH

By Dr. Edwin E. Slosson.

When Bob Ingersoll was lecturing on "The Mistakes of Moses" he was asked sarcastically if he thought he could do any better if he were running the universe. He replied "Yes" and when challenged to specify in what particular he could improve on the present administration, he answered that if he were the Almighty he would make health contagious instead of disease.

This, like other of his witty retorts, will not stand close scrutiny. In fact, recent researches indicate that the proposed improvement is already in existence and has been for ages. As we now know the microbes are not all enemies of man. Some are his active allies and they carry on warfare in his defense in much the same way as the disease-producing kinds do against him.

A French biologist, d'Herelle, discovered in 1917 that bacteria are preyed upon by something yet smaller than themselves; something too small to be seen with any microscope or to be filtered out from a fluid, for they will pass even through the pores of porcelain. "Bacteriophages", he calls them - "bacteria-eaters". They are so minute that it would seem that they must belong to the field of chemistry rather than biology, yet they grow and propagate and maintain a definite individuality like living creatures. They are normally present in our digestive tube and protect us by breaking down and dissolving inimical bacteria. The greater the number of the invading hosts the faster the bacteriophages multiply and the fiercer they become in fight, until finally they have overcome the infection. They may then in the flush of their victory carry their campaign into the enemy's country and cure others of the community. The sick persons who have been cured thus become carriers of the cure and centers of healing infection, so starting an epidemic of health. As d'Herelle says in his new book "Defenses of the Organism":

"A sick animal propagates the disease. An animal in a state of active resistance propagates immunity. These few words sum up the whole history of epidemics."

Dr. d'Herelle may be over-sanguine in thinking that he has seized the whole secret of epidemics, but his discoveries are in line with the modern methods of medical practice, which is to enlist the aid of bacteria in our defense against bacteria and to promote civil war in the Kingdom of the Protozoa. We have already in our midst an army of defenders in the form of white corpuscles of the blood and these may be multiplied and encouraged to greater exertions by medical means. We may counteract a toxin with an antitoxin. We may, as Metchinkoff advised, colonize the colon with the benign bacteria that produce lactic acid, in place of those that produce poisons. We may infest parasites with minor parasites. We may set the ultramicrobe to catch the microbe.

In this way we may hope to stave off the day when we shall fall victim to the innumerable hosts of invisible foes that continually beset us, though so far they have in the end come out conquerors in every case. "A bacillus less than one five-thousandths of an inch in length, multiplies, under normal conditions, at a rate that would cause the offspring of a single individual to fill the ocean to the depth of a mile in five days." The cholera bacillus doubles in numbers every twenty minutes. How can a clumsy creature like man, who requires twenty years to grow up, ever hope to compete with such a rapid multiplier? Yet somehow he does manage to overcome the cholera and keep it under control. He even begins to believe that he may in the course of time completely exterminate those disease germs which must live on and in man, for once every patient were cured or secluded these would vanish from the earth, never to reappear. So man by the aid of science may in time vanquish the earth-born myridons of his arch enemy, Beelzebub, God of Flies and Vermin.

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OCEAN CONFERENCE PLANS SURVEY OF UNKNOWN SEAS

Plans for the most complete survey of the ocean from top to bottom ever attempted, have been inaugurated by a conference at Washington, representing scientific branches of the government and allied institutions under the auspices of the Hydrographic Office of the U. S. Navy.

Definite routes and areas have not yet been chosen, but the preliminary discussion indicates that instead of a globe-girdling expedition, a comparatively small section of the seas will be selected for intensive study. The Aleutian Islands region of Bering Sea and the Caribbean Sea are under consideration as offering unusual opportunities for scientific investigation, with the latter most favored.

One or more ships will probably be fitted out with a complete laboratory and equipped with the latest scientific apparatus for the first cruise. The sea bottom will not only be mapped, but the composition of the water, its density, temperature and currents which affect the distribution of marine plant and animal life will be studied at all depths.

Beside the investigation of the water and the life in it, specialists in various sciences will probably be landed on oceanic islands within the area covered by the ship.