

# THE SCIENCE NEWS-LETTER

*A Weekly Summary of Current Science*

EDITED BY WATSON DAVIS

ISSUED BY  
**SCIENCE SERVICE**

B and 21st Streets  
WASHINGTON, D. C.

EDWIN E. SLOSSON, Director  
WATSON DAVIS, Managing Editor



SUBSCRIPTION: \$5 A YEAR, POSTPAID

The News-Letter, which is intended for personal, school or club use, is based on Science Service's Daily Science News Bulletin to subscribing newspapers. For this reason, publication of any portion of the News-Letter is strictly prohibited without express permission.

Vol. V. No. 171

Saturday 19, 1924

## SCIENTIST TRANSPLANTS BEATING HEART INTO NEW BODY

A living, beating heart has at last been transplanted from one living body into another.

Into a body already supplied with a heart, Dr. PL. Stohr of Wurzburg, Germany, placed a beating heart taken from another body. And he succeeded in keeping both hearts alive, functioning in the same body. Dr. Stohr has also succeeded in isolating the heart system from the organism and developing it outside the body for a considerable length of time.

The experiments were on embryo salamanders. Although there is a wide gap between salamanders and man, it is the ultimate hope of all such experiments that the same thing may eventually be accomplished in the case of man. However far the present discovery may be from such an eventuality because of the numerous intricate problems that must first be solved, it is of great interest and import.

Dr. Stohr first attempted to confirm the findings of another scientist named Ekman who had demonstrated successfully that the undeveloped embryonic heart of salamanders is capable not only of remaining alive outside the organism but also of developing into its several parts. Stohr succeeded in the case of salamanders and tritons in seventy cases and kept hearts alive for as long as three weeks.

In other cases Stohr transplanted the heart from one embryo to another, thus producing larvae or tadpoles with two hearts each. These tadpoles successfully kept alive for a period of time long enough to show the result of an extra heart on the development of the animal. During these experiments Stohr learned several noteworthy and interesting facts. He found that the power to perform regular contractions is the inherent property of each heart cell and not a function of the nervous system or of the immediate surroundings of the heart.

He also learned that there was an extraordinary regularity of pulse beat in the excised hearts. In only five cases out of the seventy were there irregularities, and these exceptions were capable of explanation. He also noted that each heart cell or entire heart has a rhythm all its own and cannot be influenced by the rhythm of another heart in the same body. Neither heart cares what the other heart is doing. A rise of temperature causes the pulse rate of both hearts to increase but in the same proportion in each case.

In successfully implanting hearts there are three possible arrangements: 1. the new heart may send the blood stream in the same direction as the regular heart: 2, the new heart may work in the opposite direction, causing a conflict in the

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."