

## MEDICINE

# Cause of Rheumatic Fever

► THE POSSIBILITY that rheumatic fever is an allergic reaction to bacteria is being investigated by a group of pathologists at New York University-Bellevue Medical School in New York.

Rheumatic fever, a disease that often damages the heart, has been under study for years but there is still little known about how the disease begins and progresses. It is generally agreed that it starts from an infection with a streptococcus germ, but what happens after that is not known.

Drs. Lewis Thomas, chairman of the department of pathology, and his associates Chandler Stetson Jr. and Benjamin W. Zweifach are attacking the fundamental problem of how bacteria cause diseases like rheumatic fever. They are working on a major theory of infection called "delayed hypersensitivity."

Hypersensitive reactions are popularly known as allergies and hay fever represents the "immediate" type of hypersensitivity. In this disorder, the presence of pollen results in a body response, usually in a matter of minutes.

Delayed hypersensitivity or "allergy of the delayed type" is the most common allergic response found in human disease states. Tuberculosis, typhoid fever, syphilis and even poison ivy are outstanding examples. This delayed reaction is also sus-

pected of playing a role in the failure of skin grafts and transplanted organs to "take."

Tuberculosis presents the classic picture of this delayed hypersensitivity. The disease-causing microbe seems to have no poison itself and when it enters the body there is only a slight, inflammatory reaction. But after two weeks, a drastic change takes place and the bacterial cells bring about severe reactions in the tissues. No one has yet identified the toxic substance nor has any one found the antibody produced by the host.

A possible clue to this type of reaction lies in the endotoxins of the bacterial cells, Dr. Thomas believes. These are the poisons which are contained within the cell until it dies, and are then released into the tissues. They are not the same as the poisonous exotoxins which are discharged by living bacteria.

Dr. Thomas has found that endotoxin can cause extreme hypersensitivity in animals to their own adrenalin, the hormone produced by the body's adrenal gland.

These results suggest that a similar effect may be involved in other reactions of delayed hypersensitivity such as rheumatic fever.

The research was reported by the New York Heart Association.

Science News Letter, March 9, 1957

## NEUROLOGY

# Nerves Age Slowly

► WHEN your heart grows old and breaks down after a lifetime of pumping, your nerves will still have plenty of use left in them.

This was the general opinion expressed by neurological experts at a recent conference sponsored by the National Institute of Neurological Diseases and Blindness and the National Advisory Neurological Diseases and Blindness Council of the National Institutes of Health, Bethesda, Md.

The researchers underscored the possibility that the life potential of the central nervous system in man was considerably greater than the average life span in America.

Recent animal studies demonstrate that there is no significant loss of nerve cells due to the aging process, they reported. Some of these studies showed that destroyed nerves in the central nervous system of dogs and cats were actually regenerated by the animals, thus raising the possibility that this nerve regeneration is almost a reversal of the aging process.

The effects of age are most noticeable in the performance of skilled acts. The type of nerve response necessary for these gradually slows down as age increases, some of

the investigators reported. This slowing down process is considered to be one of the most fruitful areas for further research.

Studies on nerve aging are now hampered by the shortage of laboratory animals of known ages. More guinea pigs, monkeys and other animals whose exact ages are known are vital to future work, the researchers said.

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## PHYSICS

## Atomic Bombardment For Better Materials

### See Front Cover

► RESEMBLING atomic "cannon" blasting away in the night, these tubes, shown on the cover of this week's SCIENCE NEWS LETTER, extend into a 20-foot water storage pool for highly radioactive fuel elements. They permit General Electric scientists at the Hanford atomic plant to study effects of atomic radiation on various materials, thereby helping in the development of better materials for more efficient atomic reactors.

Materials lowered into the tubes are exposed to atomic radiation coming from glowing uranium slugs surrounding the tubes. After such bombardment, these materials are studied to determine their resistance to or change under high-energy gamma radiation.

The fuel elements, which have been discharged from a reactor at the Hanford plant, are left in the storage pool until their radioactivity diminishes, then are removed to chemical separations plants for extraction of precious man-made plutonium.

Meantime, their waste energy is used to test materials exposed to nuclear radiation.

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