

Dr. Hans Selye Dies in Montreal; Studied Effects of Stress on Body

By DAVID BIRD

Dr. Hans Selye, an endocrinologist credited with pioneering studies on the effects of stress on the human body, died at his home in Montreal on Saturday. He was 75 years old.

Dr. Selye, who was director of the International Institute of Stress at the University of Montreal, showed in experiments that illnesses such as arthritis, heart disease, kidney disease and other circulatory disturbances could be traced to stress that led to an overproduction of adrenal hormones.

"The apparent cause of illness," he said, "is often an infection, an intoxication, nervous exhaustion or merely old age, but actually a breakdown of the hormonal mechanism seems to be the most common ultimate cause of death in man."

Although he was instrumental in linking stress with disease and death, Dr. Selye emphasized that stress was not necessarily bad. He often felt called upon to defend stress as a vital part of human existence.

Stress Called Spice of Life

"Stress is the spice of life," he once said, explaining that it is the body's response to any demand made upon it. Both good and harmful stress, he said, use up the body's adaptive energy.

"A mother's physical reactions are the same when she hears her son has fallen in battle as when she hears later the first report was a mistake and that he is alive and well after all," Dr. Selye said. "The toll on her vital energy is the same."

Whether the stress on a person leads to illness or to increased energy and achievement depends on how the body takes it.

"People could live past 100," he said, "by understanding and conquering stress, by taking it in our hands and examining its chemical and psychological properties. Stress has got such properties, and they can be measured."

According to Dr. Selye, the body takes stress by what he called the general adaptation syndrome.

There are three stages in the process, he said: alarm reaction, resistance and exhaustion. In the first stage the body acknowledges the cause of the stress, which could be, say, the news of a raise or losing a job. The body's response is immediate. The pituitary-adrenal-cortical system produces the hormones necessary for either "flight" or "fight," that is, either adapting to the stress-causing situation or resisting it.

In this first stage the pulse quickens and the lungs take in more oxygen to fuel the muscles, blood sugar increases, the pupils dilate, digestion slows and perspiration increases.

In the next stage, the body begins to repair the damage done by the arousal, and normally the stress symptoms vanish. But if the stressful situation continues, the body's adaptive energy eventually runs out and exhaustion sets in. The exhaustion can lead to a breakdown in

the functioning of vital organs, causing disease and, if the stress continues, death.

Hans Selye was born in Vienna on Jan. 26, 1907. His father was a physician, as were his grandfather and great-grandfather.

After early schooling in Czechoslovakia, he entered the German University in Prague in 1924. The next year he continued his medical education at the University of Paris, transferring in 1926 to the University of Rome. He then returned to Prague to take his medical degree and a doctorate in chemistry in 1931.

That same year he came to the United States as a Rockefeller research fellow in the department of biochemical hygiene at Johns Hopkins University in Baltimore. The next year his fellowship took him to Montreal and McGill University.

In 1936, while working in his laboratory at McGill, Dr. Selye discovered the first evidence for his stress theory. He had been conducting tests into the effects of ovarian hormones on the glandular system of rats.

By chance, he recalled, his research led him to something different: the effects of stress. "If I had been a good chemist," he said later about the random way he arrived at his discovery, "I'd never have learned about stress."

"I found that injections of the ovarian hormone stimulated the outer tissue of the adrenal glands of the rats, caused deterioration of the thymus glands and produced ulcers and other symptoms," he said. "The rats died. Later I found that any artificial hormone compounds and stresses and any kind of damage did the same thing."

He published his discovery in the scientific journal *Nature* in 1936 under the title "Syndrome Produced by Nocuous Agents," and at first it received little attention. But as he conducted more experiments and explained his theory in detail, he gained renown.

Eventually he became the author of 33 books and 1,600 articles on the subject. His book, "Stress Without Distress," was translated into more than a dozen languages.

In an interview in 1977, Dr. Selye was asked if modern life was not becoming too stressful.

"People often ask me that question, sometimes comparing our lives with that of the caveman, who didn't have to worry about the stock market or the atomic bomb," he replied. "They forget that the caveman worried about being eaten by a bear while he was asleep, or about dying of hunger, things that few people worry about much today."

"In the end," he said, "I doubt whether modern man experiences more distress than his ancestors. It's not that people suffer more stress today. It's just that they think they do."

Dr. Selye is survived by his wife, Louise, and five children: Catherine, Michel, Jean, Marie and André.