

MEDICINE

Bronchitis or Emphysema?

The increasing number of deaths from emphysema, a hard-to-diagnose respiratory disease, has sparked extensive study of the disease by the National Heart Institute.

► **CHRONIC BRONCHITIS** by any other name might be emphysema. And the breathing problem might end in death.

Alarm over the increase in emphysema deaths in this country (915 in 1949 and 10,269 in 1961) has sparked a study of 70,000 British, Norwegian and American-born individuals, Dr. Robert E. Markush of the National Heart Institute told *SCIENCE SERVICE*.

Emphysema is one of a group of respiratory diseases hard to diagnose and easy to confuse. Pulmonary emphysema is a disease in which the very fine air sacs of the lungs become abnormally stretched, resulting in a loss of functioning vital lung tissue. In many cases, the patient can breathe in but has trouble breathing out.

Plans for the Heart Institute's study of 70,000 persons have been going on for a year. Some 50,000 immigrants, partly from Britain where chronic bronchitis rates are high, and partly from Norway where they are low, have received a four-page questionnaire in the 12 states where they have located. Also 20,000 American-born persons have received the questionnaire.

Such questions as how much do you cough, how long have you been coughing, are you short of breath, do you have asthma or produce phlegm, are asked.

When answers are received, another four-page questionnaire will be sent out, and eventually, a sampling of patients will be studied in local geographical communities to get enlightening results.

The states in which the original selection of immigrants was made are: California, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Washington and Wisconsin.

Dr. Donald Reid of the London School of Hygiene and Tropical Medicine and Dr. Einar Pedersen in Norway are collaborating in the study.

Dr. Iwao M. Moriyama, chief, office of health statistics analysis of the U.S. Public Health Service, told *SCIENCE SERVICE* that one of the diseases linked to emphysema is heart disease, and that is why the National Heart Institute is collaborating in this study. Dr. Moriyama reported in *Public Health Reports*, 78:743, 1963, that smoking and air pollution have been suggested as factors responsible for the increase in deaths from chronic respiratory diseases in the United States.

"The chronic respiratory diseases have long been an important cause of death in England and Wales," Dr. Moriyama said. "In fact, chronic bronchitis has often been referred to as the 'English disease.'"

But although Britain still has seven or eight times more deaths from these diseases

than the U.S., the increase in trend is making this country a shareholder in the dubious honor.

Social Security figures prove the extent and cost of emphysema. Among 179,419 persons receiving monthly payments in 1960 for disability from serious illness, pulmonary emphysema was the proved primary medical diagnosis in 6.9%, or 12,380, of the cases. Only hardening of the arteries and coronary heart disease exceeded this number, accounting for 19.9%.

About \$60 million a year is estimated as the amount in payments to individuals with emphysema.

• *Science News Letter*, 84:211 Oct. 5, 1963

MEDICINE

Inherited Faulty Protein Clue to Heart Disease

► **AN INHERITED FAULTY** protein may be a cause of heart disease, Dr. Mary E. Carsten of the University of California, Los Angeles, believes.

She is studying a protein that, due to hereditary changes, may become a weak link in the chain of events responsible for the heart beat. Her research is being supported by the Los Angeles and Kern County Heart Associations.

The protein is actin, which is a key to the contraction process in the heart muscle cell. She has studied the protein in a number of animals—cows, pigs, chickens, frogs, fish and scallops.

The UCLA researcher has found that in all mammals studied actin is very similar in chemical structure. But as one goes down the evolutionary scale toward the lowly scallop, larger and larger differences can be observed.

The changes that occurred in the evolution of species must have taken place in a part of the molecule not essential during contraction of the heart muscle, or the species would not have survived.

However, the fact that there have been changes through the eons suggests that alterations of the actin molecule may give rise to disturbance in heart function and thus to heart disease in the human. Such alterations would be inherited.

This theory is now in the process of being investigated, and, if established, may be the long-sought key to human heart failure.

Dr. Carsten believes this theory is a more promising approach to the understanding of heart disease than suggested relationships of overeating, high fat or high cholesterol.

While these may lead to obesity and narrowing of arteries, such processes may only serve to increase the workload of an already genetically diseased heart.

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Smith Kline & French

DRUG RESEARCH—A *pharmacologist withdraws a sample of fluid from the vessel, which contains a living segment of a rat's small intestine, for analysis of drug content in a study of the intestinal absorption of experimental drugs at Smith Kline & French Laboratories, Philadelphia.*

NATURAL RESOURCES

Man's Impact on Nature And Himself Studied

► **THE INJURIES**—and benefits—of modern civilization upon man and nature are up for investigation.

Scientific knowledge has brought mixed results upon the world. The use of pesticides has destroyed insects, but also killed birds. New detergents have made clothes and houses cleaner, but also polluted our streams. Forest have been cleared for needed lumber, but erosion and dust bowls have sometimes been the result.

This impact of modern civilization upon the delicate balance of nature is now slated for study under a \$59,400 grant from the National Science Foundation.

A three-year study of chemicals in a small watershed in the Hubbard Brook Experimental Forest in West Thornton, N. H., is planned by Dartmouth College scientists F. Herbert Bormann, Gene E. Likens and Noye M. Johnson.

They intend to measure the mineral substances in the water system and learn the specific amounts the area takes in and then puts out.

This study includes analysis of such natural phenomena as rainfall, temperature fluctuations, evaporation, soil respiration, populations of the fauna and flora of the stream, and chemical and mineralogical change in the bedrock.

In an attempt to determine better management of land and water, they will investigate the effects resulting from human activities, such as the use of pesticides, tree cutting and controlled burning.

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