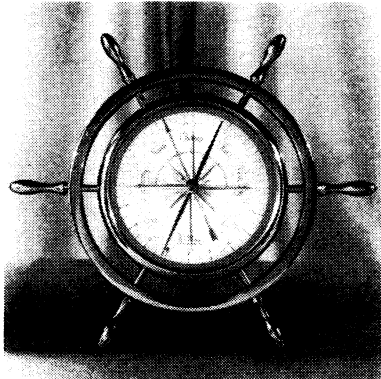


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BIOLOGY

DNA Synthesized

► A SUBSTANCE that looks and acts like DNA, the material from which living genes are made, has been made.

The man-made DNA-like substance may have an important role in cancer treatment, scientists hope, because it interferes with the activity of natural DNA. Cancer cells are believed to have an altered or abnormal DNA, or deoxyribonucleic acid.

Their hopes are largely based on the finding that artificial DNA inhibits the natural substance's ability to cause heritable changes. Some kinds of pneumococcus, a common disease-causing organism, are resistant to streptomycin, for example. DNA taken from a resistant strain can make a sensitive strain resistant and this change is subsequently inherited, Dr. S. M. Beiser of Columbia University's College of Physicians and Surgeons, New York, explained. However, artificial DNA stops the reaction.

"By every criterion used so far," Dr. Beiser told SCIENCE SERVICE, "the synthetic DNA is the same as the natural DNA." Its synthesis, announced by Dr. Beiser and Dr. Aaron Bendich and Mr. Herbert Rosenkranz of the Sloan-Kettering Institute, was completed without using any natural DNA or enzymes to help build the living mole-

cule as has been done in previous syntheses of DNA.

Inert molecules known as nucleotides and found in DNA were used as the starting material. The scientists believed that in the test tube the nucleotides tended to come together to form DNA-like molecules but that they separated as quickly as they came together. The problem was to prevent the separation.

By using a "substituted cellulose" called Ecteola which has a special attraction for DNA but not for the smaller nucleotides, the scientists obtained their DNA-like compound. The nucleotides were shaken in a solution of Ecteola. As the Ecteola removed the DNA-like molecules from the solution, more were formed by the nucleotides in order to restore the equilibrium or balance of the solution. Eventually the synthetic DNA molecules could be washed off the surface of the Ecteola with solvents.

In the living cell, DNA is made from nucleotides with the help of existing DNA and special enzymes.

Mr. Rosenkranz reported the research to scientists at the Fourth International Congress of Biochemistry in Vienna, Austria.

Science News Letter, September 13, 1958

ENGINEERING

A-Heat for Homes

► THE WORLD'S first atomic house heating installations will begin operating in a few years.

Described at the Second United Nations International Conference on the Peaceful Uses of Atomic Energy meeting in Geneva, two such installations will be located in Sweden.

Sweden is building two underground atomic reactors to be fueled by natural uranium mined within the country and to be moderated by heavy water.

One of the reactors known as R3 will heat homes in a new suburb south of Stockholm. The city of Vasteras, 70 miles west of Stockholm, will be the site of the second reactor which has been given the name "Adam." Heated water will be circulated to homes, replacing citywide oil heating systems.

The dual project, reported by two teams of Swedish scientists, will produce electricity as well as heat. They expect the reactors to generate a total electrical energy output of 200,000 kilowatts.

The two reactors will be buried in rock to minimize the danger of radioactivity in event of accidents.

Another group of scientists, representing Mitsubishi, a large Japanese industrial complex, announced plans for a nuclear-powered passenger ship for service between Japan and the east coast of South America. The ship will have a capacity of 2,000 emigrants, 200 additional passengers and 8,000 tons of

cargo. Construction has not been started on the vessel which is expected to sail at a speed of 23 knots, thus halving the time of the present Japan-South America trip.

The possibility of using the energy of fission recoil fragments, through the conversion of nuclear energy to heat and also directly to chemical energy, for industrial chemical processes was reported by a group from the British Atomic Energy Authority at Harwell. Most promising, they said, are the synthesis of ammonia to hydrazine, production of nitric acid and the synthesis of hydrogen.

Science News Letter, September 13, 1958

TECHNOLOGY

Airborne Atomic Power For Isolated Posts

► A LOW-POWER nuclear reactor that is designed to produce atomic power and space heat at remote military stations has started work at Idaho Falls, Idaho. The new Argonne Low Power Reactor will produce 3,000 thermal kilowatts and it can be transported in Air Force cargo planes.

Operating three years on each loading of enriched uranium fuel, it is intended to provide power for radar equipment and space heat for buildings at isolated locations where conventional fuel is very expensive.

Science News Letter, September 13, 1958