MEDICINE

Breast Cancer Inheritance

Studies of the family histories of 600 breast cancer patients show that there is only "a very slight susceptibility" to breast cancer by inheritance.

➤ ONLY A "very slight susceptibility" to breast cancer is inherited, it appears from studies by Dr. Sheldon C. Reed of the University of Minnesota.

Over a period of many years Dr. Reed and co-workers have traced the family histories of 600 breast cancer patients treated at the University of Minnesota's Tumor Clinic. For purposes of statistical comparison, they studied the families of the patients' husbands who generally were in the same age, racial, social and economic groups as the patients.

Results of the study as announced by the American Cancer Society include:

Sisters of breast cancer patients have one chance in about 12 of developing breast cancer. Women in the general population have one chance in about 15, according to one group of controls, and one in 23, according to another group of controls.

Just 8.2% of the sisters of the patients developed cancer, as compared with 4.3% of the sisters of the patients' husbands. Even though the number of cancers among patients' sisters was almost double that among the husband's sisters, the total still is considered so small as to be almost without significance.

A U. S. Public Health Service survey in the neighboring state of Iowa showed that 6.6% of all women develop breast cancer before they die. With this as a control, there is even less significance to the finding of breast cancer among 8.2% of the sisters of the Minneapolis patients.

Seventy-five of the Minneapolis patients had breast cancer between 1910 and 1925. Their surviving sisters were examined as part of this study. So were 154 of the patients' daughters, 5.8% of whom have had breast cancer. Because two-thirds of the daughters are past the menopause, it is felt that the cancer incidence will be about the same as that found among the patients' sisters.

No other type of cancer was found to be in excess of normal in the families of the breast cancer patients, including ovarian and uterine cancers.

There is more breast cancer among childless women, married and unmarried, than among those who have children, the study showed.

The number of children born seems to make no difference. Women with a single child are no more susceptible to breast cancer than those with many.

It is impossible to say whether cancer is influenced by the single or married state of the woman, or by some underlying hormonal or other biological condition that makes marriage undesirable or, if the woman is married, children impossible.

There is more breast cancer in urban than rural areas. This may be due to the fact that many unmarried or unmarriageable women leave the country for the city.

Breast cancer strikes most commonly just before or just after the menopause. There is no evidence for or against a virus in human breast cancer.

Science News Letter, February 27, 1954

METALLURGY

Red-Hot Ceramic Paint Protects Jet Engines

➤ CERAMIC ENGINEERS are spraying a fiery paint on jet engines to protect them from fire. Brushed on with the scorching blaze of a special spray gun, the paint quickly solidifies on the metal. It adds resistance to blistering heats generated by jet flames.

Experiments at the Ryan Aeronautical Company's development laboratory, San Diego, Calif., show that the ceramic fireproofing can be sprayed on in coatings as thin as one-thousandth of an inch. It can withstand temperatures up to 3,500 degrees Fahrenheit for limited periods, giving protection to the metal beneath which is more vulnerable to the jet's hot flame.

This new metal-protection technique may open new vistas of usage for afterburner liners, rocket parts and similar high-temperature engine components. Terrific heats attack the alloys developed to date for these parts, limiting their service life. In addition, ceramic coatings may permit normal engine operating temperatures to be boosted 150 degrees.

In field tests, special ceramic-coated exhaust system components were installed on Boeing Stratocruisers flying transpacific routes for Pan American World Airways. Later, ground checks showed the ceramic linings extended the life of the treated parts 50% to 100%.

The new paint is a cermet, so termed because it is a ceramic-metal mixture. Ryan now is experimenting with a nickel-magnesia powder, although other combinations have been developed.

The paint's brush is a modified gun used in metal spray-welding. Its intense oxygen-acetylene blaze melts the cermet powder and blasts it onto the jet engine metal. The powder is fed to the nozzle of the gun under nitrogen pressure.

Temperatures of 5,500 degrees Fahrenheit are generated in the nozzle flame. Although the engine metal ordinarily could not withstand a furnace technique involving temperatures this high, the quick flame-spraying method creates no metallurgical problem.

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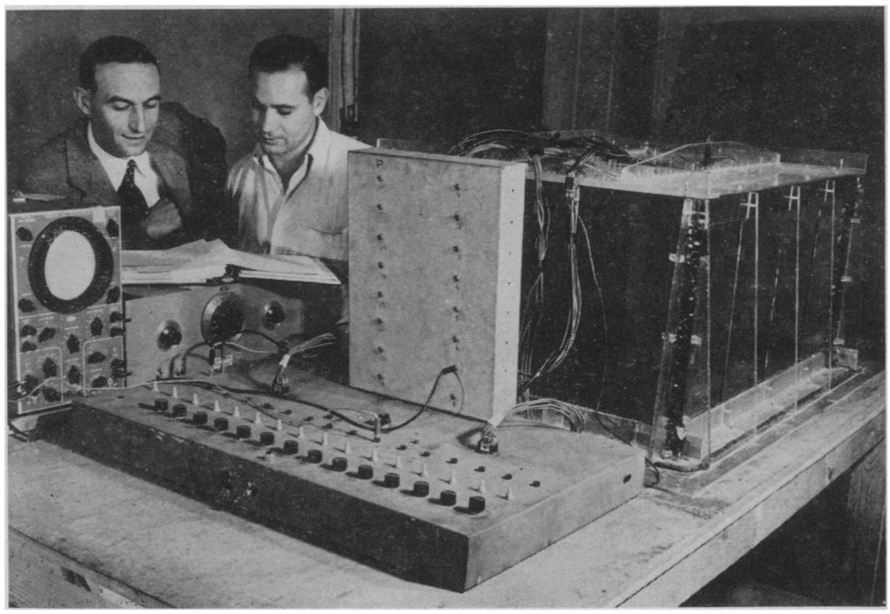

"ELECTRIC WIND TUNNEL"—To cut down research time for studies on the forces acting on airplane wings, Dr. Nicholas Rott (left) and Joseph T. Corso of Cornell University have developed the device shown here to simulate the flow of air by passing electricity through the liquid in the tank on the right. The analyzer can give the lift pattern for any wing shape and any subsonic speed.

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