

GENETICS

Inherit TB Resistance

Gene for resistance to tuberculosis may be more dominant than the gene for susceptibility, experiments with inheritance of disease in rabbits show.

► RESISTANCE TO tuberculosis may be in part a matter of inheritance. If so, the resistance may come through a gene that is more dominant than the gene for susceptibility to the disease.

Studies suggesting this were reported by Dr. Max B. Lurie of the University of Pennsylvania's Henry Phipps Institute, Philadelphia, at a conference held by the National Tuberculosis Association in New York.

The findings, he said, are in harmony with the fact that the tuberculosis death rate started going down long before any hygienic measures were undertaken to fight the disease.

Dr. Lurie studied the inheritance of tuberculosis in inbred rabbit races. Some of them were highly resistant and others highly susceptible to TB. The animals inhaled human type tuberculosis germs. The method is a quantitative one, the number of primary tubercles developing in the rabbit lungs being inversely proportional to the animal's resistance. That is, the greater the resistance, the fewer are the tubercles that develop. The tubercles are the masses of small round nodules produced by the tuberculosis germs.

The factors that determine native resistance to tuberculosis are "multiple, complex and additive in nature," these studies showed.

When rabbits of a highly resistant race were bred to rabbits of a highly susceptible race, the offspring's resistance was intermediate between that of each parent race.

Back-crossing some of these to resistant race ancestors resulted in a race with the same degree of high resistance as the original resistant race. Back-crossing the hybrids of the resistant-susceptible races to susceptible ancestors resulted in animals with significantly more resistance than that of the original susceptible ancestors.

That the spleen may have something to do with natural resistance to tuberculosis appears from studies reported by Drs. Walter Lyon Bloom and Martin Cummings of Emory University, Ga., and the Veterans Administration Hospital at Chamblee, Ga. Material from rat spleens, they have found, will stop TB germs in test tube experiments. At present they are working to find the chemical nature of the anti-tuberculosis substance in rat spleens.

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TECHNOLOGY

Aluminum Bridge Span

► THE WHEELS of American industry are grinding out a new aluminum fixed-type bridge for the Army that can span 180 feet of swirling waters or deep ravines.

Known as the T6, the bridge was designed primarily for use by Army divisions. But with a little reinforcement, it can support the tremendous weight of a full-dress army, which is composed of several divisions.

Many details still are cloaked in military security. However, it is known that a 75-foot length of the bridge can be thrown up by hand in about one-third the time required by a similar length of the Bailey bridge, the Army's stand-by during World War II.

Other short spans can be set in place by hand in less time than by machinery, even though the bridge was not designed specifically for hand erection.

Field trials of a test model showed, furthermore, that the new bridge can carry loads 50% heavier than similar bridges used in World War II.

The bridge is a product of five years' work conducted at Fort Belvoir, Va., by the Engineer Research and Development

Laboratories in cooperation with the Aluminum Company of America and the Pittsburgh-Des Moines Company. Engineers made the bridge lighter by using aluminum instead of steel where possible. Strength was produced by Alcoa's alloy 14S-T6.

Normally, trucks will carry the bridge to the site of erection. But due to its light weight, engineers believe the bridge could be dropped in sections from airplanes should the need arise.

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TECHNOLOGY

Gold-Coated Glass Gives A Super-Smooth Surface

► GOLD-COATED GLASS has produced a super-smooth surface needed by scientists to help them determine why various insulating materials break down under high voltages.

Stored under tight-fitting plastic covers, the surfaces form a part of special electrodes that General Electric Research Laboratory scientists say must stay absolutely

free of dust. One speck is enough to throw off the breakdown voltage of an insulating material by as much as 10,000 volts, they report.

Finding a super-smooth surface was a tough proposition for the scientists. They first tried hand-polishing stainless steel with a powder having granules only one-millionth of an inch in diameter. But the resulting surface was too rough.

Since liquids have smooth surfaces, they tried out mercury. But under the high voltages applied during the tests, the mercury distorted and threw off the breakdown voltage readings.

Glass lightly coated with vaporized gold produced what the scientists term the smoothest solid surface found so far. And even though the electrodes are stored under dust covers, they are carefully scrubbed with a camel's hair brush dipped in a detergent before each experiment is begun. During the experiment they are watched through a microscope to make certain they stay clean.

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BIOCHEMISTRY

Pituitary Removal Helps Prevention of Cancer

► THE IMPORTANCE of the pituitary gland, at the base of the brain, in cancer is given fresh emphasis in studies reported by Drs. Henry D. Moon, Miriam E. Simpson and Herbert M. Evans of the University of California in *Science* (Sept. 26).

Removing the pituitary gland, they found, protected rats from cancers that otherwise develop as a result of treatment with the chemical, methylcholanthrene.

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SMOOTH SURFACE — Housewife Louise Boyka dusts off, with her breath, one of the world's smoothest solid surfaces, made of finely-polished glass coated with vaporized gold and used for testing electric insulating materials.