Great Belt would cost $57,054,000.

Denmark, according to the plan, would pay its cost by money raised one-third by loan, one-third by motor taxes and one-third through government subsidy, especially to railroads.

The estimated annual construction costs would actually be less than the yearly cost of present road maintenance in Denmark.

Construction materials, including steel and coal for fuel, would be purchased abroad at a cost of $20,102,000; the rest would be from Denmark itself.

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PHYSIOLOGY

Nerves Can Double for Others In Controlling Heart Action

Tiny Fibers Heretofore Not Understood by Science May Act for Nerves Which Affect Heart Beat

SCIENCE'S first step toward an understanding of recently discovered nerve fibers for speeding up heart action, a discovery which may lead to their identification as hitherto unknown sympathetic nerves, was announced to the New York Academy of Sciences by Dr. Lucien A. Brouha of the University of Liége, Belgium.

Discovered at the University of Ghent in 1934 by Jourdan and Nowak, the tiny fibers have remained pretty much of a mystery to science, the only definite fact known about them being their position alongside the vagi nerves which run from the brain to the heart and which serve to retard the cardiac beat.

Even now, Dr. Brouha explained, little is known of their function in the normal body, but in dogs whose sympathetic nervous system has been removed these new nerve fibers take its place. Indeed, so successfully do they substitute for the missing nerves that Dr Brouha finds it absolutely impossible to distinguish a normal dog from one without its sympathetic system.

This finding is in direct contrast to results obtained with cats by Dr. Walter B. Cannon at the Harvard Medical School, for removal of the sympathetic system in these animals made them distinctly apathetic, incapable of exertion to any marked degree.

It was the ability of the new nerves to replace the sympathetic system in dogs that led Dr. Brouha to his conclusions concerning the possible function of the nerves as a substitute for the removed system. In the normal body, he believes, the nerves may aid heart regulation to a very small extent, although he said that in all probability they have additional functions as yet undiscovered by science.

In research leading to these results, Dr. Brouha conducted pioneer treadmill tests on dogs both before and after removal of the sympathetic system. The experiments were performed in cooperation with Dr. David B. Dill of the Harvard University Fatigue Laboratory where Dr. Brouha is carrying on his investigations this year.

Outstanding among his finds were that the general behavior of a dog whose sympathetic chains have been removed remains normal, although the heart beat of the animal at rest is slightly less than normal, and that emotional excitement produces the usual definite cardiac acceleration.

If the dog takes light exercise, Dr. Brouha found, the cardiac rhythm remains below the normal rate, even during a long experiment in which the total amount of exercise done is considerable. When this exercise becomes more intense, however, the cardiac acceleration occurs in proportion to the intensity of the exercise—exactly as it does in the normal animal.

Another important find was that the capacity to stand very intense exercise is not at all diminished three months after the removal operation, that time being necessary for the dog to recover from the effects of the operation.

Experimentally checking the possible influence of a rise in body temperature or muscular metabolism, Dr. Brouha found that they are definitely not responsible for the accelerated heart beat. Nor are adrenalin or sympathin, for with the removal of the sympathetic system, these hormones are not secreted into the blood stream.

This leaves only increased activity of the cardio-accelerator fibers of the vagi nerves to explain heart regulation. The activity of these fibers, Dr. Brouha says, is also accompanied by a reduction in activity of the retarding fibers of the vagi nerves whose functions along these lines are well known.

Testing the sugar and lactic acid content of the blood and the alkaline reserve of sympathectomized dogs, he found them all to vary within normal limits.

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ANATOMY

Nose Grows Longer With Age, Mouth Gets Wider

WHEN a human face grows old, the features actually change in pattern. The nose grows wider and longer. Ears lengthen. Mouth spreads wider.

These signs of age, which almost defy beauty camouflage, are detected by anthropological measurements, reported by Dr. Ales Hrdlicka, well-known anthropologist of the Smithsonian Institution. People are vaguely conscious of the altered pattern when they greet old friends, and cannot account for a familiar face seeming somehow strange.

Dr. Hrdlicka bases his conclusions on measurements of thousands of "Old Americans" that is, Americans who have three or more generations of ancestry in this country, and also on study of Indians, Eskimos, and Negroes.

The mouth begins to widen from early life and continues to change, the anthropologist finds. Effects of age on this feature are more marked than the changes in the nose.

Although women have smaller mouths than men, women's mouths are really larger in relation to their body height.

A nose alters mainly by widening, though there is some increase in length.

Dr. Hrdlicka's measurements confirm the point that people in hotter climates have broader noses than people in cold climates. It is believed that this is an adaptation to the breathing needs in different climate surroundings.

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