



PINE'S BRIDAL CHAMBER

Sealed against unwanted matings with wind-borne pollen, these pine flowers are being fertilized with selected pollen sprayed upon them by a hypodermic needle thrust through their enclosing bag.

GENETICS

Hypodermic Needle Carries Pine Pollen for Hybrids

HYBRID pines and other trees, to grow better lumber in less time, are the goal of the Institute of Forest Genetics, with headquarters at Placer-ville, Calif. Several new tricks of botanical technique have been developed to speed the work, one of the most interesting of which is the use of a hypodermic needle for pollinating the female pine flowers, which develop into the seed-bearing cones.

Under natural conditions, pines and similar trees are wind-pollinated. Their female flowers open and receive pollen shed into the air by the male or staminate flowers, and carried by the wind in yellow clouds.

This is obviously a most unselective process. One can select a good mother for one's crop of seeds, but their fathers are wholly unknown, as chance and capricious as the wind itself.

To insure a knowledge and control of the paternity as well as the maternity of their seeds, the botanists tie close-woven canvas bags over the twigs bearing unopened female flowers. Celluloid windows in the bags permit them to see when the flowers open. No chance wind-borne pollen can reach these cloistered pine-flower virgins. They are as strictly (Turn to Page 330)

PHYSIOLOGY

New Communication System Discovered in Animal Body

"Neurohumor" Secretion, Passing From Cell to Cell, Relays Messages From Nerve Centers to Peripheral Regions

A HITHERTO little recognized transmission system between cells of animal bodies, including those of man, was reported upon to the National Academy of Sciences meeting at Ann Arbor this week by Dr. G. H. Parker, director of the zoological laboratories of Harvard University.

Dr. Parker declared that this physiological mechanism that allows one cell to influence another by producing and sending a "neurohumor" secretion from cell to cell is "of as great importance as the blood or the lymph," which have been long known as conveying substances within the living body.

Recent extensive researches in America and abroad have caused scientists to conclude that the sense cells of the living organism produce secretions of a peculiar sort. Dr. Parker christens the secretion "neurohumor." Deeper-lying nerve fibers and nerve cells are activated by the neurohumor secretions of the sense cells, and the excitation thus conveyed to the central nervous organ sets up at the central termination a similar secretion which excites the next nervous element in the chain.

Finally a secretion relaying the original orders of the sense cells is produced at the peripheral end-organ such as a muscle, gland, or other portion of the body that does a certain piece of work.

Dr. Parker finds that the secretions pass in solution over the narrow spaces that separate one nervous element from the next and that they are in the nature of hormones or humoral substances.

When more is known about them, it is expected that they may explain some obscure nervous diseases, since Dr. Parker declared that the neurohumoral substances are presumably of first importance in many such ailments.

Neurohumors can be experimented with in fishes and other animals that can change color. Dr. Parker injected some of the tissue juice of a light-colored fish under the skin of a dark-colored fish and found that a light spot was produced. The reversed experiment also

was successful. If, however, a spot on the skin of a fish is denervated by cutting its nerves, this spot takes on the color of the rest of the fish only very slowly, due to the slow percolation of the neurohumor produced adjacent to the spot.

So slow is this percolation that Dr. Parker concludes that it does not occur through the blood or the lymph, but must occur by the passage of the secretion from cell to cell.

From an evolutionary standpoint, the newly revealed intercellular system is vastly older than the blood and lymph system of the higher animals. In lower animals such as the coral and the sea anemones which have no blood or lymph, the neurohumor system is the only one existing. It was therefore evolved long before blood started to serve the animal organisms.

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STATISTICS

Homicide Rate Almost Unchanged for 20 Years

FEWER people are dying of typhoid fever than in 1911, more are dying in automobile accidents or from cancer, but they are killing each other at just about the same rate as they did in 1911, the Metropolitan Life Insurance Company has found from a survey of statistics on its policyholders.

The homicide rate has shown almost no change during the past two decades. It is practically the only cause of death that has shown no upward or downward long-time trend. It is the cause of one per cent. of deaths from all causes.

Every case of homicide shows evidence of social disorder. Officers of the company suggest that efforts should be made to determine what factors cause one man to kill another, and that then corrective measures should be applied, just as in the case of diphtheria, malaria and typhoid fever.

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