PHYSIOLOGY

Link Tooth Loss, Hearing

Deafness after tooth extractions is caused by a pressure build-up of fluid in the inner ear due to obstruction by the jaw bone, a new theory states—By Faye Marley

➤ THE REASON a dentist may put a person's new dentures in immediately after extracting the natural teeth is not only for appearance's sake. Chances of deafness occurring are ten to one, especially when all the teeth are extracted.

This is because of the bite closure, Dr. M. Wharton Young of Howard University College of Medicine, Washington, D. C., told SCIENCE SERVICE. When the false teeth are inserted, the problem is solved.

The professor of neuroanatomy, who has just returned from two years in India, explained his new theory of why this hearing impairment occurs. Some persons escape, but most will experience hearing difficulty within 24 hours.

Formerly-held views on the relationship between the jaw, or mandible, and the eustachian, or auditory tube, assumed that the loss of hearing was due to the closing of the auditory tube, which leads back from the throat to the ear.

Dr. Young's research findings, which contradict this older theory, show that the deafness is a problem of fluid drainage.

"It is like closing off the flow of a soft drink through a soda straw," he explained. "More technically, the condyles, or rounded portions of the jaw bone, move backward and close the narrow space through which fluid drains out of the inner ear."

The volume and pressure inside the "labyrinth" of the ear, which consists of a system of interrelated fluid channels, produce deafness if they are increased.

"In otosclerosis or bone obstruction of the critical outflow of fluid in front of the oval window, *fenestra ovalis,* of the ear, there is a resulting increase in the volume and pressure in the labyrinth that produces deafness," he said.

The laws of hydrodynamics play a vital role in both hearing and deafness, Dr. Young said.

Most persons recognize that hearing difficulties result from even slight altitude changes such as occur in an elevator or an ordinary commercial airplane.

"Astronauts, who go to much greater heights, have noted some impairment in their hearing," he said. He explained that "structure" is the basis for all "function," both normal and abnormal, and that the structure of the inner ear is best demonstrated by instilling mercury into it, then studying the result by X-ray.

Dr. Young's X-ray analysis revealed a large sac, previously unknown, at the end of a duct leading from the ear's labyrinth to the base of the skull.

He discussed the whole problem of "hydraulic" compression of the delicate cells in the nervous system at a session of the National Medical Association meeting in Washington, D. C., which included addresses by an equal number of white and Negro physicians.

The eye disease, glaucoma, for example, which is the most common cause of blindness in adults, results from increased fluid pressure in the eyeball.

There is a basic similarity between the eye, which receives light waves, and the ear, which receives sound waves. Thus, increased pressure in the ear's labyrinth will cause deafness.

The surgical treatment of both these afflictions is to produce an opening through which the excess fluid can escape.

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BIOPHYSICS

New Theory Describes Why We See Colors

➤ A NEW THEORY explaining how the human eye can detect different colors by using tiny cells that conduct electricity has been presented at Oxford, England.

This theory is considered important because it is supported by experiments and breaks away from a currently held theory on color vision. It has been thought that color vision is caused by a chemical reaction taking place in the eye's retina.

The new theory, which states that the tiny eye cells generate color signals because of physical rather than chemical reactions, was announced before the International Congress of Photobiology by Dr. Barnett Rosenberg, professor of biophysics at Michigan State University.

Dr. Rosenberg said the new theory was substantiated by exciting a replica of an actual cone, one of the tiny cells found in the retina of the human eye, with short bursts of light. An eye-associated chemical was sandwiched between two glass plates, and an electric current and electric field were applied to the sandwich.

When different colored lights were shined on the sandwich, the direction of the current passing through the sandwich would change, the Michigan State scientist said. Blue light, for instance, created a flow of current in the direction of the light passing through the sandwich, and red light made the current flow in the opposite direction.

Dr. Rosenberg said these findings match, color for color, data obtained by Dr. Gunnar Swaetichin, a Swedish scientist, in 1956. Dr. Swaetichin had conducted his experiments by placing electrodes in the retinas of animals.

The Michigan State University research is being supported by National Institutes of Health grants.

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MEDICINE

Tumor Surgery Reviewed

➤ THE FACT that a woman has a tumor in the womb should not be a signal to her surgeon to remove the entire organ if the tumor is non-cancerous and the patient is under 40.

Dr. Theodore R. George Jr. of Freedmen's Hospital, Washington, D. C., told the National Medical Association meeting that after removal of fibroid tubors in the uterus, called myomectomy, fertility remains and women of 40 remain more stable emotionally.

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Michigan State University

COLOR SENSOR—A photoelectric cell that responds in different ways to different colors is examined by graduate student Kaiser Aziz of Michigan State University's department of biophysics.

MEDICINE

Blood Transfusion Helps Dog Transplant 'Take'

➤ MATCHED BLOOD transfused from one dog to another before transplanting a hind leg is credited with causing foreign tissue to "take," a Russian report stated.

To overcome the immunity problem, Soviet surgeon A. Laptschinsky prepared the recipient dog, named Bratik, meaning Little Brother, by completely replacing his blood when he was only six days old.

The blood was taken from the donor dog, Tsiganka, or Gypsy, whose leg was then amputated in the middle of the femur, or thighbone.

For 45 days after the operation, Bratik was sprightly, had a good appetite, ran around and rose on his hind legs.

Even with the substituted blood, however, an allergic reaction set in, and so-called "antiallergic cocktails" with other medical treatments were given.

The transplanted leg was still "taking" after 84 days, although the upper layers of skin suffered, according to official reports.

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