

PHYSIOLOGY

If You Are Over 20 Years Old You Are Probably Partly Deaf

National Health Survey Reveals That Nearly Half Those Who Think They Have Normal Hearing Really Have Defects

IF YOU are over 20 years old, the chances are you are partially deaf. And you can blame the infections of certain diseases, including the common head cold, influenza, scarlet fever, meningitis, diphtheria. Three-fourths of the population are either totally or partially deaf.

This is the news just made public by the U. S. Public Health Service in a series of four bulletins reporting a study of hearing in connection with the National Health Survey. The hearing part of the survey was conducted by Dr. Willis C. Beasley, senior administrative officer of the Public Health Service, in cooperation with prominent ear specialists.

Of all the 9,000 persons who were given hearing tests and ear, nose, and throat examinations in the Health Survey, only 52 per cent. claimed to have normal hearing. But nearly half (44 per cent.) of these who claimed normal hearing were actually partially deaf. They were unaware of their defect because the deafness occurs principally in the very high tones, above the pitch of ordinary speech. The highest notes of the violin, flute, and piccolo are lost for them.

This loss of hearing, beginning at the age of 20, increases at a regular rate as time goes on.

Degeneration of Nerve

It is due to an actual degeneration of the nerve of hearing, the examinations revealed.

"Practically all deafness among persons over 25 years of age," said Dr. Beasley, "involves some degree of nerve degeneration. This degeneration is more circumscribed among males, rather widely distributed throughout the ear among females."

Deafness in school children is due in the vast majority of cases to congestion or injury of tissue in the middle ear without injury to the hearing nerve.

A new problem for manufacturers of hearing devices is disclosed by the findings of this survey. Men and women, it was discovered, differ significantly in the way in which they grow deaf.

Men lose ability to hear the high tones mostly. Hearing devices for them should magnify the high notes a great deal more than the lower pitches of conversation.

For women the hearing loss is distributed uniformly over the whole range of tones most essential in ordinary life. Devices for women should magnify the notes of the baritone voice as well as the high pitches of the violin and piccolo.

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PHYSICS

Rubber Bands Used to Drive Pendulum in Novel Machine

JUST as a locomotive uses steam as its "working substance" to change heat into mechanical work, scientists at the National Bureau of Standards have built an experimental heat engine which uses rubber as the working substance. The alternate heating and cooling of rubber bands keeps the pendulum device oscillating for days on end without attention.

In a report, (*Review of Scientific Instruments*, February) Drs. Lawrence A. Wood and Norman Bekkedahl describe the operation of the ingenious, but simple, device which is a refinement of earlier models originally made by W. B. Wiegand of the Columbian Carbon Company.

The apparatus, called a rubber pendulum, consists of a vertically mounted metal rod which is pivoted at its central point where a small right-angle piece of metal oscillates on knife edges.

The top of the rod holds brass weights while the bottom end is attached to common rubber bands under tension. The action of the weights is to overturn the pendulum but this action is counterbalanced by the pull of the rubber bands.

Mounted in front of the rubber bands is a sheet metal shield shaped like a piece of pie with the point downward. Nearby is an electric heater which shines its heat rays at the rubber bands.

Rubber bands have the unusual property of contracting, with an increase



RUBBER MAKES IT GO

To the uninitiated observer this novel machine looks like a demonstration of perpetual motion. Contraction of the rubber bands caused by rays from the electric heater makes the pendulum swing.

of tension, when they are heated. Thus as the heat rays shine on them they contract and the increased tension pulls the bottom end of the pendulum nearer the vertical.

As the rubber bands come behind the metal shield they are cooled, expand and permit the pendulum to swing outward again. By suitable adjustment of the brass weights the inertia of the system can be arranged so that the pendulum will swing from side to side, alternately heating and cooling the rubber bands. An oscillation period of about five seconds can be obtained. The rubber bands last about two weeks when in service for eight hours each day.

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PSYCHOLOGY

Boys and Girls Pose Unanswerable Queries

ALL of us go about with many questions we can't answer or get others to answer for us. For most of us they have been so long unanswered that we have become accustomed to the situation.

For adolescent boys and girls in school,

youngsters from 14 to 18, some of the eternal question marks may be more vivid. Dr. George Lawton, of Columbia University and Evander Childs High School, New York City, has made a study of questions these children find unanswerable. The results are interesting.

Most of all they have to do with love. Then God, death, criticism of people in general, life, the future, the hereafter, religion, reincarnation and the end of the world.

Here are the questions of those aged 14, arranged in order of frequency of asking:

Why are we born, what use is life? What makes people unkind, selfish, etc.? What is love, platonic love, true love? Is there a God? Is there such a thing as reincarnation? What happens to us (our souls) after we die? Why should there be wars, and why do people go to war? Why does a new scene seem to have happened before? What makes the world rotate and why don't we feel it? Why must man worship something?

Other challenging questions asked by individual boys and girls, include:

Why can't the same government control all the peoples of the world? What do people get out of life when they don't give anything? Why don't they teach sex in school? Are our lives planned for us or do we do things because we want to or because we are compelled to? Why should parents never give us the satisfaction of saying we understand what is going on in the world about us, as in politics, religion, and so forth, and tell us that we are too young to understand? Would people be happy if they had what they desired? Is it very necessary to consider religion before marrying? Could the world get along with everybody believing in the same thing?

And now, do you, dear reader, know the answers?

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PSYCHOLOGY

Birds' Taste Sense Similar to Humans'

SENSE of taste in pigeons, ducks and chickens is essentially the same as taste in human beings, declares Dr. C. Engelmann, writing in *Die Umschau*.

These three domestic bird species perceive the four fundamental taste classes: sweet, sour, salty, bitter. In numerous tests with variously flavored water solutions, Dr. Engelmann found that pigeons have the most acute sense of taste, chickens the least.

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PSYCHOLOGY—PHYSIOLOGY

Primates Have Mating Period As Do the Lower Animals

Chimpanzee Courtship Studied at Yale Laboratories For the Bearing on Human Problems of Marriage

MEN and women probably have a natural mating period as well as do the birds or the creatures of woods and fields. This is indicated by research just reported by Dr. Robert M. Yerkes of the Yale Laboratories of Primate Biology.

Working, not with humans themselves, but with their near relatives, the man-like apes, Dr. Yerkes found that primates do have preferred occasions for love. Not restricted by the social taboos, modesties, and deceptions that society imposes upon humans, the chimpanzees revealed the recurring periods during which they longed for their mates. It is during these periods that young may be produced.

The girl who "picks her man" among the life-guard or other typical he-man types is following the same pattern that governs the chimpanzee. The female chimpanzee "falls for" the typically masculine among her ape companions.

Doesn't Want Dominance

But don't make the mistake of believing courtship among the chimpanzees to be a "cave-man drama" where the male pursues the female and drags her off by the hair of the head with a display of aggressiveness and cruelty.

The chimpanzee female does not welcome force in her mate. She makes friends with the domineering male. She may even grow to love him dearly just as the human girl is devoted to a stern father. But when it comes to choice in courtship, her preference goes to the less domineering animal.

And it is the female who does the proposing in the chimpanzee family. There is no show of coyness, reluctance, or even "come-hither." If she wants him, she goes after him. She rushes to him and prostrates herself at his feet. If she does not want him she usually knows how to manage to put him off.

"Grooming," which might be considered as the chimpanzee parallel of human "petting," is such a feminine wile used to distract the male from more intimate relations. It is also a way of expressing affection and tenderness.

When it is the male who grooms the female, he is trying to curry favor with her or is demonstrating his friendliness.

Chimpanzee grooming is not very different, apparently, from the way humans have of rumpling or smoothing the head of the loved one.

The purpose behind the Yale studies of apes such as this one reported by Dr. Yerkes in the scientific journal, *Human Biology*, (February) is not mere curiosity regarding the intimacies of life among the lower animals.

"It is not to improve the chimpanzee," Dr. Yerkes declared, "nor even to satisfy our curiosity about its patterns of behavior and their mechanisms that we study the organism persistently."

Because the chimpanzee is so very much like man, he can serve as a substitute for him in laboratory conditions to which men could not be submitted.

By study of the ape, it is hoped that men may gain knowledge regarding the processes of life and of birth control and may learn how to make human marriages more happy and satisfying.

"In the forefront of human needs," said Dr. Yerkes, "is the wise control of sexual behavior and of the quantity and quality of population. For the satisfaction of these necessities our knowledge and understanding of the nature, conditions, and relations of sexual and reproductive phenomena are wholly inadequate.

Commands Interest

"Fortunately research in this field of biology commands universal interest, and its results are promptly seized upon for critical scrutiny, evaluation, and application.

"The continuing study of chimpanzee behavior, from which the materials of this report are derived, is motivated primarily by interest in human problems."

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A titled British manufacturer has announced that he will make and present to every hospital in the British Empire an iron lung of Australian design.