

PSYCHOLOGY

Depth Perception Different

Depth or distance seen in a different way when looking at a pea and when looking at an apple. Training makes depth perception more accurate.

► YOU SEE depth or distance in a different way when you are looking at a pea than when you are looking at a nickel or an apple. And your depth perception of large objects can become much more accurate with training and conscious practice.

If the object is so small that its image is formed entirely on the fovea or center of the retina of the eye, then the idea formerly held by scientists still holds. That is, you see depth by a sort of triangulation process. The difference in the view of the object by your two eyes, and the distance from your eyes to the object determine your perception of its distance.

But if the object is larger, and it usually is in everyday life, then the geometrical explanation breaks down. Then your perception of depth depends not only on the difference between what your two eyes see, but also upon the scanning of the object by your eyes running over it.

This is the conclusion of Dr. J. Adamson on the basis of experiments conducted at St. Andrews University, St. Andrews, Scotland, and reported in the British journal, *NATURE* (Aug. 25).

Using a stereoscope, Dr. Adamson showed his subjects two arrows. Each arrow was viewed by only one eye. They were of equal thickness but of different lengths.

The two images of the two arrows fused and were seen as a single arrow, but, because one eye saw a longer arrow than the other eye, the fused image seen in the stereoscope appeared to be tilted away from the observer.

Several pairs of arrows were used. In each case the difference in length was the same but the actual length differed. Some were so small that the image was smaller than the eye's fovea (the height of the Monticello building on your Jefferson nickel viewed at ten inches); others were four times as large as the fovea, or as long as the same Monticello building.

When the arrow was large, the eyes were observed to scan back and forth along it. In this case, the apparent tilt was less than might have been expected—the larger the arrow, the less the apparent tilt.

When this scanning was suppressed by requiring the observer to fixate on a small marked place at the center of the arrow, no tilt was observed.

The apparent tilt of the large arrows was found to vary for different individuals. This, Dr. Adamson concludes, is due to differences in training and also to deviations in the binocular vision of the individuals.

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ENGINEERING

Crystals Operate Clutch

► A NEW-TYPE, high-speed clutch to transmit power from a rotating shaft to a drive shaft, as done by the ordinary automobile clutch, utilizes certain solid chemical crystals which, when excited by a direct current voltage, bend to bind the output disk on the drive shaft to the rotating input disk on the power shaft.

This clutch is the result of experimental development at the National Bureau of Standards by Ernest Codier. It is a part of a program for the development of fast-acting clutches suitable for use in high-speed computers. Only one model has as yet been constructed. It is about six inches in diameter and a little more than an inch long.

Construction of this new so-called crystal clutch is relatively simple. The output disk is located between two rotating members, consisting of a thin flexible pressure plate and a heavier mounting plate, or input disk. The crystal elements, which bend when opposite potentials are applied to

different parts of the crystal surfaces, are spaced at 120-degree intervals. When the exciting voltage is applied, the crystals press against the pressure plate at a radius of 1.5 inches, pinching the output disk between the pressure plate and the input disk.

The particular crystals used are what are known as Bimorph piezoelectric crystal elements. In the experimental unit Rochelle-salt crystal elements are used because they are readily available. These, however, are relatively unstable, and barium titanate crystals are regarded as a logical alternate.

Distinguishing features of the crystal clutch are high speed of response and almost negligible current drain. No current flows, other than insulation leakage, after the applied voltage has charged the capacity of the crystals. The clutch therefore creates no magnetic field, an advantage in some applications.

Applications for this new clutch may not be numerous. Yet its high speed and negli-

gible current drain could be valuable in a few highly specialized but important instruments. One application might be, as an example, in photographic recording apparatus to move motion picture film in fast response to an activating voltage.

Science News Letter, September 29, 1951

NUTRITION

Real Strawberry Jam Is a Better Buy Than Imitation

► IF MRS. AMERICA buys substandard strawberry jam labelled imitation, she is not getting any bargain even if she pays 27 cents for the imitation labelled product when the genuine strawberry jam would cost 41 cents.

Actually she is paying nearly two and one-half times as much per pound for strawberries in the form of preserves. The reason is that the costs of processing, labor, filling and containers are practically identical for the standard and substandard preserves.

These figures were given by Charles W. Crawford, Commissioner of Food and Drugs, at a meeting of the American Bar Association in New York.

"By adding to one pound of genuine strawberry jam about one and two-thirds pounds of sugar, costing 17½ cents retail, and eight-tenths of a pound of tap water, the consumer could get nearly three and one-half pounds of a mixture identical in composition with the imitation jam at a cost of about 58 cents," Mr. Crawford stated.

"The same quantity of imitation jam, purchased as such, costs the consumer 93 cents."

Mr. Crawford's strawberry jam figures were used in pointing out the need to stop gaps in the current law for protection of both consumers and conscientious food manufacturers and processors.

Science News Letter, September 29, 1951

PSYCHOLOGY

Children Think Adults Are Just Horrible

► CHILDREN THINK grown-ups are just horrible. Or at least grown-ups think children think grown-ups are just horrible.

A British psychologist asked 60 normal, intelligent young people to place themselves in the shoes of small boys or girls and then answer some questions. The psychologist, Miss S. B. N. Shimmin, Bedford College, London, was amazed to find that only eight out of the 60 masquerading as children had any friendly feelings toward adults. The rest chose such words as scorn, hatred, distaste, dislike, suspicion, caution, fear, to describe their feelings toward grown-ups.

Miss Shimmin said she asked adults to pretend they were children, because children were inhibited and evasive when faced with questionnaires.

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