

Human Eye More Acute Than Bee's

Optics—Physics

The first scientific determination of the acuteness of vision of a bee is but one of the interesting topics described at the recent joint meeting at Columbia University, New York City, of the Optical Society of America and the American Physical Society, and reported below.

The eye of a bee is not nearly such a wonderful organ of sight as many romantic naturalizers would have us believe. It is, in fact, only about one per cent. as good as the eye of a human being when it comes to distinguishing separate objects and the distances between them. At the joint meeting of the American Physical Society and the Optical Society of America, Prof. Selig Hecht and Dr. Ernst Wolf, of Columbia University, told of experiments which established the degree of visual acuity of the bee.

They let bees walk up a sloping glass plate, beneath which was a moving slide with alternating dark and bright bands, giving a sort of picket-fence effect. The bee would change the direction of its march when it saw the bright bands moving, and it paid no attention to bands that were too narrow for it to see. By using a number of slides, with vary-

ing widths of bands, it was possible to find the narrowest object which a bee can perceive. This was found to be a hundred times as wide as the narrowest object a human being could perceive at the same angular distance.

Bee and human eyes were found to be alike in that both see badly in a dim light and better in a bright one. Above a certain degree of brightness, however, no improvement in sharpness of vision could be discovered.

Winter Lacks Ultra Violet

Winter sunlight is not only less intense than that of summer, but contains less of the sun-burning ultraviolet waves, Dr. Arthur D. Riddle of the Hegan Memorial Research Laboratory announced.

Sunburn and the other biological effects of ultraviolet rays are produced by a certain band of wavelengths, not longer than 1/78,000 inch and not shorter than 1/86,000 inch, approximately. As the length of the shortest waves in sunlight is some place between these figures, Dr. Riddle made measurements of the limit at

different times of the year, on both clear and cloudy days.

His results show that June sunlight, in both clear and cloudy weather, contains shorter waves than even clear December weather. In June, on both clear and cloudy days, waves as short as 1/84,300 inch were present. On a clear December day, the shortest were 1/82,300 inch, while on a dull day no waves shorter than 1/81,800 inch were detected.

New Cell May Aid Television

A new form of photoelectric cell, for converting light waves to electric impulses, using the metal caesium, instead of potassium, may prove of value in television because its response is more similar to that of the human eye. The new cell was described by V. Zworykin and E. D. Wilson, of the Westinghouse Electric and Manufacturing Co.

It has been known for some time that caesium offers a number of advantages for use in photoelectric cells, said Mr. Zworykin. The difficulties of handling pre- (Turn to next page)

First-Born Are Problems

Orthopsychiatry

The first-born child in a small family is more apt than any of his brothers and sisters to have such emotional and mental difficulties as to put him in the class of problem children. At least such children present problems to child guidance clinics more frequently than other children from small families, reported Dr. Curt Rosenow of the New York Institute for Child Guidance to the meeting of the American Orthopsychiatric Association.

Dr. Rosenow has made an extensive statistical study of the children coming to child guidance clinics in Cleveland and Philadelphia, from which he draws the above fact. As far as second and third children of small families are concerned, the figures did not permit any very definite conclusions, said Dr. Rosenow.

Possibly the fact that the oldest child has arrived first at an age when mental and emotional problems might develop is a factor in the more frequent appearance of these children at the clinics. Certainly younger children are born into a situation typically different from the one into which the first born is introduced. This must be taken into consideration. However, nothing can be concluded on the basis of primogeniture alone, Dr. Rosenow declared.

Science News-Letter, March 2, 1929

Future Metal Supply Doubtful

Metallurgy

The world's metal supplies in the rocks of the earth are showing signs of failing and experts are worried over whether the most efficient applications of science and technology can keep pace with the demands of coming generations. This state of low supplies in the mineral cupboards of the future was revealed to the meeting of the American Institute of Mining and Metallurgical Engineers in New York, when D. F. Hewett, geologist of the U. S. Geological Survey, discussed the production of metals in Europe during the last 300 years.

The European trend toward cartels and understandings to control such metals as iron and steel, mercury, aluminum, zinc, lead and copper, has arisen from the unspoken realization that Europe's metal production has taken a downward tendency, Mr. Hewett said.

In America vast resources of iron, copper, lead, zinc, silver, and gold have been attacked so vigorously that many leading districts are approaching exhaustion, and metal production is being maintained by the application of new metallurgical processes to lower grade ores. American mining

operations are deepening shafts at a rate two to four times as fast as those of Europe, Mr. Hewett observed. Whereas mines in Europe range from 1200 to 1600 feet in depth, American mines are often in excess of 4000 feet.

If we are willing to pay the price in fuel, power, and labor, enough iron, manganese, aluminum, and gold can be produced, Mr. Hewett indicated, but mercury, lead and chromium are more localized and less likely to be produced in sufficient quantities for future generations even if the price is increased to stimulate the supply.

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T. B. Takes Two Years

Medicine

Every white baby boy born in this country could expect to live to 57.3 years if tuberculosis were eradicated, and the country would be saved a loss of \$179,000,000. This sum is the annual monetary loss due to deaths from tuberculosis, estimated Harold D. Larsen of the University of Wisconsin.

The loss in life expectation is 1.93 years for every white male at birth.

Science News-Letter, March 2, 1929