

## PSYCHOLOGY

# Baby's Smile Not Instinctive Response To Human Voice

**WHY DOES** a baby smile as he looks up into his mother's face?

Unsentimental explanations that the infant's smile is due to physical conditions such as a full stomach or pleasant contact on the skin are disproved by an experiment conducted by Dr. Wayne Dennis, psychologist of the University of Virginia (*Journal of Social Psychology*, May).

Del and Rey, twin babies, contributed their winsome smiles to the scientific test. Mrs. Dennis assisted in the experiment. The nursery was the laboratory. The infants were 36 days old, just a little over a month, when the testing began.

For twelve days, the babies were merely watched for evidence of smiling and what caused it. The experimenting couple bathed the babies and gave them routine care. They did not smile at them, talk to them or play with or fondle them. The infants were allowed to hear adult voices conversing with other adults, but never was speech addressed to the babies, because it was desired to isolate this factor as a cause of social smiling.

During these first 12 days, when no special attempt was made to make the babies smile, a total of 18 smiles were noticed. Smiling in the newborn does not follow any occurrence or sensation with much frequency or regularity, it was found.

From day 48 to day 82, various methods were tried for making the babies smile, and their effectiveness was noted.

The best way to make the baby smile is to pat him gently on the chest. But next best is just to learn over the crib and smile. Even tickling was not so sure a producer of smiles.

Smiling is not instinctive, Dr. Dennis concludes. It is not produced naturally by any stimulus. It is a learned, or "conditioned," response to the person or thing which brings about a cessation of fretting, unrest, and crying.

By the time little Del and Rey had learned to fixate their eyes on the adults attending them, they had learned that an adult leaning over the crib was the signal of coming welcome care which would relieve discomfort or distress. It was at this signal that they smiled before, not after, the feeding or bathing itself.

Why didn't a glimpse of the nursing bottle produce a smile? Dr. Dennis wondered at that, but he observed that it did not. Perhaps it is because the bottle was not often in the baby's direct line of vision, he suggested. While the bottle was at her lips, her eyes were fixed on the adult holding it. And then again, the adult brought comfort at other times than at feeding time. Mother provides relief oftener than does the bottle.

Smiling is not a natural response to the human adult voice, these experiments demonstrated. When the voice is not associated with care of the baby, as in this case, the voice does not bring any smiles.

It is just the presence of the adult, already associated by the young baby with comfort, that makes the smile light his face.

*Science News Letter, July 20, 1935*

## PHYSIOLOGY

## Thyroid Slows Metabolism When Temperature Is Low

**THE EFFECT** on the body of thyroid gland hormone and of the thyroid-stimulating hormone of the pituitary gland is greatly influenced by temperature, Dr. Oscar Riddle, Carnegie Institution of Washington scientist working at Cold Spring Harbor, N. Y., has discovered.

These two substances which ordinarily raise the metabolic rate, indicating increased speed of body processes, actually lowered the rate markedly when given at a temperature of 15 degrees centigrade, Dr. Riddle and his associates, Guinevere C. Smith, Robert W. Bates, Clarence S. Moran and Ernest L. Lahr, found in studies of animals.

Specialists in the study of the glands were very much surprised by Dr. Riddle's findings. No explanation can yet be given for this new observation, but it is taken to mean that in future determinations of basal metabolic rate, both on patients and in research on animals, the temperature at which the test is made must be considered.

Besides this "bombshell," as one physician has called it, Dr. Riddle told fellow scientists that he doubts whether there is a separate growth-controlling

hormone in the pituitary gland. He found that animals grew better when treated with a mixture of two other pituitary hormones, one that affects the thyroid gland and the other affecting milk secretion, than when treated with any preparations of pituitary growth hormone which he had tried.

*Science News Letter, July 20, 1935*

## FORESTRY

## Forests Store Sun's Energy Faster Than Coal Is Mined

**FOREST** trees in the United States capture and store more of the sun's radiation every year than is released by all the coal mined. Figures presented before the meeting of the American Association for the Advancement of Science, by Dr. Hardy L. Shirley of the Lake States Forest Experiment Station at St. Paul, Minn., show an advantage in favor of the forests of some two and one-half times the score of coal.

In wood, bark, leaves, etc., every acre of white pine forest in Wisconsin every year stores the equivalent of well over a ton of coal. Extending this to all the forest lands of the United States, about 670 million acres, the total forest-captured energy equivalent becomes 1,403 million tons of coal, or two and one-half times as much coal as was mined in the United States during 1930.

Yet the actual efficiency of forests in the utilization of the sun's energy is very low. Only a trifle over one-third of one per cent. of all the solar energy reaching the forest's leaves during a growing season is converted into wood.

"If we consider also the energy stored in the form of needles, bark, small branches, twigs and roots, as well as that stored by subordinate vegetation, the total amount might equal from one-half to one per cent. of incident solar energy during the growing season," said Dr. Shirley.

Sunlight falling on a forest canopy is absorbed unequally, he pointed out. The leaves of the treetops cut out more light at both the red and the blue ends of the spectrum than they do of the green light at its middle. The difference, however, is not particularly great, especially when compared with the loss in total intensity.

Yet the lesser plants that grow on the forest floor, as well as the tree seedlings struggling for an eventual place in the sun, have to get along on such crumbs of sunlight as drop from the table of the giants overhead. This paucity of