

"farm to market" highway and its use increases construction costs about \$1,000 per mile. A year or more will be required for an adequate test.

The rolls of cotton fabric as they come from the mill are 82 inches wide, three rolls being required after allowing for lapping to cover 20 feet of the usual 22-foot roadway. It is laid on a coating of hot tar, then more tar applied, with other layers of slag and asphalt coming on top.

Alabama proposes to build 119 miles of cotton fabric highways using 1,260,094 square yards of the material or more than any other state. North Carolina comes next with plans for 105 miles. Twenty-two other states will use varying amounts.

Science News Letter, September 12, 1936

From Page 167

year he behaves as though when objects disappeared from his field of perception, they simply ceased to be.

"Between the ages of five and eight months," said Prof. Piaget, "when the child already knows well enough to seize any solid objects which he sees, one has only to cover them with a cloth, or place a screen in front of them at the moment when the baby's hand is directed towards them, and he will give up looking for them, and immediately lose his interest.

"I have even observed this in systematically hiding the bottle when my six-months-old son was about to take it.

"But one can see a still more curious reaction around nine or ten months, when the child is capable of seeking the object behind the screen, and the no-

tion of real exterior permanence begins to put in an appearance. For example, when the baby is placed between two pillows and he has succeeded in finding an object hidden under the right one, the object can be taken from his hands and placed under the left pillow before his very eyes, but he will look for it under the right pillow where he has already found it once before, as if the permanence of the objective was connected with the success of the former action, and not with a system of external displacements in space."

In short, Prof. Piaget summed up, the primitive world of the child is not made up of permanent objects, but of moving pictures which return periodically into non-existence and come back again as the result of the proper action.

The baby, in handling his toy will turn it until he finally gets a notion of a "wrong side" of objects. But this does not come right away. Hand a five or six months old baby his bottle and turn it around before his eyes. If the child can see a bit of the rubber nipple at the other end of the bottle, he immediately turns the bottle around, Prof. Piaget explained. If he doesn't see the nipple, he doesn't even attempt to turn it, but sucks the wrong end.

When at last the baby has built up a more correct idea of the world and the objects about him, he has still to master the problem of perspective. Even the child of five or six will feel that a mountain changes in size as he approaches it. Prof. Piaget has noted this in travelling with his own little children among the mountains of his home land.

Finally comes the problem of comprehending the perspective of other in-

dividuals. Right and left to the young child are absolute; he cannot realize that what is right to him might be left to another. Then he must get the idea of the permanence of quantity; that a row of ten beads, for example, remains just ten even though they are placed in a longer row or gathered up into a heap. And the permanence of weight, that a paste ball is just as heavy when it is squeezed out into a cylindrical shape. This development of the thought of the child parallels in a way the development of science.

"The effort by which the child escapes from his egocentricity to form a world with this social and rational instrument which the logic of relationships gives him," concluded Prof. Piaget, "is at the basis of the ever-present gigantic effort of science to free man from himself by making him realize objectively the relativity of all things."

Science News Letter, September 12, 1936

PHYSICS-PHYSIOLOGY

Eye Can See One Millionth of an Inch

NEXT time you see a film of oil on a rain puddle in the pavement look for the colored light fringes. Pretty? Yes. But, more important, they indicate that your eye can detect a difference of one-millionth of an inch. That is the thickness of the oil films which produce those colors by interference. The beautiful coloring of some butterfly wings is a similar phenomenon of thin films. The best micrometer gages now in use will detect differences of only one ten-thousandth of an inch.

Science News Letter, September 12, 1936

Please write on the lines below
the names and addresses of a few of your friends, each to receive a free copy of *Science News Letter*. Our group of readers is steadily growing, through the cooperation of our friends.

Name
Address

Name
Address

Name
Address

Name
Address

Name
Address

Your Name

May we mention your name?

Send this list to SCIENCE NEWS LETTER
2101 Constitution Avenue, Washington, D. C.