



### HANDS GROWING USEFUL

Typical grasps of babies under 6 months of age contrasted with the more advanced hold of babies in the second half year of life. At the left above, the baby holds a ball with his hand like a scoop, thumb and fingers side by side; below, the older baby can hold the ball with thumb and forefinger while the exploring forefinger of his other hand pokes it. Center, above, the young infant grasps a rod or crayon mostly with the little fingers; below, the older baby has it almost in a writing position. Right above, the block is held without any aid from the thumb; below, the older child uses thumb to good advantage in holding a block.

PHYSIOLOGY-PSYCHOLOGY

## Movies Aid in Study of How Baby Learns to Use Thumb

**T**HE THUMB has become subject of study at the Yale Clinic of Child Development.

Motion pictures of babies taken under the direction of Dr. Arnold Gesell have made possible the tracing of development from the time the infant's hand is curled up into a tiny, comparatively useless fist until his thumb is so developed that he can pick up an object, pincer fashion, between the thumb and forefinger. The results are now made public in a report by Dr. Gesell and Dr. Henry M. Halverson, (*Journal of Genetic Psychology*, June).

"Even though 'all thumbs' is proverbially synonymous with awkwardness, the human thumb is the most highly prized member of the entire hand," these scientists point out.

Legally, the thumb is assigned a higher compensation than any of the fingers. The U. S. Employees Compensation Commission allows compensation of 51 weeks' pay for loss of the thumb as compared with 28 weeks for the forefinger.

Scientists have pointed to the use of the thumb opposed to the forefinger as the one characteristic distinguishing all men from the apes.

Useful not only for securing free rides, the thumb has enabled man to hold fine tools such as the pen and has contributed mightily to the advance of civilization.

At birth, man does not have this use of the thumb. The fingers and thumb of the newborn are characteristically bundled into a tight little closed fist. First to come out of the bundle and work independently is the forefinger which begins a separate existence at about four weeks. The thumb starts individual action at about eight weeks, but it follows a slow road to complete independence of the rest of the hand.

Here are the steps as outlined by Drs. Gesell and Halverson:

1. Birth to 16 weeks. During this time the baby develops a slight ability to draw out the thumb, but it is generally held close to the fingers.

2. From 16 to 28 weeks. Now the space between thumb and forefinger widens and:

3. From 16 to 28 weeks. The thumb is brought against the fingers with its inside edge toward them.

4. From 24 to 36 weeks. Now the thumb can go around farther. It is partly the inside edge and partly the flat side

of the thumb that opposes the fingers.

5. From 32 to 52 weeks. It is not until the child is nearly a year old that the flat pad of the thumb is brought directly against an object or against an opposing finger.

The scientists point out, however, that these age ranges are only approximate and are likely to overlap to some extent.

### Make Your Own Test

Use of thumb and finger against each other in the pincer handling of objects depends upon the ability of the thumb to move freely in a circle. You can test yourself on this ability. Just band an ordinary pencil to your thumb so that the pencil point sticks out about two inches beyond the end of the thumb. Then lay your hand flat on the edge of a table so your thumb can move freely beyond the edge. Have someone hold a scratch tablet against the pencil point and draw a circle without lifting your hand. Repeat this experiment in a similar way for each finger. You will find that the thumb circle is much bigger than that drawn by any of your fingers. The one drawn by the little finger will be smallest.

*Science News Letter, September 5, 1936*

ARCHAEOLOGY

## Lapland Revealed as Warm in Stone Age

**M**ORE than 30 settlements of human beings dating from the Stone Age, or about the year 3000 B.C., have been unearthed in Swedish Lapland by Kurt Tinnberg, Stockholm archaeologist. In a few months he has gathered some 3,000 flint tools, weapons, and utensils, said to be the most northerly ever found in Sweden.

According to Mr. Tinnberg, researches show that the climate of Scandinavia in those distant days was warmer than now. He points to recent finds indicating that grapes grew there more than 4,000 years ago.

*Science News Letter, September 5, 1936*

**● RADIO**

September 8, 2:15 p.m., E.S.T.  
ONE THOUSAND USES FOR WOOD  
—G. W. Trayer of the U. S. Forest Service.

September 15, 2:15 p.m., E.S.T.  
STARRING A DINOSAUR—Charles W. Gilmore of the U. S. National Museum.

In the Science Service series of radio programs over the Columbia Broadcasting System.