PSYCHOLOGY

Code Difficulty Rated

"W" is hardest letter that soldiers studying radio code have to learn. Easiest are "E" and "T" which have only one sound.

➤ DIDAHDAH is the hardest code letter that soldiers have to learn—that's the letter W.

Dr. S. D. Spragg, of Queens College, Long Island, N. Y., told the Eastern Psychological Association in New York that letters with the greatest number of sound elements are not always the most difficult to learn; W has only three sounds.

The familiar V for Victory (didididah) is a fairly easy letter to master although it has the maximum of four sounds. In difficulty it ties with A (didah), having only two sounds.

All the code letters leading the list in difficulty with the exception of W do have four sounds, however. And the two easiest are E (dit) and T (dah), the two having only one sound.

This information is important in the teaching of code because in most modern methods of code instruction, the alphabet is taught in four or five groups, usually on the basis of alleged differences in difficulty.

Dr. Spragg decided that this could not be determined just by looking at the letters or listening to their code equivalents. His study of actual difficulties was made with a special code class of men and women at Queens College. They were taught the alphabet as a whole, not in groups. Dr. Spragg said that he did not select this method as being necessarily the best for service classes, but because it is the only way to get at the relative difficulty of the letters fairly. The college students did very well, however, with this method of instruction.

All errors made during the time of learning were counted and they ranged all the way from only 22 for the letter E to 666 for W. Most frequently confused were letters having the same sound except for the ending.

Code Teaching Studied

➤ THE NEW method of teaching code by having listeners to the code signals try to write the letter and then prompting or correcting them after a few seconds was compared with the old method of having them study a printed list of dots and dashes and the results were reported to the meeting by Dr. John P. Seward, of Connecticut College.

No dependable differences were found. There was a slight tendency for students of the prompting method to do better with practice and at higher rates of receiving. There was also a slight tendency for the poorer learners to do relatively better with the prompting method while the better learners did better with the dot-dash method. But none of these differences were great enough to be significant.

Two Heads Are Better

➤ TWO HEADS are really better than one when it comes to working out school arithmetic problems, Dr. Samuel F. Klugman of the University of Pennsylvania told the Eastern Psychological Association.

In an experiment on 136 boys and girls of average intelligence in grades 4, 5, 6, Dr. Klugman found that they can do more problems correctly when they work in pairs. It takes them longer, however, and the time differences were greatest for the sixth grade, the girls, Negroes and older children.

Science News Letter, May 15, 1943

A huge dolomite deposit near Las Vegas, Nev., is expected to produce many million tons of *magnesia,* raw material from which magnesium metal is obtained.

● RADIO

Saturday, May 22, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. O. E. Baker, professor of geography at the University of Maryland, will discuss population problems.

ASTRONOMY

Arms of Nebulae Are Trailing Star Centers

➤ THE ARMS of spiral nebulae, those gigantic pinwheels of the universe, have been discovered to be trailing their central region by Dr. Edwin Hubble, Mt. Wilson Observatory astronomer and a world authority on nebulae. His investigation (*Astrophysical Journal,* March) is of importance in the study of the origin and development of nebulae, the most familiar of which is the Milky Way.

Spiral nebulae, comparable in size to our stellar system, are millions of light years away. Billions of stars, luminous gaseous matter, and dark clouds obscuring portions of the brilliant center form this whirlpool of light.

Dr. Hubble slips the missing piece of the puzzle into place by developing a criterion for determining the direction in which these whirling masses are inclined. We see them as images projected against space and whether they are tilted toward us or away would decide, in light of their spiral pattern, if the arms are trailing or leading.

It has been believed for some time that the dark lanes visible only on the slightly tilted nebulae are the key, but dispute arose as to whether they marked the far or near side. Working with the entire collection of Mt. Wilson photographs, including those made with the aid of the famous 100-inch telescope, Dr. Hubble eventually found a spiral nebula which showed both the dark lanes and the spiral pattern. The dark lines were silhouetted against the central or nuclear bulge, showing that the dark bands unmistakably denote the nearer side. Other nebulae studied support his assumption that the arms were trailing.

From the slant of the spectral lines it is known that all spiral nebulae are traveling in the same direction. Having once determined that direction, Dr. Hubble concluded that the arms of the nebulae are trailing in all spirals.

Science News Letter, May 15, 1943

About 7,000 species of *flies* are found in North America.