

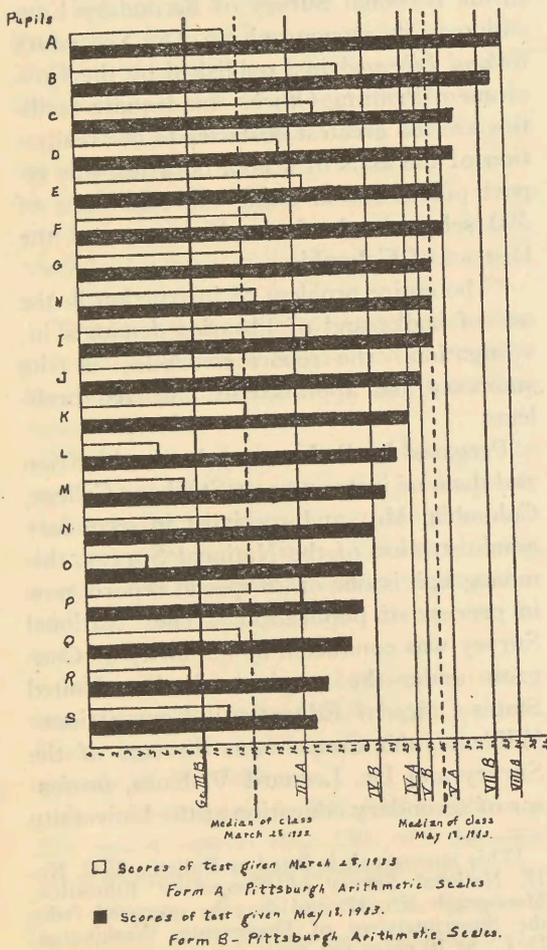
mosphere that encourages free expression, and a teacher who loves beautiful poems and has confidence in the power of a little child to appreciate and create them.

NELLIE L. WALKER.

### STIMULATION TO GROWTH IN ARITHMETIC

**L**AST February when I became supervisor of grade 4B in the training school, the children were retarded in many ways, but inability to solve arithmetic examples seemed to be their greatest handicap. They disliked arithmetic because they could not achieve success.

#### PUPIL GROWTH IN ARITHMETIC Grade IV B



After carefully examining some of their work, I gave the children examples that they could do. To succeed in doing the thing they attempted was satisfying. As each pupil's interest and confidence in himself grew, he was gradually encouraged to do more difficult work. Since the fundamental processes must be mastered in the fourth grade, the children were guided in attacking addition and subtraction first because they serve as a foundation for multiplication and division. By the twenty-eighth of March when Form A of the Pittsburgh Arithmetic Scale was given to the class, they had gained considerable confidence in their ability. In the graph the white bar shows the results of this test. The median of the class, falling at 13, showed them to be at the third grade level.

We analyzed each paper to find out the specific needs of the class as well as those of each individual child. Every pupil was shown his difficulty and in turn felt a need for practice. A few of the difficulties were borrowing in subtraction, zeros in the minuend, multiplication combinations, and the process of division. Pride and thorough understanding had awakened the children's interest—thus the law of readiness operated daily. Our next step was to tell the learners exactly what to do in order to improve. By this method the law of exercise was applied.

Since definite work on multiplication and division was needed by the whole class, we began to work on the multiplication facts. A test including the ninety multiplication combinations was given, the children having only three minutes in which to write the answers. Each child made an individual graph showing his score. The papers were analyzed and each child was told what facts he needed to learn. The child who had the best paper missed the following facts:  $6 \times 9$ ,  $8 \times 7$ ,  $8 \times 8$ ,  $4 \times 3$ ,  $7 \times 7$ ,  $9 \times 2$ ,  $8 \times 0$ ,  $9 \times 6$ ,  $5 \times 7$ ,  $8 \times 9$ ,  $7 \times 6$ , and  $9 \times 9$ . The children were divided into five groups according to their specific needs with a student teacher to help each group. After a few days of work another

test on multiplication combinations was given. Each child added another bar to his graph and noted his growth. Instead of one child competing with another, each one competed with his own previous record. Emphasis was placed on the greatest growth instead of the highest score. The papers were again analyzed and the children were re-grouped. We continued working in this way until a few children could give automatic responses to all of the multiplication facts including the form  $4x? = 8$  which we expected to use in bridging the gap for division. As each child learned his multiplication facts he was given his fifteen minutes for working on some individual problem such as skipping one or more decades when adding, forgetting to carry, counting instead of using combinations, and confusing zeros in subtraction with those in multiplication. When practically everyone knew all of the multiplication facts, we began working short division, instruction proceeding by steps of difficulty.

When all of the fundamental processes had been taught, the children took a general test. This time they analyzed their own papers and each child decided which process he needed to work on most. After the decision was made the children were divided into four groups with a child acting as leader in each group. A test was given about every three days. Some of the children looked through sample arithmetics for the kind of examples they needed to work on, others made up examples and solved them, while those who were poorest frequently solicited help from their classmates during free period and at recess. Interest continued to grow until it reached its height one day when they insisted on working arithmetic examples the whole afternoon. However, this never occurred again. We usually studied arithmetic about fifteen minutes in the morning and thirty minutes in the afternoon. This intense interest was the result of knowledge of rapid growth. Effect, the third law of learning, gave so much satis-

faction that there was a readiness for more exercise.

On the eighteenth of May, when Form B of the Pittsburgh Arithmetic Scale was given, the median of the class was a little above the standard for grade 5B. The scores for this test are represented by the black bar. The achievement of the class had been due largely to attacking the work in a systematic way, keeping in mind psychological principles, and applying the laws of learning.

RUTH M. HOLMES.

### THE HIGH SCHOOL LIBRARY

**A**LACK of adequate financial support is the greatest handicap of the American high-school library, according to the National Survey of Secondary Education in its monograph on *The Secondary School Library*<sup>1</sup> just published by the Government Printing Office. Inadequate facilities are the greatest obstacles to the realization of the aims of school libraries, this report points out in citing the conditions of 390 selected schools in 46 states and the District of Columbia.

"The entire problem of instruction in the use of books and of libraries demands investigation," the report concludes in its summary and appraisal of unsolved problems.

Prepared by B. Lamar Johnson, librarian and dean of instruction at Stephens College, Columbia, Mo., and specialist in secondary administration of the National Survey, this monograph is one of 28 special reports now in process of publication. The National Survey was conducted by authority of Congress under the auspices of the United States Office of Education. Commissioner William John Cooper was director of the Survey and Dr. Leonard V. Koos, professor of secondary education at the University

<sup>1</sup>This monograph is listed as Bulletin, 1932, No. 17, National Survey of Secondary Education, Monograph No. 17, and may be procured from the Superintendent of Documents, Washington, D. C., at 10 cents per copy.