Editorial

ALPHA AND OMEGA

This publication marks the end of one era and the beginning of another with respect to Mathematics Council, ATA (MCATA) publications. Beginning in 1964, MCATA adopted a policy of producing an *Annual* each year, whose purpose was to help keep members informed on major ideas in mathematics education and to give members practical ideas to help them do a first-class job in the classroom.

At a recent executive meeting, it was decided to abandon the idea of an *Annual* but not the philosophy of a major annual publication. The pressure to produce an *Annual* in the year for which it was scheduled and the feeling that the prominent dating of a publication might "outdate" it long before the material was out of date were the two major reasons for this decision.

Beginning with this publication, the Mathematics Council has embarked on a series of monographs to appear at the rate of more or less one per year. Monograph No. 2 is already in preparation. It will consist of teacher-developed activities keyed to the Alberta Curriculum Guides. Some plans have been made for Monograph No. 3 and an editor has been appointed.

The executive believes that this change will better reflect the purpose of the major MCATA publication without decreasing the service of the Council to its members.

PURPOSE OF THE MONOGRAPH

The general purpose of this first monograph is to demonstrate that many mathematical concepts at all levels can be taught with very simple manipulative aids. Mathematics teachers have always been ingenious at devising their own aids. This skill is as important today with budget restrictions on every side as it was years ago when school administrators thought that all you needed to teach mathematics was a textbook and a piece of chalk. The need for children to manipulate has been well-documented in professional literature.

The specific purpose of this monograph is to show the versatility of relatively simple and inexpensive manipulative aids. Some of the articles demonstrate horizontal versatility; that is, the author concentrates on a narrow range of grade levels and shows how an aid may be used to teach a number of different mathematical concepts at that level. Other articles demonstrate the vertical versatility of an aid; that is, they show how an aid can be used to teach mathematical concepts over a wide range of grade levels. Still other articles demonstrate both horizontal and vertical versatility.

OVERVIEW

It may be wise to begin with a word of caution. We should not use manipulative aids just for the sake of using an aid. The aid must fit into our objectives for our lesson and program. In the first article, *Robert E. Reys* outlines some very useful considerations for anyone using manipulative aids.

The horizontal versatility of the geoboard is well illustrated by *Werner W. Liedtke*. He outlines a number of geoboard activities covering a wide range of elementary school topics including number, operations, patterns, geometric figures, measurement, graphing, fractions and games of various kinds. *T.P. Atkinson* shows how popsicle sticks can be used to teach number, numeration, and geometric concepts.

Separate articles by *Sr. Marie Benoit* and *J.E. Kirkpatrick* outline aids for use in skill development. Sr. Benoit outlines some activities with wooden cubes while Joan Kirkpatrick suggests a number of activities and easily-constructed devices to provide computation practice.

The use of thumbacks in developing concepts of weight and probability is suggested by *W. George Cathcart*. *Mary A. Beaton* outlines 10 experiences for developing concepts of 3-D space with materials such as straws, pipe cleaners, paper, cardboard containers, cubes, and tin cans.

Beth Blackall gives a number of suggestions for open-ended activities with shapes cut from a 12" by 12" floor tile. The activities suggested demonstrate both the vertical and horizontal versatility of a very simple manipulative aid.

Logical thinking can be developed through the use of attribute blocks. An article by *James H. Vance* contains some valuable games and activities using attribute blocks.

Separate articles by *Thomas E. Kieren*, *Bill Higginson*, and *Alton T. Olson* clearly demonstrate that much mathematics can be derived from simple aids. Kieren develops a number of mathematical concepts from upper elementary school through high school using a simple rectangle. The toy, Think-a-Dot, is used by Higginson as a source of mathematical activities from elementary through university level. Olson outlines five methods, all involving simple aids, for representing a reflection in the plane.

This monograph ends with a bibliography compiled by *Bill Higginson*. Let us not forget that books are invaluable aids in teaching mathematics.

THANKS

The editor is very thankful for the excellent cooperation received from all contributors. In particular, thank you for taking the time to write quality papers. A word of thanks is also due Hilda Lindae and the staff at Barnett House for their fine work in the final production.

Hopefully, mathematics teachers will find in this monograph a number of worthwhile aids to assist in the teaching and learning process, which is what education is all about. May the ideas presented here trigger your imagination with respect to the mathematics which can be found in many common concrete objects not mentioned in this monograph.

The Editor