

Book Reviews

Louise Lafortune, Editor.
FEMMES ET MATHÉMATIQUE.
Montreal: Les éditions du remue-ménage, 1986.
\$13.05. pp. 260.

In June 1986 the Quebec section of the **International Organization of Women and Mathematics in Education (IOWME/MOIFEM)** held a conference in Montreal. This book contains the six papers presented at that time, plus the reports of two workshops, two annexes, biographical notes on the authors, and a list of resource materials and addresses of North American associations concerned with the place of women in mathematics and the sciences. This alone would be worth the price of the book even if the remainder was not stimulating and thought-provoking, which it is.

The unifying theme of this book is agreement by the authors that the barriers which prevent women from entering the fields which rely on or are dependent upon mathematics are not of a biological nature but rather are the results of the emotional, social, educational, and cultural pressures to which they are subjected from their earliest years.

The potpourri of papers – none of which can deal in depth with the topics raised within the confines of this book – gives a good indication of the major areas of concern in the area of women and mathematics at the present time. The book, written in French, is well presented. Anyone with even a small working knowledge of French should be able to comprehend it.

The first paper is by Leone Burton (professor at Avery Hill College, London, and International Convenor of IOWME) "Femmes et Mathématique: Y-a-t-il une intersection?" She criticizes the image of

mathematics as a "hard" or male subject. Rational, objective, abstract, are all words which conjure up a male-oriented subject in keeping with the way in which mathematics has developed and evolved. This, together with its recent grouping with the sciences and technology rather than with the arts and humanities, has resulted in the gender stereotyping of the discipline and has influenced girls away from it as a socially acceptable course of study early in their education.

From Plato's eternal truths to Gödel's incompleteness theorem via Einstein's relativity theory, mathematics has been considered an "uncovering" of already existent knowledge, passed on from teacher to pupil as a precious liquid is conserved by transference from a full to an empty vessel. Burton believes that it is this stress on received knowledge and acquired skills, with an emphasis on rightness and the authoritarian aura embedded in it, which has worked to the detriment of female students. A radical change must take place in classrooms, giving more attention to processes than to products, and emphasizing the possibilities of trial and error, problem solving, and investigation methods in seeking solutions and proofs before women feel that there is a place for them in this field. They, then, can take a full part in the development and study of mathematics.

Louise Lafortune (provincial co-ordinator of MOIFEM) traces the gender-oriented problems encountered by Mary Fairfax-Somerville, Sofya Kovalevskaya, and Emmy Noether in their lives as mathematicians between 1780 and 1935. She gives an insight into the (lack of) change in society's perception of women and mathematics over the centuries. The conclusions drawn are that some of the barriers to access to education have been removed but that there remain psychological and cultural obstacles in the way of women who wish to study mathematics. Statistical evidence supports this, showing that the number of females involved in the subject tends to diminish sharply towards the end of the secondary cycle in Canada and in many other national educational systems.

In "Les filles et les sciences," Roberta Mura, Renée Cloutier, and Meredith Kimball report on a study of the attitude differences between the sexes towards mathematics. They examine how a combination of the pupil's perception of the value of studying mathematics, a self-confidence in one's ability, and the expectations and pressures of society on the individual contribute towards the successful study of the subject. The authors conclude that it is difficult to draw conclusions about what interventions are needed to improve the present situation.

Céline Guilbert's paper also looks at social influences, especially of the family milieu, in the choice of career of a daughter. Using two groups of McGill University undergraduates in 1984, one enrolled in the traditional

caring professions associated with women – nursing, occupational and physiotherapy – while the other studied the less traditional disciplines of engineering, dentistry, and architecture, she confirmed the hypothesis that in the majority of cases it is the family which has the major input into the decision-making process.

A paper by Lesley Lee deals with her experience of working in an inner-city area of Montreal in an attempt to demystify mathematics for a group of mature women who are anxious about and lacking in confidence about mathematics. She provides an interesting insight into the problems experienced by the non-mathematician in daily life situations.

Lise Legault's paper is an exploratory study into the mathematical achievement of a Grade VI class and the psychological influences which seem to have a bearing on these standards. She stresses the importance of Piaget's work on number operations and reversibility in the mathematical schema of children at about the age of seven and its subsequent effect on their comprehension of mathematics.

In the two conference workshops, one group studied the part played by family, parents, educators, and the educational system and the active intervention programmes which must be put in place if the situation is to be changed. The other group discussed the intriguing but theoretical question as to what mathematics would look like if it had been defined and developed by women.

This is an interesting question which can never be completely resolved. Mathematics exists; it has been developed mainly by men. It is considered to be a male-defined and male-oriented subject both by the majority of those who study it and those who avoid it. Unless all knowledge as we now know it is totally destroyed, and then "re-developed" by women mathematicians or by a group equally balanced between the sexes, the shape and character of such a discipline must remain a cause of speculation. The one variable in the equation is the manner in which mathematics is generally regarded, and it is towards this end that energy, enthusiasm, and intervention programmes must be directed. This may be among the greatest challenges to present-day education if there is to be a future in which both women and mathematics are to receive maximum benefit from working together.

A major reservation about this book stems from a concern about much of the present research which tends to confirm that the family is the first and most enduring of the groups socializing girls against the study of mathematics. Combining societal-familial values with the items of folklore like those expressed by "Give me a child until it is seven and I will show

you the man (sic)" gives reason for concern. The earliest years of a child's life related to attitude development are as yet greatly neglected in research; at conferences where educators working in the fields of science and mathematics meet, the early years are at best underrepresented. Yet it is during these very years that lifelong attitudes are established. It is at this stage that the intervention programmes should be aimed. Anything later than kindergarten is open to the objection that one is shutting the stable door after the horse has bolted. The best the present intervention programmes can achieve is to give first aid to those whose attitudes are already set in the hope that those receiving the aid will intervene in the next generation.

This fact apart, the organizers of the MOIFEM conference are to be congratulated in setting it up and taking it one step beyond the usual run of such activities by publishing the proceedings. This enables those who did not attend to share in its many and varied contributions to the important study of *Femmes et Mathématique*.

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CONSENSUS AND DISSENT:

TEACHING ENGLISH PAST, PRESENT, AND FUTURE.

Urbana, IL: National Council of Teachers of English,

152 pp. \$10.00. NCTE members \$7.50.

The National Council of Teachers of English released its first yearbook on the occasion of its 75th anniversary. The seventeen contributors of *Consensus and Dissent: Teaching English Past, Present, and Future* identify the state of the teaching of English today while reviewing its development over recent decades and setting down its challenges for the future. Each in his own way stresses the themes of the yearbook: (1) a recognition of the professionalism of teachers, (2) a vision of the integrity of the discipline, and (3) the reconciliation of theory, research, and practise in the classroom.

First, the authors look at "Content: What We Teach" through a discussion of language, reading/literature, written composition, and oral communication. Through an historical and developmental approach, this section gives a balanced idea of how the content of the English classroom has expanded to reflect new knowledge and new needs.