

New Math Course Stresses Student Participation

By MARGARET I. McLEAN

Today, when Johnny asks Dad for help with his arithmetic, poor old Dad may find himself facing problems such as these: Find the set of all natural numbers less than 99 that are perfect squares; or, is the set of all proper fractions with denominators between 7 and 3 finite, infinite or null?

He then could be asked to: Name the property which justifies the following: $a(b+c) = ab+ac$. In due course, if he can stand the pace, Dad runs into algebra which looks like — oh well, let's not go any farther, I don't think the typographer could even set it up in print, and I certainly can't understand it!

But Dad is not the only one with troubles. The teacher, too, is finding it a challenge to keep up with the remodelling process at work in the revision of the mathematics programme from kindergarten to grade 13.

To meet the situation, a total of some 60 elementary teachers of Richmond Hill, Markham and Vaughan Townships, and secondary school teachers of the York Central District, attended weekly seminars for two

months this fall at Bayview Secondary School to learn about the new approach to teaching mathematics. At the seminars, under the guidance of Mr. W. W. Bates, mathematics consultant for the Toronto Board of Education, who addressed the elementary school teachers, and Mr. H. E. Totton, master teacher of mathematics for the York Central District High School Board, who led the discussion with the high school teachers, the teachers probed reasons for the changes, dug into the actual material in depth and argued out the pros and cons of ways to make the new ideas meaningful to the students.

The changing mathematics programme is the result of a study initiated in Ontario about five years ago under the joint auspices of the Ontario Teachers' Federation, the Ontario Mathematics Commission (of which Mr. Totton is a member) and the Ontario Department of Education. From this study, recommendations were made, experimental courses were outlined and exploratory classes set up in various communities.

The Richmond Hill Public School

Board has lost no time in making a start by placing some of its students on the new programme at different levels, commencing with grades 1 and 2. In the secondary schools, classes at grade 9 level are taking the new course and it is probable that the grade 10 classes will move into the new programme shortly after the new year, thus anticipating the new grade 11 course which will go into effect under provincial regulations in September, 1964.

What do students and teachers think of the change? I observed a grade 9 class being taught under the new method by Miss Stella Dallas at Bayview Secondary School recently. The class, in the general or academic course, was using the textbook "Mathematics 9" published by the Gage Publishing Company and of which Mr. Totton is a co-author. This book begins by reviewing the general arithmetical knowledge of the student in order to give him a proper introduction to Algebra and progresses to what appeared to me to be quite advanced Algebra, using a terminology and system of notation quite foreign to me, but which

is commonly used, I understand in physics and advanced mathematics.

Not only was the terminology used by the youngsters in the classroom new to me (they were working on the subtraction rule for integers) but the teacher's whole approach was new and refreshingly different.

"Turn to page 104 and discuss the two questions you haven't done yet," she began. When a student offered a solution to a question she queried, "All those who agree? Disagree?" A student who disagreed with the solution given was asked "Why do you disagree?"; a student who replied "Yes and no" was asked to think a little more and explain himself. While the teacher stood at the back of the classroom, various students were asked to go to the board and write down the solution to various questions. One student was then detailed to go over the answers, enquiring whether the rest of the class agreed or disagreed with them.

Here was a situation where the students were not merely sitting in their seats having information poured into their ears (but not necessarily their minds); but one in which the

students were actively participating, seeking information from not only their teacher but from each other — and quite obviously weighing the information carefully.

The result was an atmosphere of alert interest. Seated at the back of the classroom, I scrutinized each student closely and found not a single example of apathy or bored endurance, which I am sure I evidenced in every mathematics class I ever sat through.

In speaking to Miss Dallas briefly after the class, she stated that she enjoyed the new course and felt that the students did too. The class I had observed and which had so impressed me, was not the best one, achievement-wise, she said, but was certainly keen and co-operative.

Perhaps the comment to his teacher of a student repeating grade 9 is significant. He said, "I could take it easier if I were repeating the old course, but I find the new course much more interesting. These new ideas really make you think!"

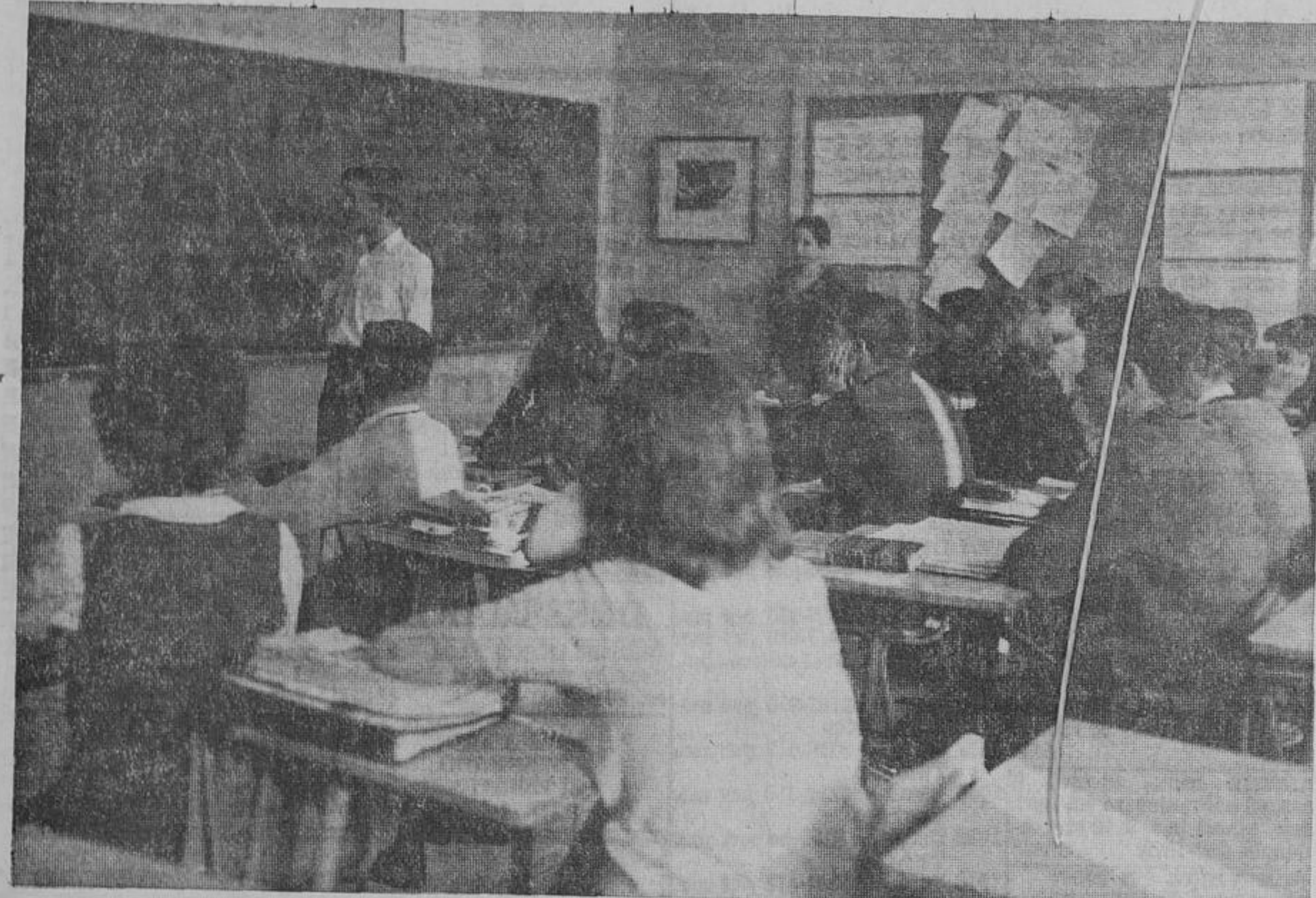
As part of the developing educational programme in York Central, teachers of mathematics, and indeed of all subjects, have begun classroom

intervising with their colleagues. Mrs. R. Stephens of Woodbridge High School, Mr. N. Jefferson of Thornhill Secondary School, Mr. Z. Zeleny of Richmond Hill High School and Mr. W. McPhedran of Bayview Secondary School are co-operating in the development of this in-service training in mathematics.

At the final seminar on December 11, plans were made to set up a liaison committee of teachers representing separate and public elementary schools in Richmond Hill, Vaughan and Markham Townships and Woodbridge and the secondary schools of York Central. Parents can rest assured that these educators intend to see that the best mathematics programme possible will steadily evolve in this growing community.

And here is a closing question which was disposed of in about thirty seconds by a grade 7 student being taught under the new system: Can you form a prime number by adding 3 to another prime number? Is it possible to repeat this using two other prime numbers?

But don't call me and ask for the answer — Mr. Totton didn't tell it to me!



Revision of the mathematics programme from kindergarten to grade 13 is giving a new look and a new interest to the teaching of mathematics. Above a grade 9 class at Bayview Secondary School gives rapt attention to Mike Patterson, fellow student, who is explaining a problem on the blackboard. Miss Stella Dallas who introduced the new concept of mathematics to this class in September is supervising from the side of the classroom. Student participation is encouraging. (Photo by Barbour)

Elgin Mills And Jefferson News

Happy Birthdays
Belated birthday greetings to Colleen Boyle on January 3, to Ella Anderson on the 6th to Bruce Dodson on the 7th and to Reggie Mitchell on the 8th. Many happy returns of the day to Mary Katherine Taylor on the 13th, to Lawrence Metkile on the 15th and to Catherine Miller on the 16th.

School News
Tom and Lil wish to thank very heartily their "Jefferson Family" for their beautiful Christmas parcels which are very much appreciated. A very special thanks goes to Mrs. J. A. Miller for the artistic way in which the gifts were wrapped — one a perfect replica of the school bus down to the last detail!

The first Monday in February the kindergarten children will be going to school in the afternoon instead of the morning and Mrs. Bryce will start at 12.50 picking up every pupil at their own home.

St. John's Church News
The Rev. Tony Capon, Canadian General Secretary of the Scripture Union will be the preacher at the morning prayer service on Sunday. The Rev. T. Robinson will be preaching at St. John's Church, Brome, Quebec next Sunday.

The congregation are so sorry that Mrs. Harden has resigned as organist and she will be missed very much. They are grateful to Mrs. Rawlings of King who has kindly agreed to help out until a successor can be appointed.

The afternoon branch of the women's auxiliary will be holding their January meeting at the parish hall on January 15 at 2 p.m.

Mrs. William Leach was at church on Sunday with her parents Mr. and Mrs. G. Beatty.

Neighbourhood Notes
Mr. and Mrs. Stanley Leno recently visited Mr. and Mrs. Donald Pow at their home in Port Dover. Mrs. Pow is the former Gail Kerfoot who taught at Jefferson a few years ago.

Mr. Clarence Espey, son of Mr. William Espey and the late Mrs. Espey, of Elgin Mills, is to be married to Miss Olwyn Gilder of Richmond Hill on January 18 at the Richmond Hill United Church.

Mr. and Mrs. James Locke of Orange, California, spent two weeks with Mr. and Mrs. Bruce Locke and family over the festive season. Mr. and Mrs. Jack Darker of Kenmore, Mr. and Mrs. A. Reid and Robin of Rochester and Mrs. Edna Martyn of Toronto were guests over Christmas.

Lynn and Grace Squire of Willowdale spent a few days with their grandmother, Mrs. Challenger, during the holidays. On New Year's day, Mr. and Mrs. Squire and children had dinner with Mrs. Challenger and Catherine.

A speedy recovery to Betty LeDez of Elgin Mills Road who returned on Saturday from the York Central Hospital after a tonsillectomy.

Welcome to our community to Mrs. William Moon and family who recently moved into Mrs. Jennie Burns' home on the Elgin Mills Road. Mrs. Moon is Mrs. Burns' daughter. Mr. Jim Williams spent Christmas week with his parents. Jim is working in Montreal now.

Last Friday when Colleen Boyle, daughter of Mr. and Mrs. L. Boyle, celebrated her fifth birthday, her grandparents, Mr. and Mrs. I. Meyers of Weston and her aunt, Miss Ruth Meyers were on hand to wish her many happy returns of the day.

Peter Ratchford spent a few days during the holidays in the York Central Hospital for observation.

Mr. and Mrs. Bob Reid, Susan and Hal, who are living in Fenelon Falls, visited Mr. and Mrs. E. J. Gamble last Saturday.

Mr. and Mrs. Ernie Ford and family spent Christmas with Mrs. Ford's sister, and family. Mr. and Mrs. Burns, in Scarborough. They celebrated New Year's with Mr. and Mrs. Smith

in Pefferlaw. Mr. and Mrs. Ross Kerwin and family, and Mr. and Mrs. Rod Kerwin and family had dinner on Saturday night with Ross' parents Mr. and Mrs. W. H. Kerwin in Toronto.

Mr. and Mrs. J. Meadows who have been residents of Leonard Avenue for the past year, moved on Saturday to Toronto. Congratulations to Mr. Maurice Patton on winning a gold brick recently on a lucky draw. Mr. Patton bought a W.Y.S. Club ticket in Orillia and when the draw was made he became the proud owner of a 35 oz. gold brick!!!

Mr. and Mrs. Hans Hallgren and family visited Terry's parents, Mr. and Mrs. Sundquist in Kipling over the holidays. One morning it was 40 below, brrr. They found lots of snow up north and enjoyed the skating on the bright crisp days.

Mr. and Mrs. N. Dibb entertained on Christmas Day when their guests included Mr. and Mrs. J. Graham of Acton, Mr. and Mrs. Hoffstetter and family of Kitchener and Mrs. Barbara Sparrow of Toronto. Mr. and Mrs. Dan Sweeney spent a few days with them over New Year's.

Linda Locke spent a few days

during the Christmas holidays with Mr. and Mrs. E. Lee, Downsview.

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