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The Exeter Congress MATHLAND Demonstration

The United States National Presentation includes a paper by Seymour Papert and a live demonstration to show how a new generation of computer-based laboratories might affect the way mathematics is learnt in elementary schools and beyond. To turn the demonstration into a real teaching experience, a working sample of the new kind of math-lab was set up three weeks ago in Exeter, and has been used by local boys and girls who seem delighted to give up summer vacation time for this kind of mathematics.

AN INVITATION

This sheet is about arrangements we have made to give participants in the Congress as much opportunity as possible to observe and talk to our young (ages 10-13) students, and to try their own hand at using the laboratory's mathematical super-toys. This will happen more effectively if we can keep the population density in the lab low and the level of prior knowledge high. So we ask visitors to sign up on forms available in the U.S. Presentation's Exhibition Area and suggest that they will find their visit more profitable if they can acquire some prior knowledge about the lab. Sources of knowledge are:

- (a) "The New Educational Technology" - a collection of reprints of papers by M. Minsky and S. Papert... available at our table in the U.S. Exhibition area.
- (b) A series of initiation talks (at times listed below) by Harold Abelson, Jeanne Bamberger, Margaret Minsky, Seymour Papert and Cynthia Solomon, (all from M.I.T.)
- (c) The current number of the International Journal of Maths Education in Science and Technology.

TO AVOID YOUR COMING AND FINDING IT'S NOT YOUR THING.....

We include here a brief indication of what you will see if you come while our students are at work.

You will see students writing programs at computer consoles. But very few of the programs would be merely manipulating numbers or text. More typical programs would be producing animated movies on a TV-tube screen, or making music emerge from a computer controlled sound generator or driving a mechanical turtle that moves about the room, circumnavigating obstacles with the help of information from its touch sensors.

PURE MATHS, APPLIED MATHS

From the perspective of the machine, we appear to have extended the scope and excitement of programming computers by making them control physical processes in the real world. We have made a mathland full of super-toys. Experience shows that even the most recalcitrant mathophobes of all ages find these super-toys irresistible and allow themselves to slip into sophisticated mathematical activities.

From the perspective of mathematics, we appear to have found ways to let the student learn mathematics as applied mathematics... in the sense that mathematical knowledge is acquired as an instrument of power, making it possible to do things of independent worth that one could not otherwise do.

MATHPOWER

A student has composed a piece of music by using the computer as an obedient group of players. Is this mathematics? He thought in terms of time relations, pitch relations, recurrence formulae, free and bound variables, composed functions... he set up formal definitions to represent his developing ideas... Is this music? The experience of creative composition is no less real for being beyond a student's ability to play an instrument! A student has written a program to give a mechanical turtle a "tropism"... Is this mathematics? Is this biology? He understood the force of a very powerful idea called "feedback" in some circles, "successive approximations" in others, and acquired a good example of the relation between global conditions and local ones. Perhaps he was guided towards programming the turtle to find its way by observing his own behaviour when he gropes along with his eyes closed... and thereby acquires a model for what it is to set up a formal model - something few kids ever had a chance to do.

SCHEDULES.

LAB VISITS (Thornlea, 10 minutes walk, 2 minutes by car-shuttle)

	<u>To observe students</u>	<u>To use Lab</u>
Wed	9.30 - 12.30	} 2.30 - 5.30 8.00 - 10.00
Thurs	9.30 - 12.30	
Fri	9.00 - 10.30	
Sat	-----	9.00 - 11.00

SIGN-UP SHEETS IN U.S. Exhibition Area, Queen's Building

CAR-SHUTTLE TO THORNLEA FROM QUEEN'S

Initiation Sessions

Queen's Building, Room G, First Floor.

Wed:	2.15 - 3.00	(General Survey)
	3.00 - 3.30	(Turtle Geometry)
	8.00 - 9.00	(Survey and discussion)
Thurs:	2.15 - 2.45	(General Survey)
	2.45 - 3.30	(Computer Music)

Other times if requested.

(Each of the five sessions mentioned above is self-contained)