The electronic sackbut Music for the space age



Ottawa composer Peter Jermyn demonstrates the "one-note-attime" instrument which uses the tamiliar piano or organ keyboard. Close up of interior of Sackbut. Vertical pressure on a key controls pitch. A glide strip on the keyboard enables the player to glide from one note to another. The free hand operates several controls which vary the wave forms, timbre, attack and decay. Another control gives an effect similar to that of a trumpeter moving a mute in front of his instrument. Twenty-four controls can break up and bend notes, creating repetitive patterns into which other notes fit, producing the effect of more than one note playing at the same time.

Le compositeur Peter Jermyn, d'Ottawa, fait une démonstration de cet instrument, donnant "une note à la fois", à l'aide d'un clavier semblable à celui d'un piano ou d'un orgue. Ci-contre, vue intérieure de la saqueboute. L'intensité du son est fonction de la pression que l'on exerce sur les touches; si l'on exerce un effort transversal on peut contrôler la fréquence. Une glissière permet de passer d'une note à l'autre. La main libre peut, à l'aide des autres commandes, faire varier la forme de l'onde, le timbre, la montée ou la décroissance. Une commande permet d'imiter une trompette en sourdine. Vingt-quatre touches permettent de répéter des ensembles de notes tout en acceptant d'autres notes ce qui donne l'impression qu'on joue plusieurs notes en même temps.

It's the only one of its kind. It slurs, it slides; it's classical, jazz and rock; it can sound like an ancient reed instrument, a mediaeval stringed instrument, or a space ship travelling through the atmosphere. It's called the Sackbut and it's destroying the limitations of all previous keyboard instruments.

Invented by Dr. Hugh LeCaine of the National Research Council of Canada's Radio and Electrical Engineering Division, this electronic monophonic instrument places continuity of pitch, intensity and tone color within fingertip reach on a keyboard the size of a small electric organ.

"It's a superb instrument," says Dave Wilson, President and founder of Dayrand Limited, Montreal, the company which is manufacturing the sackbut under licence from Canadian Patents and Development Limited, a subsidiary of NRC which patents government-owned inventions and licenses them to industry. "We're naturally excited about it because it's Canadian and we're Canadian, but we're aiming it at the world market."

Electronic experiments began about the turn of the century. Previously, music making was limited by the

mechanical qualities of instruments and the physical capabilities of the performers. But the first real breakthrough occurred in France in 1948 with the idea that sounds could be treated as sound objects, or pieces of sound recorded on tape. Once recorded, these pieces could then be subjected to all kinds of treatment — speeded up, played backwards or cut in half. The idea caught on very quickly and composers all over the world were trying it. Music probably never will be the same again. New sounds and new notations have influenced modern orchestral scoring as well as expanding the field of electronic music.

Dr. LeCaine began work privately on the Sackbut in 1945. Nine years later, NRC entered the picture, encouraging the project as a form of communication between Canadian artists and scientists.

"My primary concern," says the musician-physicist, "was making an electronic instrument that was musically expressive. I felt that all previous electronic instruments were cold and mechanical. I thought that we must have some means of controlling the sound in an artistic way."

Dr. LeCaine has achieved just that. The Sackbut is