

# News of the arts

## Portrait of a scientist/musician

Father of electronic music in Canada; scientist, composer, inventor, painter; add to this teacher, lecturer, consultant, photographer, horticulturist and, last but not least, humanist — and a portrait of the late shy Hugh LeCaine emerges.

"He epitomized what research is all about," says Horace Aubrey of the National Research Council's Division of Electrical Engineering, where Dr. LeCaine spent his entire working life. Joining the Council in 1940, just when radar work for the war effort was getting under way, he started work on the first of his many inventions. "With the use of tin cans and a couple of potentiometers — the most hairy-looking thing you ever saw," says Aubrey, "LeCaine designed the first automatic pattern recorder, an instrument used to measure the directions in which an antenna propagates a radio signal." For years, the Council had the only one of its kind in the world.

At the end of the war, Canadian National used receiving equipment designed by LeCaine to plan radio links across the country. In the field of nuclear physics, he collaborated in building the forerunner of what is today the Van de Graaff nuclear accelerator used to generate a stream of high-speed sub-atomic particles. Such accelerators are used in medicine, chemistry and atomic energy as "super" microscopes or probes.

His interests vascillated between music and physics until the former became all consuming.

With his invention of the electronic Sackbut in 1945, Hugh LeCaine opened the era of electronic music. "My primary concern," Hugh once said, "was making an electronic instrument that was musically expressive." The problem, he felt, lay in the cold, mechanical sounds of available electronic instruments. LeCaine's answer was the construction of an extremely sensitive instrument which, unlike other keyboard instruments, could slur and slide from note to note, producing variable sounds, with an additional capacity for making constant tone, colour and pitch adjustments.

### Genius appreciated

LeCaine also invented a multitrack tape recorder — a device primarily for replaying and retaping sounds. With it, 16 tapes can be played at the same time, and by

mixing them or combining certain sections, musical compositions can be created. "There are other tape devices," says colleague Dave Rocheleau, "but none has the flexibility of this one."

"Hugh and I discussed the kinds of head to be used in tape drives," continues Horace Aubrey. "At that time, no one knew much about these drives and unlike other tape recorders with one head, the multitrack had six! The head had to be strong enough to hold the tapes as they went through, but not of sufficient load to slow them down. For months, I worked on it and at last came up with something I thought was absolutely superb. I attached it to the multitrack, and left for the day. Well, you should have seen it next morning; Hugh had been in during the night (he preferred to work during these quiet hours) and taken a hacksaw to it! I was almost in tears — and then I saw the note: 'as soon as I looked at it, I realized you could improve it Horace, if you did this, and this, and this!' "Most people would have been frustrated," concludes Aubrey, "but we appreciated the genius of the man."

In demand as a lecturer, LeCaine was known to spend hundreds of hours preparing for one 30-minute talk. Although he had dozens of compositions to his credit, many of which have been heard on radio, television and in concerts, perhaps the best known is *Dripsody*, written in 1955. "The whole composition," wrote a

reviewer in *High Fidelity Magazine*, "is based upon the single sound produced by the fall of a drop of water. This is developed in all manner of ways — plain and fancy scales, played with a neat, pearly perfection any piano virtuoso might envy; bell tones of several kinds; long sustained pure tones; and mixtures of these several elements. The work is particularly useful as an introduction for the lay listener."

As a leading authority and one of the world's foremost designers of electronic musical instruments, Hugh LeCaine was called upon for advice in the setting up of Canada's first electronic music studios — at the University of Toronto (from which he received an honorary LL.D. in 1973) and at McGill University (D. Mus. 1971) — and at the Hebrew University in Jerusalem. His alma mater, Queen's University, awarded him an honorary LL.D. in 1974.

Hugh LeCaine, who died last year at the age of 63, was honoured posthumously at the opening of the Centre Georges Pompidou in Paris, when tapes, photographs and scores depicting his work formed part of the audio-visual exhibition on the history of electronic music.

And, at Queen's University, Kingston, the Harrison-LeCaine Hall stands in memory of the scientist-musician who introduced electronic music to Canada.

*The foregoing article, by Joan Powers Rickerd, has been reprinted from Science Dimension, Vol. 9, No. 6, 1977.*



Dr. Hugh LeCaine combines electronic theory with a "command performance" for the Duke of Edinburgh (right) on his visit to NRC in 1954.