**Hugh Le Caine**

Gayle Young

Hugh Le Caine (1914-1977) was a Canadian scientist and inventor of electronic musical instruments. He began by building instruments for live performance, notably a polyphonic touch-sensitive organ which was in many respects a precursor of the polyphonic synthesizer, and a monophonic keyboard, which he called the Sackbut, with which one could control pitch, volume and tone quality in live performance. In this instrument he made use of voltage control, and it has therefore been describes as an early voltage-controlled synthesizer. Both these instruments were initially designed in Le Caine’s home studio, as Le Caine was employed as a physicist at the National Research Council (NRC) in Ottawa, developing micro-wave radio transmission and contributing ot exploration in nuclear physics.

In 1954 he as invited to work full time at the NRC on the development of musical instruments. It was hoped that a commercial company would manufacture the instruments he designed, and the project began well when the Baldwin Organ Company bought the patent on the Touch-Sensitive Organ. At the NRC lab, with technical and office support, his output increased and he developed several other instruments including the Multi-track, a tape playback machine where the speed of up to six recordings could be controlled though a keyboard very similar to the one used in the Sackbut. In 1955 he completed the musique concrête piece *Dripsody* using this instrument to alter the sound of a single drop of water. In other instruments he used components such as touch-sensitive keys to control a variety of characteristics of the sound.

By 1959 the intentions of the NRC lab had shifted towards the creation of new instruments that could be used in electronic music studios. A studio was opened at the University of Toronto in 1959, which was the second one in North America, the first being at Columbia-Princeton in New York.

Le Caine’s lab built over twenty-two new instruments over the next twenty years, and almost single-handedly equipped electronic music studios at University of Toronto and another at McGill University in Montreal, opened in 1964.

Perhaps the most important aspect of Le Caine’s designs for his instruments was the “playability” that he took care to build into them. His ideal was to enable nuance-filled expressive performance. Touch sensitivity was an essential ingredient in this, and was used in keyboards, mixers, and other components, applied mechanically, electronically, and through light sensitivity. Le Caine’s designs were so advanced in this respect that some of the features that he developed found their way into commercial designs only in the late 1980s.

In the studies on this CD we see the same imagination and originality that is evident in the instruments themselves. This recording illustrates the wide range of techniques which Le Caine pioneered and shows something of his personality and sense of humour. Consider his comment from 1966: "What a composer of electronic music needs most is not an understanding of the apparatus, but a new understanding of sound."

NOTES

Young, Gayle, *Sackbut blues / Blues pour Saqueboutte*, Ottawa, Canada Museum of Science and Technology, YEAR.

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