

# Electronic Piano

By JOHN SOUTH

Through an open window of the big house on the hilltop just outside Vancouver flows beautiful piano music that might have come from another world, for its notes are purer than any that people in the vicinity have ever before heard from a piano.

And if they look inside the open window, they will see what appears to be a ghostly figure about the music, for there is no one sitting at the piano. It is playing by itself!

That scene is not yet an actuality, but it is not far from realization. It is one of several forms of a new type of recording now under study for the marketing of a revolutionary new electronic piano developed at a research centre which is unique in Canada.

This is Electronic Laboratories of Canada Ltd., located on the 740-foot crest of Capitol Hill in a suburb of Vancouver — an ideal spot for research in radar, television and other communications and electronics work.

The laboratory, established a year and a half ago, now does virtually all the research work for the well-known American firm of which it is a subsidiary — Electronic Laboratories Inc. of Indianapolis. W. W. Garstang, well-known in the electronics field in the United States, is president of both the Indianapolis and Vancouver firms.

The new electronic piano, which the Vancouver lab's staff says is the world's first, embodies a magnetic principle not heretofore used in a musical instrument. In place of the conventional wire strings, the new piano has tuned bars of magnetized steel which, when struck, set up a moving magnetic field that creates pure tones, minus the harmonics that are difficult to eliminate in stringed pianos.

The new electronic instrument will never need to be tuned. As originally developed, it is small, compact piano which can be moved easily from one room to another by one person. Equipped with a radio-type volume control and speaker, it may sell for as little as \$150.

In addition to the new electronic piano, the Vancouver research centre to date has developed a radical new noise-elimination system for radio transmission in which unwanted static is used to boost the signal being transmitted; a new wind-driven electric generator for farms which will function in breezes as mild as 4 or 5 m.p.h.; a new-type table radio embodying both frequency modulation and amplitude modulation; plus other devices.

The laboratory has not yet done any research in television, but 39-year-old Don L. Hings of Vancouver, in charge of the research centre, told The Standard following his return from a three-months' trip to Indianapolis that he and his staff expect to be working in this field in the next year or so.

## Key Man

The story behind the development of the electronic piano and the setting up of the research centre, which is one of few in the Dominion, centres in large measure around Hings.

Largely a self-taught expert, he never attended university and did not become a professional engineer until 1938. His interest in the vast field of communications began when he became a radio "ham" at the age of 14, and the skill and ingenuity he has since developed are remarkable.

Most of the staff of seven expert young researchers who work with Hings at his Vancouver laboratory were engaged in wartime research with the Canadian Signal Corps and National Research Council. Hings himself was civilian head of Signal Corps Research in Ottawa for four years.

When he set up his own laboratory after V-J Day and made the necessary arrangements with the Indianapolis concern, he collected his staff of seven, "sold" them on the idea of working with him in his "favorite" city, Vancouver. The seven staffers, each an expert in a particular line, hail from scattered parts of Canada. But they packed up, bag and baggage, with their families and moved to Vancouver's Capitol Hill.

As a Boy Scout, Don Hings had camped on top of Capitol Hill. He remembered the spot, decided it would be the ideal place to establish his lab.

Here, with a splendid view of practically all Vancouver, he has helped his staff to build homes for themselves and their families, and

here the researchers live as a little community.

An immediate new development for the lab, Hings says, is to be the establishment of a 2,500-mile short-wave "proving ground" between Vancouver and the East. A big transmission set is to be built at the Capitol Hill lab, and this will be beamed on eastern stations, which in turn will be beamed on it.

The new "proving ground" will be used for research designed to improve transmission in various types of communication, including teleprinter, radio pictures or maps, airlines communication, etc. A highlight of the study will be an effort to eliminate fading in transmission. Like television, long-range research in radar is also on the future agenda of the Vancouver experts.

The electronic piano has now reached the "finalization" stage and a study is being made at Indianapolis to see how it will be presented for sale. Although it has been developed basically as a piano, it may be marketed also as a combination piano-organ and as an organ. It may also be presented in two sizes — a small, "table"-type model and a large standing model.

Also under study is the matter of marketing the instrument in a form so that music can be recorded on it for subsequent reproduction. This would enable a pianist to play a number of tunes on the instrument, then replay them by simply pressing buttons. One use of such recording would be to show music students where they had made certain mistakes in their playing.

The original "pilot" model of the electronic piano developed at the Vancouver laboratory has a four-octave keyboard, built on a three-foot-long, two-foot-wide, one-foot-deep box which weighs only 35 pounds, and can be set on a table. The amplifier and speaker are encased in another box, which can be placed elsewhere in a room.

## Moving Magnetic Field

The piano's tuned bars of magnetized steel are about as thick as a pencil, and encased solidly in a heavy casting. A heavily-padded piano mallet strikes each bar, but this creates no mechanical sound. Instead, the slight vibration of the bar is sufficient to set up a moving magnetic field which cuts across a coil of wire. This sets up an electric current in the coil, which when amplified reproduces as a tone through the loudspeaker.

"It's really a piano with the pure qualities of a harp," Hings explains. "In the conventional piano, there are a lot of harmonics on the lower notes because the base-board is unable to carry them. But in the electronic piano, the low notes are just as pure as the high notes."

The man responsible for development work on the piano model at the Vancouver lab is Al Hall, a member of Hings' staff. Hall, formerly of Winnipeg, got the MBE for his wartime mechanical work with the National Research Council. Today, in charge of the Vancouver lab's machine shop, he is the centre's model-making expert.

## Piano Ready Soon

From present indications, the electronic piano should be on the market in a matter of months, says Hings.

The laboratory's newly-developed, noise-elimination system for radio has recently been under demonstration in the East, he adds. This actually is an electronic "gate" system which utilizes static to pass on the radio signal, however weak it may be. It is a radical departure from systems heretofore developed for suppression of radio noise.

The firm was interested in electronic toys, but this was "a transition endeavor, between war and peace," and they have now withdrawn from the toy field altogether.

Licensed to handle radar equipment, the laboratory also services marine-type radar sets on ships operating out of Vancouver. Brian Stevenson of Vancouver, formerly with the National Research Council, is the chief radar expert at the Capitol Hill lab.

Of television, Hings says, "It's slow in coming, and it'll probably be a year anyway, before we enter that field."



"PILOT" MODEL of a new type of electronics piano developed in Vancouver is tested by Eileen Hings, 11-year-old daughter of one of the inventors.



BRIAN STEVENSON, formerly with the National Research Council at Ottawa, is a radar expert at the Vancouver Electronic Laboratories.



DON L. HINGS, 39, is in charge of the Vancouver Electronic Laboratories, where new strides in electronics are being made.