Instrumentation development and sales program

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III. INSTRUMENTATION DEVELOPMENT AND SALES PROGRAM

As a result of an increasing number of inquiries from various institutions that have expressed an interest in the purchase of instrumentation developed at the Speech Transmission Laboratory we have been looking for suitable manufacturers in Sweden. We have good hopes that we in a short time will be able to announce a manufacturer and a sales program. It would facilitate our planning if you completed and sent back the enclosed circular form in which we list the present items of our planned program.

This program is as follows:

A. Synthesis outfit

(1) Portable OVE I miniaturized synthesizer with four continuously tunable formants, correction for higher poles, and standard source shaping. Noise source optional.

(2) Function generator for item (1) enabling a manual $F_1$, $F_2$, $F_0$ and source on-off control.

(3) Items (1) and (2) go into a small size bag.

(4) Modular units for digitally controlled synthesizers comprising formant circuits and binary coded attenuators. These can be used instead of the continuously controlled units in item (1) or as building blocks for any digital controlled system you wish to develop.

(5) Anti-resonance circuits.

(6) Real pole and zero circuits.

(7) Voice source.

(8) Noise source.

B. Analysis outfit

(1) Miniaturized outfit for speech analysis comprising a number of modules such as

(a) power supply and 19" module cabinet
(b) amplifier/attenuator, 10 dB steps from -40 to +60 dB
(c) full-wave linear rectifier
(d) step-wise variable low-pass filters. Third order active filters
(e) same but high-pass
(f) same but band-pass
(g) passive filters of greater rate of attenuation
(h) clipping stage with frequency to voltage converter
(i) duplex oscillogram unit with high-frequency pre-emphasis amplifier
(j) averaging voltmeter
(k) loudspeaker amplifier, 3W with self-contained power supply.
C. Aids for the deaf

A series of instruments intended as aids for speech correction with hard of hearing subjects has been developed. The instruments listed below have been used in preliminary tests and even if more extended experiments will result in modifications the present versions seem to be adequate enough to warrant a limited production.

(1) **Speech spectrum display.** The instrument shows an instantaneous amplitude-frequency spectrum of the speech sounds. The frequency scale is logarithmic, 200-7000 c/s, and divided in twenty bands. The amplitude scale is quantized in ten 3-dB steps. The instrument is equipped with a memory.

(2) **Intonation display.** The larynx vibration frequency is displayed on a cathode-ray oscilloscope with repetitive time-base and long persistence screen. The instrument uses a contact microphone.

(3) **S-indicator.** A meter gives a continuous reading, low for low-frequency fricatives and high for high-frequency fricatives. For a good s-sound the reading must be above a certain scale value.

(4) **Nasalization indicator.** By means of a contact microphone a signal is picked up that is proportional to the degree of nasalization. The signal is heard in headphones and displayed on a meter or an oscilloscope.

(5) **Rhythm display.** The intensity of the speech sounds are displayed on an oscilloscope. Voiced sounds deflect the spots upwards and unvoiced sounds downwards.