

TIME COMPRESSOR

Developed by the University of Illinois, this new device has almost unlimited possibilities in diversified fields.

THE University of Illinois has developed and demonstrated a "time compressor" which speeds up words or music without changing tone or ease of understanding. An hour's program material can easily be compressed into 45 minutes' time.

Inventors of the new unit are Prof. Grant Fairbanks, director of the University's Speech Research Laboratory; Dean W. I. Everitt of the College of Engineering; and R. P. Jaeger, formerly at Illinois, now with a commercial laboratory.

The development is based on the fact that the ear is faster than the mouth. Words can be understood more rapidly than they can be spoken. Attempts to speed up speech causes the speaker to slur or trip over his words. The new invention overcomes this by recording speech in condensed form without changing the pitch, as happens when an ordinary recording is speeded up.

The machine incorporates a mechanism consisting of a continuous loop of recording tape and a set of four pickup heads in a revolving drum around which the tape makes a right-angle turn.

The pickups are arranged like the spokes of a wheel. Only one pickup touches the tape at a time, but just as it moves off, the next comes into contact with the tape. As far as the sound output is concerned, the playback is continuous, but actually that part of the original sound which was between the "spokes," and untouched by them, is left out.

The tape and drum run at different speeds and these can be varied independently to obtain any degree of compression desired.

Alternately, the drum can revolve the other way so that each pickup overlaps somewhat on sound the previous head covered. This repeats the bit of sound and thus the machine becomes a "time expander."

The output of the machine is recorded at a rate adjusted so that the result has the true pitch of the original.

The machine has another important potentiality. Instead of compressing time, it can be used to compress the tones of a voice, and then expand them back to original understandability. This is an almost instantaneous process which may permit a telephone or radio circuit to carry many conversations where one is now carried.

The problem of "bandwidth reduction" has interested engineers for a long time. They have found various

ways of making circuits do multiple duty, and now the compressor may offer another possibility of carrying more messages without building additional transmission facilities.

The present "time compressor" is still a laboratory model in the University's Speech Research Laboratory, although it is the fourth model. Soon such machines will be available for radio stations and recording studios.

In addition to the more obvious applications for this device, it has already been suggested that the device be used for recording talking books for the blind to present the maximum material in the minimum amount of time; recording music for unbelievable rapidity and precision; for recording conferences, conversations, airport control directions, etc. on less tape so that they can be reviewed in less time; for a faster presentation of facts in broadcasts beamed to countries behind the Iron Curtain with less danger to listeners; faster reports over long distance telephone or radio; new production opportunities for motion pictures and television; new techniques for teaching; and new approaches to study of speech, music, and languages.

According to reports, compressions of 10 per-cent or even 20 per-cent pass unnoticed. Up to 50 per-cent does not destroy understanding of speech. Music put through the machine has its tempo stepped up, but pitch and clarity are unchanged.

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Prof. Fairbanks and Dean Everitt, two of the "time compressor" inventors, look over the laboratory model of unit at U. of Ill.

