TABLE 1
SOMATIC DEVELOPMENT IN SUCCESSIVE GENERATIONS OF THYMECTOMIZED RATS SHOWING RANGE AND AVERAGE VALUES

	Teeth erupted	Eyes opened	Testes descended	Vagina opened
Controls	7–9 (8.2)	13–16 (15)	25–33 (28.6)	41–50 (44.5)
F_1	8–10 (9.3)	13–18 (15.9)	24–38 (30.4)	40–53 (45.1)
F_2	8–10 (9.5)	15–18 (16.2)	24–36 (30.7)	42–61 (46)
F_3	8–10 (9.6)	15–18 (16.3)	26–33 (30.3)	41–52 (46.5)
F_4	9–10 (9.3)	16–19 (17)	30–33 (31)	44–48 (46)

is no marked retardation, it is seen that these somatic changes occurred at the outer limits of the normal or just beyond it.

From the foregoing data, based on a study of 555 rats in four successive generations of offspring of thymectomized parents, it is evident that thymectomy has resulted in retardation in the rate of growth and in a slight delay in the rate of development.

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GROWTH STIMULATING PROPERTIES OF GRASS JUICE

IN earlier studies on the nutritive value of milk produced at different seasons of the year[1,2] it was found that milk produced on summer pasture had a higher nutritive value, as measured by growth of young rats, than milk produced under winter-feeding conditions. At that time we made this statement, "The significance of these studies lies in the relation of fresh plant tissue as contrasted with field dried material to subtle changes in the milk secreted." More recent and direct studies have confirmed this point of view. Young rats, fed a mineralized milk produced on winter rations and giving an average daily growth of the male of about 2 grams, grew at the rate of 4+ grams per day when the daily allowance of the whole winter milk was supplemented with three cc of fresh, clear grass juice (principally Kentucky blue grass). See the chart for this record.

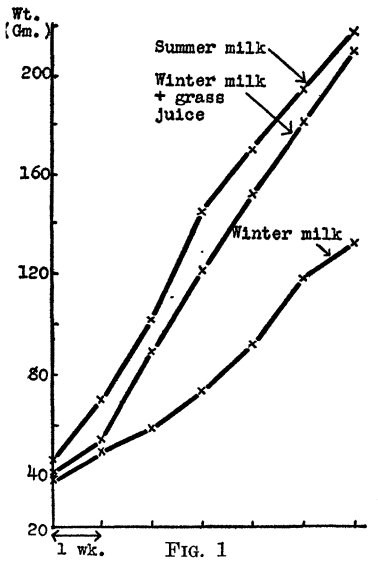

FIG. 1

Studies on the characterization of the factor or factors responsible for this growth response are now in progress. It is evident that in this fresh tissue there are important water-soluble substances which contribute to the difference between the nutritive value of summer and winter milks, and are directly stimulating to growth when added to a winter milk.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A DEVICE FOR COPYING SINGLE SOUNDS FROM A PHONOGRAPH RECORD OF SPEECH OR MUSIC

INVESTIGATORS in the psychophysics of speech and music frequently find it desirable to reproduce single speech sounds or individual musical tones in isolation from the performances in which they occur. The present paper describes an electrical and mechanical technique, developed in the Psychological Laboratories of the State University of Iowa, which makes it possible to copy from a phonograph record single sounds of short duration.

The essentials of the apparatus are: (1) Phonograph recording equipment, including an amplifier and two constant speed, 78 r.p.m. turntables, one for cutting and the other for playback; (2) a photoelectric relay; (3) a 32 c.p. light source; and (4) two shields of thin galvanized iron. The shields are shaped as in A, Fig. 1, and are designed to be placed upon the playback turntable, their inner diameters being equal to that of the latter. In position, as shown in side view at B, Fig. 1, they form a one-inch projection beyond the rim of the turntable, C. The projection is capable of being varied in length from 180° to 360° of the circumference of the turntable. As the turntable revolves, the projection interrupts periodically the light from a 32 c.p. lamp, D, placed beneath the projection. When not interrupted, light

[1] C. A. Elvehjem, E. B. Hart, H. C. Jackson and K. G. Weckel, *Jour. Dairy Science*, 17: 763, 1934.
[2] F. E. Stirn, C. A. Elvehjem and E. B. Hart, *Jour. Dairy Science*, 18: 333, 1935.

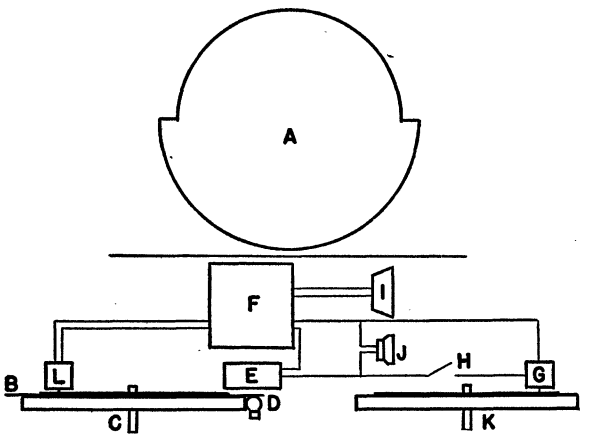

FIG. 1. Schematic of apparatus for copying isolated sounds from a phonograph record. A, shape of shield; B, projecting portion of shield; C, playback turntable; D, 32 c.p. lamp; E, photoelectric relay; F, amplifier; G, cutting-head; H, switch; I, loud speaker; J, head-phones; K, cutter turntable; L, electric pick-up.

from this lamp falls upon the cell of the photoelectric relay, E. The relay is put across one side of the line conducting the output of the amplifier, F, to the cutting-head, G, and is adjusted to close the circuit when the cell is activated. A switch, H, also breaks the circuit.

The original phonograph record is placed on top of the shields, played into the amplifier and heard in its entirety in the loud speaker, I, while the line from the relay to the cutter is tapped by a pair of head-phones, J. The shields are adjusted until the sound selected for recording is heard in the head-phones as one of the intermittent tones admitted by the relay. This selected portion is recorded in isolation by closing the switch, H, during the interval which immediately precedes the sound, and by opening it as soon as the sound has been cut.

With the present apparatus sounds of duration less than .39 sec. are recorded conveniently. Sounds of longer duration may be recorded with the same arrangement by decreasing the length of the projecting portion of the shields or by mounting the shields, relay and light upon a slower speed turntable than that used for playing the original record. In psychophysical work which does not demand the presentation of stimuli in rapid succession, the device may be adapted to any electric phonograph and used without recording the sounds.

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DEMONSTRATION APPARATUS FOR SMALL INSECTS

THE apparatus here described has proved useful for the public exhibition of small biological specimens. A six-foot model was in use as part of the recent Vermont Conservation Commission's exhibit at the Sportsman's Show in Burlington and attracted a great deal of interest. The apparatus in this instance was used to display specimens of insects which form an important part of the food of the brook trout. By the use of ten lenses of several sizes fifteen different forms were shown.

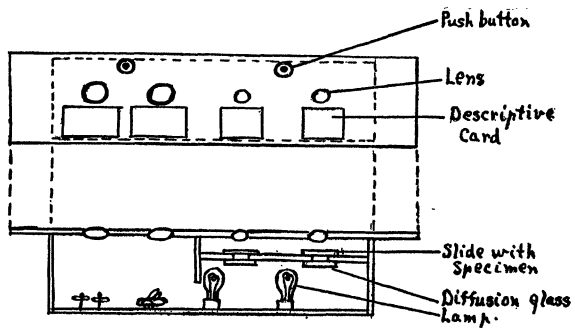

FIG. 1. Top and side views of demonstration apparatus.

The apparatus consists primarily of a box into the upper lid of which the lenses are fastened; the illumination is furnished by fifteen-watt electric lamps which can be turned on by the observer by pushing a button mounted on the lid by the lens. Large objects, such as adult insects, are illuminated with indirect light, and a reading glass lens of about a six-inch focal length is used to magnify them. Small objects, such as larvae, which one would ordinarily examine under a dissecting microscope, are mounted on a baffle board close to a dissecting lens. Light passes up through a small hole in the baffle board. It was found that best results were obtained when the opening on the lower side of the board was covered by a piece of opal glass which helps to diffuse the light without cutting down its intensity too greatly. The push button control of the lights eliminates the danger of overheating and the consequent destruction of balsam preparations. Descriptive labels placed beside the lenses help to convey the story to the layman observer.

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BOOKS RECEIVED

CROWTHER, J. G. *Soviet Science.* Pp. x + 342. 15 plates. Dutton. $4.00.

KELWAY, PHYLLIS. *Hedge Folk in Twilight.* (Field mice, dormice, shrews, hedgehogs, owls). Pp. xi + 178. 21 plates. Longmans, Green. $2.50.

SOUTHWELL, R. V. *An Introduction to the Theory of Elasticity; For Engineers and Physicists.* Pp. viii + 509. 120 figures. 3 plates. Oxford University Press. $10.00.

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