

feller Institute for Medical Research. Each culture was divided into two halves, one of which was treated with radium in various degrees of intensity, while the other part was kept untreated as a check or "control." The type of tissue chosen was that most early resembling the fibroid or cancerous growths that have replaced healthy bone in the radium-sick patients.

In no case was it found that a radioactive solution, even the weakest, was stimulative of extra growth. Any concentration of radium strong enough to have any effect at all had a slowing-down effect, and above a certain minimum strength they eventually killed the tissues exposed to them.

Dr. Flinn was therefore brought to the conclusion that the replacement of radium-destroyed bone by malignant fibroid tissue was due first to the destruction of the bone-repairing cells, which permitted the decay of the bone and its subsequent failure to re-form even when extra calcium is medicinally administered, followed by the abnormal tissue growth, and frequently by bacterial infection, as the result of the constant irritation which is known to occur at sites of fracture and of greatest bone stress.

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PHYSICS

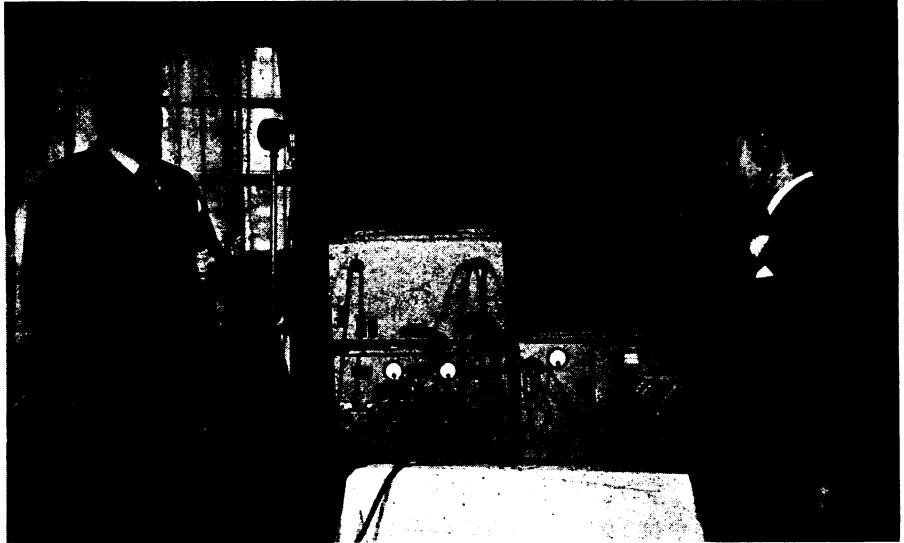
New Apparatus Makes Tests on the Singing Voice

EVALUATION of a singer's voice is no longer dependent on widely variable opinion which the human ear helps to form. Tests by the scientists of the Electrical Research Products, of New York, with special, newly-devised instruments, make it possible to measure acoustically the qualities of a given singing voice. Any voice can be compared with an ideal voice represented by curves already prepared. The ideal voice has the power of Caruso and the other special attributes which all good singers possess in part but none completely.

S. K. Wolf, D. Stanley and W. J. Sette, of the New York firm of electrical consulting engineers, describe (*Journal of the Acoustical Society of America*, April, 1935) how they used automatic high speed level recorders, crystal harmonic analysers and an acoustical spectrometer to study voices.

Over one hundred singing voices were studied in the tests. Of them all, that of Lauritz Melchior, tenor of the Metropolitan Opera Company, was the nearest approach to the "ideal." His voice fitted almost perfectly the ideal reference curves already established.

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THE SHAPE OF A VOICE

Lauritz Melchior, Metropolitan opera star, submits his voice to the consideration of a wholly mechanical critic—and comes out triumphant.

ECOLOGY

Lake Turns to Desert When Unwisely Drained

DESTRUCTION'S course, from lake to sandy desert in the middle of Wisconsin, has been traced by Prof. Norman C. Fassett of the University of Wisconsin.

The region lies in what is known as the "driftless area," a part of the Midwest that was not covered with ice during the Glacial Age, overlapping the adjoining corners of the states of Wisconsin, Minnesota, Iowa and Illinois. It is called "driftless" because of the absence of the "drift" soil produced by the glaciers everywhere else in that part of the country.

Part of the driftless region was occupied during the Ice Age by a great shallow lake, which geologists called Lake Wisconsin, lying in what is now central Wisconsin. Prof. Fassett relates its decline and fall in a single sentence: "The bed of this lake has largely developed into bog; the bogs were drained some 25 years ago, the dry peat burned, and the ashes blew away, leaving a sandy desert."

Into this costly monument to man's bad judgment in land-and-water management, trees and lesser plants have moved. The trees consist principally of jack pine, scrub oak and quaking aspen. The smaller plants have a decided flavor of the Southwest about them: bluestem

grass, prairie clover, false indigo and leadplant. They seem to be making themselves quite at home on the sand.

The driftless area generally has good cornland on the plateau-like tops of its uplands and on the flat bottoms of its ravine-like valleys. The slopes are too steep for cultivation. According to exposure, they bear heavy stands of timber or are covered with prairie grasses. Both timbered and grassy slopes are for the most part over-pastured, so that the natural slow process of erosion has been destructively speeded up.

To the student of nature, the great interest of the driftless area lies in its character as a meeting-place of diverse types of vegetation. Not only are there prairie plants on the exposed slopes, but in the more sheltered parts there are species, such as the Arctic primrose, that are not to be found anywhere else this side of Labrador. Besides these, and constituting the great number of strange species, are plants found elsewhere only in the southeastern United States, especially in the southern Alleghenies.

It appears probable that these plants were there before the last great advance of the glaciers, perhaps longer, and that they lived there during all the centuries of glaciation, an island of flowers in a sea of ice.

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