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On the Conductivity of Cod Liver Oil

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this another similar radiator was mounted and connected by two inch pipes to the lower radiator. The radiators were filled with kerosene and were ready for operation January 1, 1930.

During the following weeks of cold weather the temperature of the kerosene in the upper radiator was recorded and at no time was it found to be as low as 30°F. The lowest temperature noted in the chicken house was 14°F while on the outside it was -23°F.

That end of the chicken house which contained the radiator was later insulated from the remainder which was to be used as a control. But since the installation of this partition the weather has been so warm that it has been impossible to obtain any accurate data on the effectiveness of this arrangement in keeping the room warm.

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PROBLEMS SUGGESTED BY AN UNCERTAINTY PRINCIPLE IN ACOUSTICS

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At the suggestion of Professor A. Lande the principle adopted is $\Delta\nu \cdot \Delta t = 1$, where ν is the intrinsic frequency of an acoustic signal and Δt is its time duration. Applying this principle one finds that it is consistent with experiments on the change in ν in the vibrato and the failure to detect it by ear, with recorded tests on minimum perceptible differences in frequency, and with the minimal time for tone perception. The problems suggested by the principle are: (1) Variations in Δt and $\Delta\nu$ by an artificial vibrato with aural observations of detectable $\Delta\nu$, (2) redetermination of minimum perceptible differences in frequency as dependent upon Δt and (3) an examination of Δt required for tone perception with varied values of $\Delta\nu$ required for so-called tone perception.

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ON THE CONDUCTIVITY OF COD LIVER OIL

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Further experiments have been conducted on the conductivity of cod liver oil under varying conditions. All experiments on the

variation of conductivity with temperature have shown that the conductivity increased with the temperature. By plotting the logarithm of resistance against temperature, straight lines were obtained over considerable ranges of temperatures. The breaks in these curves were apparently quite sharp but did not occur at the same temperatures with different trials even though oil from the same bottle was used. The resistance became very unstable at temperatures around 85°C.

It was found that exposure to the air caused very decided changes in the conductivity, probably due to oxidation. It is known that oxidation destroys vitamin A, but these experiments have shown that there is no relation between the electrical conductivity and the vitamin content of cod liver oil.

Further experiments have confirmed our former conclusions that this oil is not photoelectric under the action of ultra-violet light.

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