Subject B experienced considerable practical benefit to conversation through the use of the acoustic fan, in spite of the fact that his bone-acuity was so low that quantitative measurements were not possible. This subject derived no apparent benefit from opening his mouth, or attempting to tune his mouth cavity to the pitch to be heard, except at 1024 cycles, where the benefit was slight.

These tests with an acoustic fan would seem to indicate an available method which may be used by the otologist in determining the acuity for bone-transmitted speech; and if the diagnosis in the case reported by Sabine is correct, then the fan may be employed as an aid to the diagnosis of stapedial fixation. This is a complete report.

[1] Pohlman, A. G., and Kranz, F. W., *Arch. of Otolarygol.*, 1926, iii, 136.

[2] Kranz, F. W., *Phys. Rev.*, 1923, xxii, 66.

[3] Pohlman, A. G., and Kranz, F. W., *Ann. of Otol., Rhinol. and Laryngol.*, 1925, xxxiv, 1224.

[4] Sabine, P. E., *Laryngoscope*, 1921, xxxi, 819.

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The Development of Marked Activity in Ergosterol Following Ultra-Violet Irradiation.

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In a previous communication we showed that cholesterol which has been purified by means of bromination failed to develop antirachitic properties as the result of ultra-violet irradiation.[1] These experiments, as well as some others, led us to question whether it is the cholesterol itself which becomes active or some contaminating substance intimately associated with it.

Recently we have been conducting experiments with a preparation of ergosterol prepared from yeast. Ergosterol is an optically active sterol possessing three double bends and a hydroxyl radical. Its molecule therefore possesses two factors which have been found to be linked with the activation of cholesterol derivatives and allied sterols.[2] The ergosterol was irradiated with the mercury vapor lamp for one-half hour at a distance of one foot, then suspended in linseed oil and fed to rats in varying amounts. It was found to bring about a healing process of the bones when even as little as 0.003 mg. per capita daily was given. In tests in which irradiated

cholesterol is fed, it has been found that approximately 1 mg. is needed to initiate healing.

Other experiments will be undertaken to ascertain the relationship of ergosterol to cholesterol and the extent of its distribution in the animal body. This is a complete report.

[1] Hess, A. F., and Windaus, A., PROC. SOC. EXP. BIOL. AND MED., 1926, xxiv, 171.

[2] Hess, A. F., and Windaus, A., PROC. SOC. EXP. BIOL. AND MED., 1927, xxiv, 369.

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Proteins and Non-protein Colloids as Bioelectric Models.

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The following experiments were undertaken in order to test the rôle of colloids in the production of electric currents in tissues. Hober[1] and his collaborators, Matsuo,[2] Mond,[3] and Deutsch[4] have tested cell arrangements with various proteins as middle conductors, *e. g.*, 1/10 mol. solution of KCl gelatin, 1/10 mol. solution of LiCl + about 0.01 volt, and compared these with other arrangements in which various animal or vegetable tissue took the place of gelatin.

Generally an agreement has been found. It has not yet been shown, however, whether non-protein colloids like agar agar might not act in the same way as proteins. To ascertain this, analogous cells with agar agar, etc., were measured and compared with the protein cells. With protein cells the following electromotive forces have been observed, m/10 KCl being constantly on the one side of the proteins, 1/10 mol. solutions of various solutions on the other side.*

* The technique of these measurements is simple. The protein is poured into a glass tube, open at both ends, filling the entire lower half of the tube as a plug. The upper end of the plug is constantly in contact with m/10 KCl, and this again with a saturated KClHgCl electrode; the lower end of the plug is dipped successively into the various salt solutions, which in turn are in contact with the second electrode. A binant electrometer was used for measuring the electromotive forces in the present research, but a compensation apparatus with a galvanometer would do the same service. Control tests in which the lower end of the protein plug dips also into m/10 KCl are always necessary. This symmetrical arrangement should show no electromotive force, but it usually does, consequently this e. m. f. must be subtracted from all the value observed.