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Biological Fluid Osmotic Pressure Determinations

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BIOLOGICAL FLUID OSMOTIC PRESSURE DETERMINATIONS

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An outgrowth of the method used by A. V. Hill to determine the next liberation accompanying the passage of a nerve impulse has resulted in the development of an apparatus by which the osmotic pressure of as small quantities of fiuid as .5 cu. mm. may be determined to an accuracy of .1 per cent NaCl. The principle consists essentially in the differential cooling effect produced between the experimental sample and a standard solution when placed in a standard, constant temperature, constant humidity, environment. A discussion of the necessry thermocouple loop construction, electrical difficulties, and optical system is included in the report.

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MAGNETIC VELOCITY ANALYSIS OF POTASSIUM ATOMS SCATTERED BY A MAGNESIUM OXIDE CRYSTAL

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A beam of neutral potassium atoms is directed to the surface of a MgO crystal, incident at an adjustable angle of from 20 to 80 degrees. Perpendicular to this beam is a slit system which defines a second beam of atoms which have been scattered by the crystal. This second beam is directed to the region between a pair of Stern-Gerlach magnet pole pieces. The intensity of the beam is measured by means of a Langmuir-Taylor surface ionization detector.

By measuring the variation in beam intensity with varying angle of incidence of the primary beam on the crystal while the magnetic field is off, one finds that there is no effect of diffraction or regular reflection of the atoms at the crystal surface. The atoms emerge according to the simple cosine law.

With the application of the magnetic field the beam is broken up into two velocity spectra, in each of which the deflection of an