quired. The limit of detection is approximately 10^{-12} mole of component per ml. of carrier gas.

It is essential to purify the helium carrier gas from all substances other than neon, otherwise too high a background current occurs and the system becomes saturated. It is difficult at this stage to state the permissible impurity level. The ratio of ionization currents for 1 v.p.m. added impurity (nitrogen, oxygen, methane, argon) against the 'pure' helium is 1.05. This is better than the value obtained by Jesse and Sadauskis² of 1.003.

The helium purification system used is a combination of physical and chemical methods, comprising molecular sieve at 20° and -196° C., titanium at 1,000° C. and 'Hopcalite' at 400° C.

A detailed report on the application of this technique to the analysis of permanent gases is to be published.

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R. BERRY

United Kingdom Atomic Energy Authority,
Development and Engineering Group,
Research and Development Branch,
Culcheth Laboratories,
Warrington, Lancs.

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Proton Magnetic Resonance of the Water Phase of Gelatin Gels

RESULTS have recently been reported concerning the proton magnetic resonance line-width of the water phase of starch gels¹. I have examined the solvent line-width of gelatin gels at 16.7 Mc./sec. in a field of 3,910 gauss with the spectrometer now in use at this laboratory. The samples were contained in soda glass tubes of 1.2 mm. inside diameter. Sample spinning at about 1,200 r.p.m. was employed. The instrumental resolution was 0.12 p.p.m. The measurements were carried out at +20° C. The gels were made by solution at 85–90° C. of commercial gelatin in distilled water. The most concentrated gel (0.2 gm. gelatin per ml. water) was also examined with various concentrations of sodium chloride.

The line-width as a function of gelatin concentration is given in Fig. 1 (upper curve). The line-width increases rapidly up to about 6 c./s. at 0.05 gm./ml. At higher concentrations of gelatin the increase in line-width was small. On addition of sodium chloride, the line-width decreased considerably, but did not reach the value for water. As suggested in the article on starch gels¹, this upper limit of line-width of the aqueous phase may be due to the molecular mobility of macro-molecules. Approximate measurements of T_2 by the wobble regrowth method² indicated that T_2 decreased from about 1.5 sec. for distilled water (in equilibrium with air oxygen) to about 0.05 sec. for the most concentrated gel. Approximate measurements were also made on T_1 by the progressive saturation method³. T_1 decreased from about 2 sec. in distilled water to about 0.15 sec. in the most concentrated gel (0.2 gm./ml.).

Work on different types of biological gels is being continued, and the proton resonance of organic macro-molecules is being investigated on gels in heavy water (D_2O).

Fig. 1. Proton magnetic resonance line-widths of gelatin gels. (a) Line-width as a function of gelatin concentration in distilled water. (b) Line-width of a gelatin gel containing 0.2 gm. gelatin/ml. water as a function of concentration of sodium chloride in the gel.

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ERIK ODEBLAD

Isotope Laboratory,
Department of Obstetrics and Gynecology
of the Karolinska Institutet,
Sabbatsberg Hospital, Stockholm Va.

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BIOCHEMISTRY

Analysis of Human Leucocyte Deoxyribonucleohistone by Immuno-electrophoresis on Cellulose Acetate

THE internal composition of the nucleus is still unrevealed to a large extent despite many recent advances. The work described here constitutes a new approach to the problem made possible by a combination of histochemistry and immunoelectrophoresis on cellulose acetate membranes. Kohn¹ first introduced cellulose acetate as a supporting membrane for zone electrophoresis, and Consden and Kohn² showed that this material was elegantly suited to the entire process of immunoelectrophoresis. In this laboratory the techniques were found to be easily reproducible³ and are now being used to study the human leukæmic leucocyte, with particular reference to the nucleus.