* The stationary solutions for this case have been investigated previously[3], starting from the diffusion equation. It is easily shown that the solution in our case has the same form.

[1] M. V. Koniukov and Ia. P. Terletskii, J. Exper. Theoret. Phys. USSR **27**, 542 (1954)

[2] H. Krefft. Phys. Z. 32, 948 (931); H. Krefft, H. Reger and R. Rompe, Z. techn. Phys. **14**, 242 (1931)

[3] R. Seeliger and A. Kruschke, Phys. Z. **34**, 883 (1933)

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Polarization of the Nuclei of Ferromagnetic Atoms

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DURING the past years several indirect methods have been proposed for obtaining oriented nuclei (see references 1,2). Still another method of obtaining polarized nuclei is proposed in the present note.

It is possible to polarize nuclei of ferromagnetic atoms in the following manner. Ferromagnetics which contain nuclei possessing spins are cooled to very low temperatures (for this purpose it is necessary to bring the ferromagnetic into thermal contact with a cooled paramagnetic salt). An external magnetic field exceeding the saturation field is then superimposed on the ferromagnetic. Complete polarization of the shell spins is then obtained.

In turn this brings about a significant polarization of the nuclei (owing to the great magnitude of the field, forming a shell on the nuclei, and also due to the very low temperature) The relaxation of the nuclear spins will be rapid since it is tied in with the interaction of nuclei with the conduction electrons.

The advantage of the ferromagnetic method consists in the fact that by this means a target is obtained free of foreign atoms. The drawback of this method is that it is applicable only for polarization of nuclei of ferromagnetic atoms.

Shchegolev, Alekseevski and Zavaritskii have observed anisotropy in the γ-rays emitted from the nuclei of Co^{60}, when polarized by the ferromagnetic method. At a temperature of the order of 0.05 - 0.08°K intensity, the γ-intensity radiation along the external field is about 10-15% less than in the perpendicular direction.

In conclusion, I wish to express thanks to N. E. Zavaritskii and to I. F. Shchegolev, who reported the results of their measurements.

[1] R. J. Blin-Stoyle, M. A. Grace and H. Halban, Progress in Nuclear Physics 3, 63 Pergamon Press, London (1953).

[2] G. R. Khutsishvili, Uspekhi. Fiz. Nauk 53, 381 (1954)

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The Rotation of the Plane of Polarization in Electrolytic Solutions by a Magnetic Field

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OKAZAKI[1], in a careful study of the Faraday effect, found that in aqueous solutions of strong electrolytes, the effect could be considered as made up of additively of two parts, the so-called molar rotations of the different ions.