ments support the validity of such an assumption.

Further investigations on the pressure variation of the oscillation period of the susceptibility in zinc will make it possible to establish the dispersion law for the small group of charge carriers.[15]

The calculations by Kosevich[15] permit a quantitative determination of the oscillation period of the magnetic susceptibility in a constant magnetic field as a function of the external load. In the case of a homogeneous compression of the crystals the change in pressure Δp, which corresponds to the oscillation period, equals

$$\Delta p = e\hbar H / c a \overline{m}_\beta. \quad (5)$$

This quantity can be determined for the zinc crystals from the experimental data. The results of the calculation are given in Table III ($\theta = 80°$).

TABLE III

H, Oe	Δp, kg/cm²
1000	75
5000	370
10000	750

It can be seen from the table that it is possible to observe the variation with pressure of the susceptibility oscillations in zinc crystals in a constant field by using the "ice" method for generating high pressures at low temperatures and by varying the pressure in the apparatus.

Two cases have been studied quantitatively and treated theoretically so far, i.e. changes induced in the chemical potential of the charge carriers by some external factor, and the conditions when such changes strongly affect the properties determined by small groups of charge carriers. The discussion here deals with the effect of the temperature on the magnetic properties of those elements which exhibit the de Haas — van Alphen effect,[17] and with the effect of elastic deformations on the oscillations of the magnetic susceptibility caused by small groups of charge carriers.[15]

In Sec. 4 it was noted that small amounts of impurities change the oscillation period of the susceptibility in zinc crystals very strongly. It is probable that the impurities also induce in the chemical potential a change that affects appreciably the filling of the small group of charge carriers, and, correspondingly, the most important characteristic of the de Haas — van Alphen effect, i.e. the oscillation period of the susceptibility.

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[1] P. V. Bridgman, The Physics of High Pressures. London, Bell, 1949.

[2] B. G. Lazarev and L. S. Kan, J. Exptl. Theoret. Phys. (U.S.S.R.) **14**, 463 (1944).

[3] B. G. Lazarev and L. S. Kan, J. Exptl. Theoret. Phys. (U.S.S.R.) **14**, 470 (1944); Kan, Lazarev, and Sudovtsov, J. Exptl. Theoret. Phys. (U.S.S.R.) **18**, 825 (1948).

[4] E. Maxwell, Phys. Rev. **78**, 477 (1950); **79**, 173 (1950); Allen, Dawton, Lock, Pippard, and Shoenberg, Nature **166**, 1071 (1950).

[5] Alekseevskii, Brandt, and Kostina, Izv. Akad. Nauk SSSR, Ser. Fiz. **16**, 233 (1952); **21**, 790 (1957); Dokl. Akad. Nauk SSSR **105**, 46 (1955); J. Exptl. Theoret. Phys. (U.S.S.R.) **28**, 379 (1955), Soviet Phys. JETP **1**, 384 (1955).

[6] L. S. Kan and B. G. Lazarev, J. Exptl. Theoret. Phys. (U.S.S.R.) **34**, 258 (1958), Soviet Phys. JETP **7**, 180 (1958).

[7] Verkin, Lazarev, and Rudenko, Dokl. Akad. Nauk SSSR **69**, 773 (1949); J. Exptl. Theoret. Phys. (U.S.S.R.) **20**, 93 (1950); **21**, 658 (1951); Dokl. Akad. Nauk SSSR **73**, 59 (1950); **80**, 45 (1951).

[8] J. A. Marcus, Phys. Rev. **71**, 559 (1947); D. Shoenberg, Nature **164**, 225 (1949); Phil. Trans. Roy. Soc. **245**, 1 (1952); T. Berlincourt, Phys. Rev. **99**, 1716 (1955).

[9] I. M. Lifshitz and A. M. Kosevich, Dokl. Akad. Nauk SSSR **96**, 963 (1954); J. Exptl. Theoret. Phys. (U.S.S.R.) **29**, 730 (1955), Soviet Phys. JETP **2**, 636 (1956); I. M. Lifshitz and A. V. Pogorelov, Dokl. Akad. Nauk SSSR **96**, 1143 (1954).

[10] Verkin, Dmitrenko, and Lazarev, J. Exptl. Theoret. Phys. (U.S.S.R.) **31**, 538 (1956), Soviet Phys. JETP **4**, 432 (1957).

[11] Dmitrenko, Verkin, and Lazarev, J. Exptl. Theoret. Phys. (U.S.S.R.) **33**, 287 (1957), Soviet Phys. JETP **6**, 223 (1958).

[12] B. I. Verkin and I. M. Dmitrenko, Izv. Akad. Nauk SSSR, Ser. Fiz. **19**, 409 (1955), [Columbia Tech. Transl. **19**, 365 (1955)].

[13] B. N. Bushmanov, Физика металлов и металловедение (Physics of Metals and Metal Research) **4**, 310 (1957); H. Schilling, Physics (Amer.) **5**, 1 (1934).

[14] B. I. Verkin, Doctoral Thesis, Khar'kov State University (1956).

[15] A. M. Kosevich, J. Exptl. Theoret. Phys. (U.S.S.R.) **35**, 249 (1958), Soviet Phys. JETP **8**, 171 (1959).