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ESR of Impurities in MgO

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SP1. Electron Spin Resonance of Impurities in Magnesium Oxide.*† JOHN E. WERTZ, JUANA L. VIVO, AND BORIS MUSULIN, *University of Minnesota*.—All magnesium oxide crystals we have been able to locate show a six-line hyperfine splitting pattern found previously upon deliberate addition of manganese.¹ Technical MgO powder shows the same behavior as does also a reagent grade which has been heated to 1200°C. Their line width is as small as 1.5 gauss, very narrow for an ionic crystal, and much narrower than found previously.¹ The fourth line (counting from the low-field end) shows unusually large variations of intensity relative to the other five. Each of the principal lines has four

satellites, explainable for an electronic spin of $5/2$. At high spectrometer sensitivity, a number of weak lines are found in pairs. Their origin is being investigated. Heating to 200°C in the resonant cavity of the spectrometer decreases the ESR line intensity by an amount expected from Curie's law. An impurity of nuclear spin $7/2$ and electronic spin $3/2$ gives eight principal lines over a 560 gauss region. Each has two satellites.

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† To be given at the end of Session B if the chairman rules that time permits.

¹ W. D. Hershberger and H. N. Leifer, *Phys. Rev.* 88, 714 (1952).