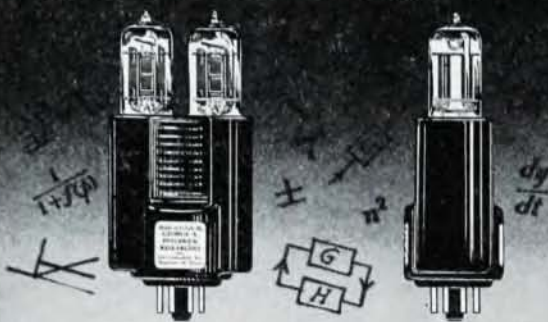


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Meetings

Magnetism

Washington Conference Reported

Research in the field of magnetism has a long-standing tradition, but it was only last year that a special conference devoted solely to the subject was held in this country. The conference, which met at the University of Maryland in the first part of September, was sponsored by the Office of Naval Research and organized by its Advisory Committee on Magnetism. In the present overabundance of meetings, conferences, symposia, etc., of diverse scope and merit, a new conference, especially if it is to last five full days, is quite justifiably looked upon with suspicion. It is thus most gratifying to look back at the conference on magnetism and to realize that almost four hundred scientists registered and most of them regularly attended all its sessions. The fact that during these few days the majority lived on the charming and hospitable campus of the University of Maryland, and the fact that there were no simultaneous sessions and that, last but by no means least, the weather was ideal, unquestionably contributed much to the success of this meeting. Although the conference was not planned as an international conference, there were about twenty scientists from abroad. A few of the invited foreign scientists in this field, in particular Néel, Weil, and Wohlfarth, were unfortunately unable to come at the last moment.

That the scope of the conference was very ambitious can be seen from the following list of subjects which were covered: magnetization curve (Stoner, Bates and Marshall, Sucksmith, Bozorth, Kaya); ferrites (Néel, Guillaud, Bickford, Rado, Galt); neutron diffraction and atomic moments (Shull, Goldman, Hastings and Corliss, Kriessman); magnetoelastic and magnetolectric effects (Brown, Mason, Levy and Truell, Dijkstra and Martius, Pugh and Rostoker); paramagnetism (Montroll and Newell, Bleaney, Elliott, Bitter, Lacey and Richter, Smoluchowski, Kaufman and Lin); symposium on exchange (Zener and Heikes, Slater, Wohlfarth, Van Vleck); ferromagnetic resonance (Kip, Kittel, Damon, Davisson and Beams, Hagan); paramagnetic resonance (Opechowski, Anderson and Weiss, Gorter, Maxwell and McGuire, Hutchinson); fine particles and permanent magnets (Néel, Rathenau, Meiklejohn and Paine, Crittenden, Geisler, Weil); and anti-ferromagnetism (Smart, Gorter, Stout and Matarrese, Kubo). These forty-eight papers were supplemented by a large number of short discussions and contributions on current research topics.

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It is impossible, within the limits of this short report, to give justice to all the papers. Unquestionably, the main interest was centered on the symposium on exchange, which at the present time is a rather controversial subject. Slater presented his method of approach in which all functions in the molecular orbitals treatment are orthogonalized and the correlation energy taken into account. His results on the paramagnetic oxygen molecule seem to be most promising. Van Vleck described the generalized Heisenberg approximation in which nonintegral moments of atoms follow from inclusion of excited configurations. This may lead to an understanding of many phenomena which lie beyond the limits of the classical Heisenberg model. Stoner presented (in place of Wohlfarth) the collective electron theory of magnetism and its success in correlating magnetic properties with other phenomena and in predicting their behavior. Finally, Zener discussed his theory in which the important exchange interaction is assumed to be between the d and s electrons rather than between the d -shells themselves. Neutron diffraction results, which undoubtedly will provide some of the most crucial evidence for clarification of the theory of ferromagnetism, at present seem to be unable to help in deciding between the various theoretical approximations.

Among other topics which drew much attention at the conference one may mention thermomagnetic measurements, spontaneous magnetization near the Curie temperature, properties and order of permalloys, mechanism of magnetization of ferrites, their structure and transformations, coexistence of antiferromagnetism and "parasitic" ferromagnetism, ordered distribution of vacancies in pyrrhotite (Fe_xS_8), application of Kerr effect to the study of domains, neutron diffraction data on atomic moments in alloys below and above Curie temperature, Hall effect in ferromagnetic materials, paramagnetism of various crystals, relaxation effects in ferromagnetics, ferromagnetic and paramagnetic Faraday effects, paramagnetic and antiferromagnetic resonance, powder magnets, oxides and, finally, a spin-wave theory of antiferromagnetism.

The proceedings of the conference will appear in the January 1953 issue of *The Reviews of Modern Physics*.

R. Smoluchowski
Carnegie Institute of Technology

X-Ray Diffraction

Fortieth Anniversary Celebrated

A meeting of the X-ray Analysis Group of the Institute of Physics of Great Britain to celebrate the 40th anniversary of the discovery of x-ray diffraction by crystals was held at the Royal Institution in London on October 24th and 25th. Approximately 200 crystallographers attended the two sessions to hear a series of five papers. Dr. W. H. Taylor, Cavendish Laboratory, Cambridge University, Chairman of the X-ray Analysis Group, who presided over the sessions, opened the meeting on Friday afternoon by extending a welcome to the visitors from overseas. Two of these were Pro-

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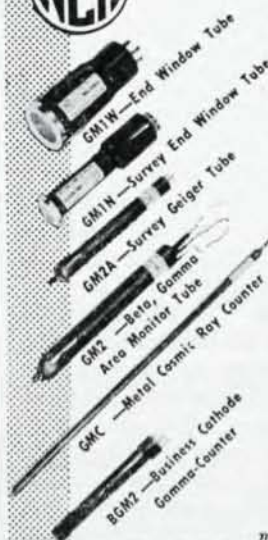
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