

## CONTENTS

### Section A

Critical Phenomena in $\text{He}^4$ and $\text{He}^4\text{-He}^3$ . . . . .	Hall Z
Page*	
4Zp 1 Thermal Conductivity of Liquid Helium near the Superfluid Transition, G. Ahlers . . . . .	3
4Zp 2 A Simple Demonstration of the Scaling Laws for the Critical Point and the $\lambda$ Transition, Y. Imry, D. Bergman . . . . .	4
4Zp 3 Sound Attenuation Measurements in the Microdegree Neighborhood of the Lambda Point of Helium, R.D. Williams, I. Rudnick . . . . .	5
4Zp 4 Optical Measurements on High Frequency Second Sound Close to the Lambda Point, S. Cuncolo, G. Grillo, G. Jacucci . . . . .	6
4Zp 5 Critical Heat Currents in Liquid Helium II near $T_\lambda$ , S. M. Bhagat, R.A. Lasken . . . . .	7
4Zp 6 Heat Flow in Superfluid Helium near the Lambda Transition, M.J. Crooks, D.L. Johnson . . . . .	8
4Zp 7 Nuclear Relaxation in the Critical Region of $^3\text{He}/^4\text{He}$ Liquid Mixtures, S. Saito, G. Terui, E. Kanda . . . . .	9
4Zp 8 Specific Heat of Liquid $^3\text{He}/^4\text{He}$ Mixtures near the Junction of the Lambda and Phase Separation Curves, T.A. Alvesalo, P.M. Berglund, S.T. Islander, G.R. Pickett, W. Zimmermann, Jr. . . . .	10
4Zp 9 The Temperature Dependence of the Scattering of Light by Liquid Helium near Its Critical Point, M.P. Garfunkel, W. Goldburg, C. Huang . . . . .	11
Superflow and Vortices . . . . . Hall Z	
5Za 1 Third Sound, Fourth Sound and the Healing Length of Superfluid Helium, I. Rudnick . . . . .	12
5Za 2 The Dissipative Equation for Superfluid Helium: An Experimental Determination, M. Chester, D.W. Williams, C. Motloch . . . . .	13
5Za 3 Experimental Study of the Interdependence of Normal and Superfluid Flow in Helium II, G. van der Heijden, A.G.M. van der Boog, H.C. Kramers . . . . .	14
5Za 4 Fourth Sound Attenuation by a Superflow in a Porous Medium, M. Francois, M. Le Ray, D. L'Huillier, J. Bataille . . . . .	15
5Za 5 Measurements of Persistent Currents in Helium by Doppler Shifted Fourth Sound, I. Rudnick, H. Kojima, W. Veith, R.S. Kagiwada . . . . .	16

---

\* Parenthesized pages indicate papers to be read by title only.

5Za 6	The Influence of Heat Flow through Vortex Pinning Media on the Density of Helium II, A.G.F. Dorscheidt, T.H.K. Frederking, H. van Kempen, P. Wyder . . . . .	17
5Za 7	Effect of a Superflow on a Vortex Lattice, M. Le Ray, J. Bataille, M. Francois, D.L'Huillier . . . . .	18
5Za 8	Vortex Motion in He II, L.J. Campbell . . . . .	19
Superflow and Vortices		Hall Z
5Zp 1	Liquid Helium Program at UC Irvine, J.R. Pellam . . . . .	20
5Zp 2	Quantized Rotation in Superfluid Helium, R.W. Guernsey, Jr. . . . .	21
5Zp 3	Josephson-Anderson Effects in Superfluid Helium, J.P. Hulin, B. Perrin, C. Laroche, A. Libchaber . . . . .	22
5Zp 4	Determination of hN Using Josephson Effect in Superfluid Helium, B.M. Khorana . . . . .	23
5Zp 5	Axiomatic Thermodynamic Formulation of a Nonlinear Continuum Theory of Rotating Superfluids, T.S. Chang . . . . .	(24)
5Zp 6	On Two-Fluid Models for Liquid He II, E. Lundgren . . . . .	(25)
Liquid He <sup>4</sup>	. . . . .	Hall Z
5Zp 7	Properties of Liquid Helium from Inelastic Neutron Scattering A.D.B. Woods, R.A. Cowley . . . . .	25
5Zp 8	Determination of Roton Linewidths by Raman Scattering, T.J. Greytak, J. Yan . . . . .	27
5Zp 9	Direct Birth of Rotons in He by High Frequency Field, M.P. Kemoklidze, L.P. Pitayevsky . . . . .	28
5Zp 10	The Attenuation of Sound in Liquid <sup>4</sup> He, J. Kalejs, G.W. Waters, J. Wilks . . . . .	29
5Zp 11	Propagation of Sound in Liquid <sup>4</sup> He below 0.6 K, R. Klein, R.K. Wehner . . . . .	30
Charge Carriers in Helium	. . . . .	Hall Z
6Za 1	Generation of High Density Charge Carriers in Liquid He II M. Date, H. Hori, H. Kamata . . . . .	31
6Za 2	Injection of Charge into Liquid Helium by Field-Emission and Field Ionisation, A. Hickson, P.V.E. McClintock . . . . .	32
6Za 3	Mobility of Negative Ions in He I and He II Measured with a New Method, B.S. Blaisse, J.M. Goldschvartz, M. Naeye . . . . .	33
6Za 4	Measurement of the Vortex-Phonon Scattering Cross-Section in Superfluid Helium, P.V.E. McClintock . . . . .	34
6Za 5	Ion Transmission through the <sup>3</sup> He- <sup>4</sup> He Phase Boundary, M. Kuchnir, P.R. Roach, J.B. Ketterson . . . . .	35
6Za 6	Ion Mobility in <sup>3</sup> He and <sup>3</sup> He- <sup>4</sup> He Solutions at Very Low Temperatures, J.B. Ketterson, M. Kuchnir, P.R. Roach . . . . .	36
Charge Carriers in Helium. Films	. . . . .	Hall Z
6Za 7	Evidence for a Superfluid-Induced Surface Barrier for Electrons in Liquid Helium, W. Schoepe, C. Probst . . . . .	37
6Za 8	The Structure of Turbulent Superfluid Helium, D.M. Sitton, F. Moss . . . . .	38
6Za 9	Measurements of Equilibrium and Flowing Helium Films, C.C. Matheson, D.G. Blair . . . . .	39
6Za 10	Energy Gap for Helium Film Excitations, J.B. Brown, M.G. Tong . . . . .	40



9Ya 4	$^3\text{He}$ Quasiparticle Mean-Free-Path below 100 mK, D.S. Betts, D.F. Brewer, R. Hamilton . . . . .	66
He $^3\text{-He}^4$	Mixtures . . . . .	Hall Y
9Ya 5	Nuclear Resonance Study of the Onset of Fermi Degeneracy in He $^3$ Films, D.F. Brewer, D.J. Creswell, A.L. Thomson . . . . .	67
9Ya 6	X-Ray Scattering from Liquid He $^3$ , He $^4$ and He Gas, and He $^3$ - He Mixtures, R.B. Hallcock . . . . .	68
9Ya 7	The Pressure Dependence of the Solubility of Liquid He in Superfluid He at the Absolute Zero of Temperature, B.M. Abraham, O.G. Brandt, Y. Eckstein . . . . .	69
9Ya 8	The Specific Heat at Constant Osmotic Pressure of He $^3$ in Superfluid He $^4$ , R. Radebaugh, J.D. Siegwarth . . . . .	70
9Ya 9	The Diffusion Coefficient of Helium 3 in Helium 3-Helium 4 Solutions, D.C. Chang, H.E. Rorschach . . . . .	71
9Ya 10	Investigation of Surface and Size Effects in Helium Three Films, D.F. Brewer, A. Evenson, LT $^3$ Sun, A.L. Thomson . . . . .	(72)
9Yp 1	Measurement of the Viscosity of He $^3$ -He $^4$ Solutions, C.M. Lai, P.P. Craig, T.A. Kitchens, D.F. Brewer . . . . .	73
9Yp 2	The Velocity of Second Sound in Liquid Mixtures of He $^3$ and He $^4$ at Low Temperatures, R.A. Sherlock, N. Brubaker, D.O. Edwards, R.E. Sarwinski, P. Seligmann . . . . .	74
9Yp 3	Kinetic Theory of Dilute-Superfluid He $^4$ -He $^3$ Mixtures at Very Low Temperatures, Y. Disatnik, A. Yanover . . . . .	75
9Yp 4	Effective He Quasiparticle Interaction in Superfluid He, S.G. Eckstein, Y. Eckstein, C.G. Kuper, A. Ron . . . . .	76
9Yp 5	Thermal Boundary Resistance between Liquid and Vapour He, D.S. Betts, D.F. Brewer, R. Lucking, R. Marshall . . . . .	77
9Yp 6	Magnetic Susceptibility and Spin Diffusion Coefficient of He $^3$ -He $^4$ Solutions under Pressure, D. Cheng, P.P.Craig, T.A. Kitchens . . . . .	(78)
9Yp 7	First and Second Sound Velocities in Dilute Superfluid He $^4$ -He $^3$ Mixtures at Very Low Temperatures, H. Bruker, Y. Disatnik . . . . .	(79)
Microscopic Theories . . . . .		Hall Y
10Ya 1	Energy Spectrum of the Excitations in Liquid Helium II, S. Sunakawa, S. Yamasaki, T. Kebukawa . . . . .	80
10Ya 2	Collective Motion and Ultrasonic Attenuation in Liquid Helium, T. Nishiyama, M. Ichiyanagi . . . . .	81
10Ya 3	Microscopic Theory of the Equilibrium Properties of a Superfluid Bose System for T ≠ 0°K, I. RamaRao . . . . .	82
10Ya 4	On the Two-Branch Structure of the Excitation Spectra in Liquid Helium, F. Iwamoto, K. Nagai, K. Nojima . . . . .	83
10Ya 5	On the Question of Second Branch in Elementary Excitations Spectrum in Liquid He, L.P. Pitayevsky . . . . .	84
10Ya 6	Perturbation Theory of Liquid Helium-4, B.H. Brandow . . . . .	85
10Ya 7	Microscopic Theory of Quantum Liquids in the Representation of Correlated Basis Functions, C.-W. Woo . . . . .	86
10Ya 8	A New Theory of Liquid Helium II, K.W. Wong . . . . .	87
10Ya 9	On the Pair Theory of Many-Boson Systems, S. Nakajima, Y. Kuroda, Y. Kurihara . . . . .	88
10Ya 10	Fluctuations, Long-Range Order and Superfluidity, E.B. Sonin . . . . .	89
10Ya 11	Dynamics of Quantum Statistical Condensate, T. Ohmi, T. Usui, K. Yamada, J. Yamauchi . . . . .	90

- 10Ya 12 Critical Properties of Quantum Lattice Gas Model, C.  
Kawabata, M. Suzuki . . . . . (91)
- 10Ya 13 A Fluid Dynamical Approach to Elementary Excitations,  
E.E.H. Shin . . . . . (92)

## Section B

<b>Magnetic Impurity . . . . .</b>	<b>Hall Y</b>
4Yp 1 Superconductibility in Anderson Model, F. Takano, C. Inoue	95
4Yp 2 Crystal Field Effects on Superconductivity, P. Fulde, J. Keller . . . . .	96
4Yp 3 Superconductivity and Kondo-Effect in Dilute Alloys of Zn-Mn, E. F. Wassermann, H. Falke, H. P. Jablonski . . . . .	97
4Yp 4 Superconducting Properties of Some Homogeneous and Inhomogeneous Small Systems, E. Guyon . . . . .	98
4Yp 5 NMR Studies on Magnetic Field and Magnetic Impurity Induced Gapless Superconductivities in $\text{La}_{3-x}\text{Gd}_x\text{Al}$ System, Y. Masuda, M. Hashimoto . . . . .	99
4Yp 6 Specific Heat and Magnetization of Superconductors with Magnetic Impurities, T. Aoi, T. Mamiya, K. Iwahashi, Y. Masuda . . . . .	100
<b>Fluctuations:Theory . . . . .</b>	<b>Hall X</b>
5Xa 1 Fluctuations and Resistance in Superconductors:Theory, P. C. Hohenberg . . . . .	101
5Xa 2 Microscopic Investigation of the Effect of Magnetic Field on the Fluctuation Superconductivity, T. Tsuzuki, M. Koyanagi . . . . .	102
5Xa 3 Momentum Conservation, Time Dependent Ginzburg Landau Equation and Paraconductivity, G. Eilenberger . . . . .	103
5Xa 4 Fluctuation of the Order Parameter in Zero Dimensional Superconductors, K. Maki, J. P. Hurault . . . . .	104
5Xa 5 Breakdown of the Mean Field Theory in the Paraconducting Region, J. P. Hurault, K. Maki . . . . .	(105)
5Xa 6 Fluctuations in Superconductors below $T_c$ , H. Schmidt	106
5Xa 7 Surface Effects in the Onset of Superconductivity, H. J. Mikeska . . . . .	107
5Xa 8 Fluctuation of the Order Parameter in a Superconductor with Magnetic Impurities, S. B. Nam . . . . .	108
5Xa 9 Critical Behaviour in the Linear Response of a Super- conductor to a Static Magnetic Field, F. de Pasquale, E. Tabet	109
<b>Fluctuations:Experiment . . . . .</b>	<b>Hall X</b>
5Xp 1 Thermodynamic Fluctuations in Superconductors:Experimental Situation, R. D. Parks . . . . .	110
5Xp 2 Fluctuations near the Onset of the Resistive Transition in Filamentary Superconductors, J. E. Lukens, R. J. Warburton, W. W. Webb . . . . .	111
5Xp 3 Resistive Transition of Superconducting Gallium Films, R. Aoki, T. Kawaguchi, K. Hatada, H. Kawamura . . . . .	112
5Xp 4 The Resistive Transition in Clean One Dimensional Super- conductors, G. A. Thomas, R. D. Parks . . . . .	113

5Xp 5	Superconducting Fluctuation Effects on the S-I-N Junction Current, H. Takayama . . . . .	114
5Xp 6	Excess Conductivity of a Tunneling Junction due to Fluctuations, K. Yoshihiro, K. Kajimura . . . . .	115
5Xp 7	Fluctuation Effects in the Magnetic Transitions of Bulk Superconductors, J. P. Gollub, M. R. Beasley, M. Tinkham . . . . .	116
5Xp 8	Fluctuations in the Resistive Transition in Aluminum Films, K. Kajimura, N. Mikoshiba . . . . .	(117)
Basic Properties . . . . .		Hall X
6Xa 1	Apparent Superconducting Energy Gaps in Pure Niobium and Tantalum, M. Levy, F. Carsey, R. Kagiwada . . . . .	118
6Xa 2	Measurement of Superconducting Energy Gaps with Microwave Ultrasonics, E. R. Dobbs, E. Hughes, M. J. Lea, J. A. Rayne . . . . .	119
6Xa 3	Two-Gap Superconducting Alloys, A. Melo, S. T. Spence . . . . .	120
6Xa 4	Transition from Strong to Weak Coupling Superconductivity in Some Niobium Alloys, Y. Kimura, T. Ohtsuka, Y. Yamamoto . . . . .	121
6Xa 5	The $^{57}\text{Fe}$ Mossbauer Effect in Strong-Coupled Superconductors, R. D. Taylor, J. C. Norvell, P. P. Craig, T. A. Kitchens . . . . .	122
6Xa 6	A Resonance in the Microwave Absorption Spectrum at the Superconducting Energy Gap, M. P. Garfunkel, R. W. Markley . . . . .	123
6Xa 7	Phonon Contribution to the Far Infrared Absorptivity of Superconducting and Normal Lead, R. R. Joyce, P. L. Richards . . . . .	124
6Xa 8	Violation of the Similarity Principle of Superconductivity under Pressure, G. Dummer, D. E. Mapother . . . . .	125
6Xa 9	Study on the Superconductivity of High-Pressure Phase of Tellurium, T. Nakajima, Y. Ohki, E. Kanda . . . . .	126
6Xa 10	Enhancement of the Superconducting Transition Temperature in Deformation-Induced Structures, E. W. Collings, J. D. Boyd, J. C. Ho . . . . .	127
6Xa 11	Proximity Effects in Superconducting Aluminium-Silver Alloys in the Cooper Limit, J. Blanc, A. Nemoz, J. C. Solecki . . . . .	128
6Xa 12	The Effects of Boundary Scattering on the Critical Temperatures of Superconductors, W. D. Gregory, P. J. Carroll, M. A. Superata . . . . .	(129)
6Xa 13	The Effect of Nonmagnetic Impurity Ag on $T_s$ of CuS, M. Isino, E. Kanda . . . . .	(130)
6Xa 14	Upper Critical Field Changes in Electron Irradiated Niobium, H. Ullmaier, C. Papastaikoudis, W. Schilling . . . . .	(131)
6Xa 15	A Search for Superconducting Effect on Alpha Particle Differential Energy Loss in Type I Superconductors, D. C. Liu, W. K. Roberts . . . . .	(132)
6Xp 1	Superconductor in the Strong Alternating Field, L. P. Gor'kov . . . . .	133
6Xp 2	Solution of Eliashberg-Equations Avoiding the Introduction of a Coulomb-Pseudo-Potential, W. Klose, P. Hertel . . . . .	134
6Xp 3	The Pressure Effect in the Superconductors, Y. Tamura, Y. Wada . . . . .	135
6Xp 4	Calculation of the Superconducting Anisotropic Energy Gap in Metallic Tin, J. F. Balsley, J. C. Swihart . . . . .	136
6Xp 5	Investigation of Highly Anisotropic Superconductors (Zn and Cd) by Low Temperature Specific Heat, E. Ducla-Soares, J. D. N. Cheeke . . . . .	137
6Xp 6	Effect of Non-local Kernel on the Magnetic Behaviors of Superconductors with Cubic Symmetry, T. Nagashima, K. Takanaka . . . . .	138

6Xp 7	An Anisotropic Upper Critical Field of Pure Type II Superconductors in Low Temperature, K. Takanaka . . . . .	139
6Xp 8	Multiparticle Quasibound State near the superconducting Transition Temperature, K. Matsuno, H. E. Stanley . . . . .	140
6Xp 9	A simple Model of a Disordered Superconductor and Its Enhanced Electron Electron Interaction, G. Bergmann . . . . .	141
6Xp 10	Superconductive Properties of the Excitonic Insulator, R. H. Parmenter, W. R. Henson . . . . .	(142)
6Xp 11	Superconductive Zitterbewegung, D. Lurie, S. Cremer . . . . .	(143)
Compounds and Alloys . . . . .		Hall X
8Xa 1	Superconducting Transition Temperatures of Alloys Based upon Nb <sub>3</sub> Al, F. J. Cadieu, D. H. Douglass, Jr. . . . .	144
8Xa 2	To the Causes of Changes in the Critical Temperature of Nb <sub>3</sub> Al and Nb <sub>3</sub> AlI <sub>1-x</sub> Ge <sub>x</sub> Compounds, V. M. Pan, V. I. Latisheva A. I. Sudovtsov . . . . .	145
8Xa 3	Superconductivity in Thin Films of A-15 and B-1 Structure Compounds, J. K. Hulm, J. R. Gavaler, M. A. Janocko, A. Patterson, C. K. Jones . . . . .	146
8Xa 4	Superconducting Properties in Nb-N Films, Y. Saito, T. Anayama, Y. Onodera, T. Yamashita, K. Komenou, Y. Muto . . . . .	147
8Xa 5	Superconducting State Knight Shift in V <sub>3</sub> Au, L. J. Ancher, N. J. Poulié, L. A. G. M. Wulffers, E. C. van Reuth . . . . .	148
8Xa 6	Superconductivity in the Hydrides of Thorium, C. B. Satterthwaite . . . . .	(149)
8Xa 7	Influence of Atomic Ordering on electronic Properties of Al5-Type Alloys, F. Heiniger, R. Flukiger, A. Junod, J. Muller, P. Spitzli, J. L. Staudenmann . . . . .	150
8Xa 8	Superconducting Properties of Al5 Compounds in the V-Pt System as Functions of Composition and Heat Treatment, J. E. Cox, R. A. Hein, R. M. Waterstrat . . . . .	151
8Xa 9	Superconductivity in Silver, G. Deutscher, P. Lindenfeld, S. Wolf . . . . .	152
8Xa 10	Superconductivity of Beryllium Films, R. E. Glover, III, F. Baumann, S. Moser . . . . .	153
8Xa 11	Superconductivity of Amorphous Germanium Films Condensed onto Liquid Helium Cooled Substrates, B. Stritzker, H. Wuhl . . . . .	154
8Xp 1	Superconductivity in Actinide Metals, K. Mendelssohn, J. A. Lee, M. J. Mortimer . . . . .	155
8Xp 2	Superconducting Properties of Technetium Single Crystals, G. Kostorz, S. Mihailovich . . . . .	156
8Xp 3	The Effects of 3d and 4d Solutes on the Superconductivity of U-Co Alloys, B. R. Coles . . . . .	157
8Xp 4	The Specific Heat and Superconductivity of Th-Y Alloys, T. Satoh, K. Kumagai . . . . .	158
8Xp 5	A Study of Superconductivity and Magnetism in Intermetallic Compounds of Lanthanum with Tin and Indium, A. M. Toxen, R. J. Gambino, B. J. Van der Hoeven . . . . .	159
8Xp 6	Bulk Superconductivity in a Non-homogeneous Ti-Mo (10 at.%) Alloy, J. C. Ho, J. D. Boyd, E. W. Collings . . . . .	(160)
8Xp 7	Low Temperature Thermal Properties of La and Pb, L. Shen, D. C. Heberlein, B. Bertman . . . . .	(161)
8Xp 8	Superconductivity and Electronic Structure of Indium Alloys N. E. Phillips, J. C. F. Brock, M. F. Merriam, M. H. Lambert . . . . .	162
8Xp 9	Oscillatory Dependence of Superconductive Critical Temperature on Number of Valency Electrons in Alloys of Mainly Non-Transition Metal Compounds, E. E. Havinga, M. H. van Maaren . . . . .	163

8Xp 10	Critical Carrier Concentration for Superconductivity in Mixed Metal - Semiconductors Systems, M. H. van Maaren, H. B. Harland, E. E. Havinga . . . . .	164
8Xp 11	Superconductivity of $Rb_xWO_3$ , H. R. Shanks, G. C. Danielson	165
8Xp 12	Theory of Layer Structure Superconductors, S. Doniach, W. E. Lawrence . . . . .	166
8Xp 13	Superconductivity and Magnetic Susceptibility of $Zr_2Co-Zr_2Ni$ System, K. Yamaya, T. Sambongi, T. Mitsui . . . . .	(167)
Flux Pinning and Related Problems . . . . .		Hall Z
8Zp 1	Pinning of Flux Lines in Superconducting Niobium due to Point Defects, H. Ullmaier, C. Papastaikoudis, W. Schilling	168
8Zp 2	Flux Pinning in Heterogeneous Lead-Sodium Alloys, H. C. Freyhardt, J. Petermann, P. Haasen . . . . .	169
8Zp 3	Surface Flux Pinning in Low $K$ Type II Superconductors, P. R. Doidge, A. R. Eastham . . . . .	170
8Zp 4	The Dependence of the Surface Resistance of Superconductors on the Mean Free Path, J. Halbritter . . . . .	171
8Zp 5	Direct Mechanical Measurement of Pinning-Forces in Type II Superconductors, F. X. Eder, G. Eggendorfer . . . . .	172
8Zp 6	Dynamic Properties of Flux Lines in Mixed State of Type-II Superconductors in Longitudinal Magnetic Field, M. Sugahara (173)	
8Zp 7	Pinning Force in Solid-Solution Alloys of the Niobium-Hafnium System, O. Béthoux, J. Y. Guerin . . . . .	174
8Zp 8	Ion-Implantation as a Method of Studying and Controlling the Surface Superconductivity of Superconductors, C. C. Chang, A. C. Rose-Innes . . . . .	175
8Zp 9	The Influence of Physical Imperfections, Caused by Cold Rolling and Neutron Irradiation, on a Type II Superconductor, D. de Klerk, C. A. M. van der Klein, J. D. Elen . . . . .	176
8Zp 10	Magnetic Instabilities in High Field Superconductors, T. Ogasawara, K. Yasukochi, T. Akachi . . . . .	177
8Zp 11	Critical Current-Longitudinal Magnetic Field Characteristics of Type II Superconductors, K. Yasukochi, T. Ogasawara, Y. Kubota, K. Maruyama . . . . .	178
8Zp 12	An Investigation of the A. C. Loss Mechanism below $H_{c1}$ in a Type II Superconductor, P. R. Brankin, R. G. Rhodes . . . . .	179
8Zp 13	On the Interaction of RF-Fields with Phonons due to the Surface Dipole Layer and the Surface Residual Resistance of Superconductors, J. Halbritter . . . . .	(180)
8Zp 14	An Investigation of $\rho_f(H,T)$ in Magnetic Fields Perpendicular to the Surface, I. N. Goncharov, L. V. Petrova, Khukhareva . . . . .	(181)
8Zp 15	On the Nature of the Peak Effect near the Upper Critical Magnetic Field, I. N. Goncharov, I. S. Khukhareva . . . . .	(182)
Vortex State in Type II and Type I Superconductors . . . . .		Hall X
9Xa 1	Electromagnetic Response of Type II Superconductors in the Vortex State, K. Maki . . . . .	183
9Xa 2	Generalization of the Time-Dependent Ginsburg-Landau Equation, M. Cyrot . . . . .	184
9Xa 3	Reexamination of Transport Properties of Dirty Type-II Superconductors, H. Ebisawa, H. Takayama . . . . .	185
9Xa 4	Flux-Flow Resistance and Hall Effect in Pure Type-II Superconductor:Nb, K. Noto, Y. Muto . . . . .	186

9Xa 5	The Flux Flow and Transport Properties in the Superconducting States, Y. B. Kim . . . . .	187
9Xa 6	Vortex Motion in Dirty Type II Superconductors, Y. Muto, K. Mori, K. Noto . . . . .	188
9Xa 7	Entropy of Bortices and Specific Heat in the Superconducting Mixed State, R. Ehrat, L. Rinderer . . . . .	189
9Xa 8	Flux Flow as a Function of Film Thickness in Type I Superconducting Films, T. Ogushi, T. Takayama, Y. Shibuya . . . . .	190
Vortex State . . . . .		Hall X
9Xp 1	The Resistive Effects in th Thin Plate of Type II Superconductor, L. N. Goncharov, L. V. Petrova, I. S. Khukhareva . . . . .	191
9Xp 2	Individual Vortex Motion Study in Type II Superconductors J. Baixeras, T. Pech . . . . .	192
9Xp 3	Theory of Flux-Flow Noise Voltage and Crosspower Spectra in Superconductors, J. R. Clem . . . . .	193
9Xp 4	Flux Transport Noise in Niobium Foils, J. B. Kruger, C. Heiden . . . . .	194
9Xp 5	Verificatinn of Burgess' Theory of the Flux Flow Noise Spectrum of Type II Superconductors, S. W. Shen, A. van der Ziel . . . . .	195
Tunneling . . . . .		Hall X
9Xp 6	Tunneling Measurements of Gaps in Superimposed Layers of Al and Sn, J. Vrba, S. B. Woods . . . . .	196
9Xp 7	Tunneling into Rhenium Single Crystals, S. I. Ochiai, M. L. A. MacVicar, R. M. Rose . . . . .	197
9Xp 8	Magnetic Field and Superconducting Tunnel Junction Characteristics with a Non Conventional Insulator, G. Faraci, G. Giaquinta, N. A. Mancini, I. F. Quercia . . . . .	198
9Xp 9	Measurement of Tunnel Current Density in a Metal-Oxide-Metal System as a Function of Oxide Thickness, J. M. Eldridge, J. Matisoo . . . . .	199
9Xp 10	Low Temperature Tunnelling Study of Vortices in Superconducting Thin Films, G. B. Donaldson, D. J. Brassington . . . . .	200
9Xp 11	Tunneling Spectroscopy of NbN, K. Komenou, K. Tanaka, Y. Onodera . . . . .	(201)
Josephson Junction . . . . .		Hall Z
9Zp 1	Josephson Current through Junctions with Normal Metal Barriers, C. Ishii . . . . .	202
9Zp 2	Josephson Junctions with Superconducting Barriers:I. Theory, K. Yamafuji, T. Ezaki, T. Matsushita, F. Irie . . . . .	203
9Zp 3	Josephson Junctions with Superconducting Barriers:II. Experiment, M. Mitani, K. Aihara, N. Hara . . . . .	204
9Zp 4	Supercurrent through S-N-S' Sandwich, S. Kobayashi, M. Sato, W. Sasaki . . . . .	205
9Zp 5	Electric Transport Currents across Normal-Superconducting Interfaces, J. Clarke . . . . .	206
9Zp 6	Stimulated Emission of Energy Gap Radiation from N-S Point Contact Junctions, W. D. Gregory, L. Leopold, D. Repici, R. F. Averill, J. Bostock . . . . .	207
9Zp 7	Interaction of Microwaves with Point Contact Josephson Junction Arrays, T. D. Clark, . . . . .	208
9Zp 8	Electrodynamic and Noise Properties of Very Small Josephson Tunnel Junctions, S. A. Buckner, J. T. Chen, D. N. Langenberg . . . . .	209

9Zp 9	Noise in Josephson Point Contacts, H. Kanter, F. L. Vernon, Jr.	210
9Zp 10	Complete Electromagnetic Solutions in London Approximation for Radiating Josephson's Junctions, M. Renard,	211
9Zp 11	Current Induced Self-Field Effect in Pb-Cu-Pb Josephson Junctions, M. Mitani, K. Aihara, N. Hara	(212)
9Zp 12	Critical Currents in Point Contact Josephson Junctions, J. Trefny, R. R. Wagner, B. Bertman	(213)
9Zp 13	Josephson Junctions with an Evaporated Semiconducting Barrier, Ph. Cardinne, B. Manhes, M. Renard	(214)
9Zp 14	Singularity in the Josephson Supercurrent Amplitude, B. T. Ulrich	(215)
Domains and Current Induced Transition . . . . .		Hall T
10Ta 1	Flux Movement in Type I and Type II Superconductors, L. S. Wright, D. C. Baird, M. R. Wertheimer	216
10Ta 2	High-Resolution Magneto-Optical Observation of Magnetic Structures in Superconductors at Low Critical Fields, H. Kirchner	217
10Ta 3	Magneto-Optical Observation of Magnetic flux Structures in Superconductors, R. P. Huebener, V. A. Rowe, R. T. Kampwirth	218
10Ta 4	Kinetics of the destruction of type I Superconductivity by a Current, E. Posada, F. Rothen, W. Bestgen, L. Rindere	219
10Ta 5	Axial Magnetic field Penetration into Short Cylinders of Superconducting Indium, R. Olafsson, J. F. Allen	220
10Ta 6	The "Intermediate State" in Type-II Superconductors, U. Krageloh, A. Seeger	221
10Ta 7	Current Induced flow of Superconducting Domains in the Intermediate State, P. R. Solomon, R. E. Harris	222
10Ta 8	Transport Current Distribution and Deformation of the Vortex Lattice Structure in Type II Superconductor, P. Thorel, Y. Simon	223
10Ta 9	Destruction of Superconductivity by a Current, B. K. Mukherjee, H. D. Wiederick, D. C. Baird	224
10Ta 10	S-N Transition of Non-ideal Type II Ta, S. Koga, Y. Shibuya	225
10Ta 11	High Field Superconducting Properties of Laves Phases in V-Hf and V-Hf-Zr Alloys, K. Inoue, K. Tachikawa	226
10Ta 12	Dynamics of the Intermediate State in Bulk Superconductors P. R. Solomon, R. E. Harris	(227)
Films and Small Particles . . . . .		Hall X
10Xa 1	Bulk Granular Superconductors, H. Cortes, P. Pellan, J. Rosenblatt	228
10Xa 2	The Critical Currents in Superconductors of the II Kind with a Disperse Intermetallic Phase, V. M. Pan, Ju. I. Beletski, L. S. Lasareva, S. A. Firstov	229
10Xa 3	Critical Field of Pb-Bi Alloys in Porous Glass, J. H. P. Watson	230
10Xa 4	Measurements of $B_{c2}$ of Lead Films as a Function of the Mean Free Path of the Electrons, G. Bergmann, R. Koepke	231
10Xa 5	Granular Refractory Superconductors, J. H. P. Watson	(232)
10Xa 6	Superconducting Transition Temperature of Metallic Grains with Grain Size, J. H. P. Watson	(233)
10Xa 7	Order Parameter Measurements on Long Superconducting Thin Film Geometries, D. K. Rose, W. M. Fairbank	234
10Xa 8	Stability of Supercurrent Flow in Cylindrical Films of Tin, H. Meissner	235

10Xa 9	Anisotropy of the Surface Impedance in Finite Size Films in a Parallel Field, W. Holzer, G. Waysand, E. Guyon . . . . .	236
10Xa 10	Observation of Single Fluxoids and the Susceptibility in a Low $\kappa$ Type II Superconducting Microcylinder, D.S. McLachlan . . . . .	237
10Xa 11	Anisotropy in the Thermal Conductivity of Thin Super- conducting Films, P. Lindenfeld, M.S. Moskowitz . . . . .	(238)
10Xa 12	First and Second Order Phase Transitions of Tin Whiskers in a Magnetic Field, D.S. McLachlan . . . . .	(239)
10Xa 13	Magnetic Transition of Type II Superconducting Thin Films of Sn, Pb, and In under Magnetic Field Modulation, Y.W. Kim, E.K. Cornell, E. Friedman, C.L. Aseltine . . . . .	(240)
10Xa 14	Electrical Properties of Aluminum Fine Particles Prepared by Gas Evaporation Method, K. Ohshima, T. Fujita, N. Wada	(241)
10Xa 15	Superconductivity of Indium Fine Particles, S. Matsuo, S. Hayashi, S. Noguchi, K. Oshima, T. Fujita, N. Wada . .	(242)
10Xa 16	Magnetic Field Modulation of the Microwave Impedance of Pb Superconducting Films, P.L. Indovina, S. Onori, E. Tabet	(243)
10Xa 17	Studies of the Mixed State in Superconducting Films, K. Rose, D.A. Soderman . . . . .	(244)

## Section C

<b>Plasma Waves, Transport and Other Properties.</b>	<b>Hall T</b>
5Ta 1 Anomalous Behaviors of the Azbel'-Kaner Type Cyclotron Resonance in Bismuth, J. Nakahara, H. Kawamura, Y. Sawada.	247
5Ta 2 Helicon-Phonon Interactions in Semi-Metals, E.R. Dobbs, D.J. Meredith, J. Young.	248
5Ta 3 Interactions of Spin Waves and Magnetoplasma Waves in Exchange-Enhanced Paramagnetics, P.R. Wallace.	249
5Ta 4 Nonlinear Photomagnetoelectric (PME) Effect in Bi by Laser Irradiation, T. Fukase, Y. Nishina.	250
5Ta 5 Theory of Acoustoelectric and Acoustomagnetoelectric Current in the Quantum Magnetic Field, M. Nakayama.	251
5Ta 6 Nuclear Quadrupole Interactions in the Semimetals As, Sb, and Bi, H.K. Collan, P.E. Gregers-Hansen, M. Krusius, G.R. Pickett.	252
5Ta 7 Electronic Specific Heat of $\alpha$ -Phase Alloys Based on Copper and Silver, S. Noguchi, U. Mizutani, K. Kondo, T.B. Massalski.	253
5Ta 8 Nonlocal Pseudopotentials and the Fermi Surfaces of Sodium and Potassium, M. Matsuura, M. Watabe.	(254)
5Ta 9 Numerical Calculation of the Electronic Properties of Metals Based on Realistic (Non-muffin-Tin) Potentials, W. Brunn, L. Fritzsche.	(255)
5Ta10 The Band Structure of Palladium and the Effects of Hydrogen Impurity, H. Kaga, L.A. Girifalco.	(256)
<b>Transport Properties.</b>	<b>Hall T</b>
5Tp 1 Transport Properties of Tellurium at Very Low Temperatures, S. Tanaka, K. Takita, T. Hagiwara.	257
5Tp 2 Thermoelectric and Thermomagnetic Effects in Graphite, K. Sugihara, T. Takezawa, T. Tsuzuku, Y. Hishiyama, A. Ono.	258
5Tp 3 Temperature and Impurity-Concentration Dependences of the Hall Coefficient of Metals, H. Kimura, K. Honda.	259
5Tp 4 Computer Simulation of Anomalous Magnetoconduction in Semimetals— The Esaki Effect and Its Variations, Y. Murayama.	260
5Tp 5 Thermomagnetic Effects in Bismuth, K. Sugihara.	(261)
5Tp 6 A One-Dimensional 'Superlattice' in Semiconductors, L. Esaki, L.L. Chang, R. Tsu.	262
5Tp 7 Extremely Field Sensitive Resistivity and Susceptibility of High Purity Ga and Bi at Low Temperature, T. Kushida.	263
5Tp 8 A Magnetohydrodynamic Effect in Bismuth at High Magnetic Fields, T. Morimoto, K. Yoshida,	264
5Tp 9 Zero Bias Anomaly, Induced by Mn Impurities in Al-I-Al Tunnel Junctions, N. Kroo, Z. Szentirmay.	265
5Tp10 Kondo Type Behaviour in a Degenerate Semiconductor, Y.C. Chan, D.M. Finlayson, I.A. Johnson.	266

Fermiology (Ultrasonics and Others) . . . . .	Hall T
6Ta 1 The Band Structure of Bismuth-Antimony Alloys, N. B. Brandt, Va. G. Ponomarev, E. A. Svistova, S. M. Chudinov . . . . .	267
6Ta 2 High Field Quantum Oscillations in Dilute Bismuth-Antimony Alloys, H. Chu, Y. -H. Kao . . . . .	268
6Ta 3 Pressure Dependence of Galvanomagnetic Effects in Ytterbium and Tellurium, S. Minomura, G. Fujii, O. Shimomura, H. Nagano, S. Tanuma . . . . .	269
6Ta 4 Magnetic Breakdown Effect in Magnetostriction of Cadmium, J. M. Carter, D. M. Sparlin . . . . .	270
6Ta 5 Experimental Study of Electronic Properties of Bismuth and Antimony by Giant Quantum Attenuation of Sound Waves, S. Mase, Y. Matsumoto, T. Sakai, Y. Suido . . . . .	271
6Ta 6 High Field Magnetoacoustic Attenuation in Magnesium, F. G. Brickwedde, R. W. Reed . . . . .	272
6Ta 7 Magnetic Susceptibilities of Arsenic and Arsenic-Antimony Alloys, Y. Yamaguchi, K. Miyano, S. Ishiguro . . . . .	273
6Ta 8 de Haas-van Alphen Effect and Magnetic Susceptibility of Antimony and Arsenic Alloys, Y. Sito, K. Maezawa . . . . .	274
Fermiology (Band Structure). Size and Boundary Effect. Hall T	
6Tp 1 Observation of Quantum-Size Effects by Far Infrared Spectroscopy, M. V. Dorigo, J. H. Storlinga, P. Wyder . . . . .	275
6Tp 2 Magnetic Properties of Thin Metallic Films in the Quantum- Size-Effect Region, Y. -H. Kao, Y. -S. Way, S. -Y. Wang . . . . .	276
6Tp 3 Surface Scattering of Electrons in Magnetic Surface States, J. Mertsching, H. J. Fischbeck . . . . .	277
6Tp 4 Effect of Small-Angle Scattering on the Galvanomagnetic Properties of Thin Films of Polyvalent Metals, L. E. G. Ah-Sam, M. C. Hones . . . . .	278
6Tp 5 Low Temperature NMR Study of Samll Metallic Particles, W. A. Hines . . . . .	279
Fermiology (dHvA Effect) . . . . .	Hall Z
8Za 1 Amplitudes in the de Haas-van Alphen Effect, D. Shoenberg . . . . .	280
8Za 2 de Haas van Alphen Effect in Cobalt, F. Batellan, I. Rosenman . . . . .	281
8Za 3 Pressure Dependence of de Haas-van Alphen Effect on Antimony and Arsenic, S. Tanuma, S. Minomura, O. Shimomura, G. Fujii, W. R. Datars . . . . .	282
8Za 4 de Haas-van Alphen Effect in a Kondo-Type Alloy, M. Labro, C. Rubbens . . . . .	283
8Za 5 Magnetothermal Oscillations in a Commensurate Cr (Mn) Alloy, J. E. Graebner . . . . .	284
8Za 6 de Haas-van Alphen Effect Measurements of Electron Relaxation Time Anisotropy due to Dislocations in Copper, D. W. Terwillinger, R. J. Higgins . . . . .	285
8Za 7 Effect of Dislocations on the de Haas-van Alphen Effect in Single Crystals of Copper, P. T. Coleridge, B. R. Watts . . . . .	286
8Za 8 A Theory for the de Haas-van Alphen Effect in Metal Crystals with Dislocations, B. R. Watts . . . . .	287

Many Body Effect . . . . .	Hall Z
9za 1      The Temperature Dependence of the Electron Phonon Mass Enhancement, P. B. Allen . . . . .	288
9za 2      Electron-Phonon Renormalisation Effects in Azbel-Kaner Cyclotron Resonance, P. Goy, G. Weisbuch . . . . .	289
9za 3      Temperature Dependence of the Relaxation Time and Cyclotron Mass in Mercury, R. G. Poulsen, W. R. Datars . . . . .	290
9za 4      Extraordinary Mode Wave Propagation in Potassium, W. M. Walsh, Jr., P. S. Peercy, L. W. Rupp, Jr., P. H. Schmidt . . . . .	291
9za 5      Collective and Magnetic Properties of Electrons in Metals at Very Low Temperatures, A. Ishihara . . . . .	292
9za 6      Landau Orbital Ferromagnetic States in Metals, H. J. Lee . . . . .	293
9za 7      Landau Quantization Effects in Light Scattering Cross Section Associated with Degenerate Plasma Modes, R. W. Danz, N. J. Horing . . . . .	294
9za 8      Correlation Energy of Quantum Plasma in High Magnetic Field, N. J. Horing, R. W. Danz . . . . .	(295)
9za 9      Magnetic Field Effects on Phonon Spectrum through Electron Shielding, N. J. Horing, R. W. Danz, M. L. Glasser . . . . .	(296)
9za10     Variational Technique for the Many Body Spectral Density, E. B. Brown, H. Hartmann . . . . .	(297)

## Section D

Spin Ordering and Dynamics . . . . .	Hall T
4Tp 1 Cooling by Adiabatic Magnetization and Spin Ordering T. Haseda, Y. Tokunaga, Y. Kuramitsu, K. Amaya, S. Sakatsume	301
4Tp 2 Spin Ordering, Spin Waves, and Cooling by Adiabatic Magnetization in a Spin-Pair System, M. Tachiki, T. Yamada, S. Maekawa . . . . .	302
4Tp 3 Spin Interactions in Cu(NO <sub>3</sub> ) <sub>2</sub> ·2.5H <sub>2</sub> O, J.C. Bonner, S.A. Friedberg, H. Kobayashi, B.E. Myers . . . . .	303
4Tp 4 Magnetic Properties of a System with Crystal-Field Singlet Ground State, T. Murao . . . . .	304
4Tp 5 Contribution of Dipolar Interactions to the Magnetic Ordering in Terbium Aluminum Garnet, A. Gavignet-Tillard, J. Hammann . . . . .	305
4Tp 6 Spin-Wave Relaxation in Antiferromagnetic CuCl <sub>2</sub> 2H <sub>2</sub> O, H. Yamazaki . . . . .	306
4Tp 7 Magnetism of NiCl <sub>2</sub> 2H <sub>2</sub> O, M. Motokawa . . . . .	307
4Tp 8 Low Temperature Propérités of D <sub>2</sub> PO <sub>4</sub> <sup>Y<sub>4</sub></sup> in a Magnetic Field, C.S. Konce, B.W. Mangum, D.D. Thornton . . . . .	308
4Tp 9 Paramagnetic Relaxation in Dysprosium and Terbium Ethyl Sulfate. The Influence of Various He Baths on the Relaxa- tion Functions, H. Kalbfleisch, U. Kump . . . . .	309
4Tp 10 Brillouin Scattering in Solids: A Tool in the Study of Magnetic Interaction, W. Low . . . . .	310
4Tp 11 Spin Ordering in a Complex Antiferromagneti Vivianite Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> ·8H <sub>2</sub> O, H. Ikeda, N. Uryu . . . . .	(311)
Nuclear Cooling and Nuclear Magnetism . . . . .	Hall Y
5Ya 1 Observation of Zero-Point Spin Deviation in Antiferromagnetic K <sub>3</sub> Fe(CN) <sub>6</sub> , K. Ono, M. Shinohara, A. Ito, N. Sakai, M. Suenaga . . . . .	312
5Ya 2 Magnetic Properties of Some Rare Earth Compounds at Very Low Temperatures, T.E. Katila, V.K. Typpi, E.R. Seidel . . . . .	313
5Ya 3 Hyperfine Heat Capacity of Metallic Europium and Erbium, M. Krusius, G.R. Pickett . . . . .	314
5Ya 4 On Mossbauer Diffraction by Nuclei with Ordered Spins, V.A. Belyakov . . . . .	315
5Ya 5 Nuclear Antiferromagnetism in the $\mu$ K Range, M. Chapeilier	316
5Ya 6 Hyperfine Enhanced Nuclear Magnetic Cooling in Van Vleck Paramagnetic Intermetallic Compounds, K. Andres . . . . .	317
5Ya 7 Nuclear Cooling Combined with Dilution Refrigeration, P.M. Berglund, G.J. Ehnholm, R.G. Gylling, O.V. Lounasmaa, R.P. Søvik . . . . .	318
5Ya 8 Proton Cooling by Adiabatic Demagnetization in Ce <sub>2</sub> Mg <sub>3</sub> (NO <sub>3</sub> ) <sub>12</sub> · 24H <sub>2</sub> O, B.S. Blaisse, G.J.C. Bots, J.A. Ottjes, J.A. Koen	319

Kondo Effect . . . . .	Hall Y
5Yp 1 Functional Integral Approach to the Bound State due to the s-d Exchange Interaction, A. Yoshimori, A. Sakurai	320
5Yp 2 Kondo Effect in the Anderson Model and the Wolff Model F. Shibata, H. Mamada, F. Takano . . . . .	321
5Yp 3 Problem of the Renormalization of Local Spin Fluctuations M.T. Beal-Monod, J.P. Hurault, K. Maki . . . . .	322
5Yp 4 Transport Properties of Kondo Alloys in Presence of a Magnetic Field, M.T. Beal-Mond, R.A. Weiner . . .	323
5Yp 5 Application of the Renormalization Group Method for Infrared Divergences in the Kondo Effect, A. Zawadowski, M. Fowler	324
5Yp 6 Influence of the Electron-Electron Interaction at the Magnetic Impurity Sites on the Kondo Effect, K.H. Fischer	325
5Yp 7 Why There Is No Breakdown of Perturbation Theory at the Kondo Temperature in Dilute Magnetic Alloys, R.D. Mattuck, C.Y. Cheung . . . . .	(326)
5Yp 8 Random Spin Problem of the Kondo Effect, Y. Kurata	(327)
5Yp 9 The One Particle Excitation from the s-d Singlet State, K. Kawamura . . . . .	(328)
5Yp 10 Interaction Effects on the Nearly-Magnetic Cobalt Impurities in Gold, B. Lecoanet, R. Tournier . . . . .	329
5Yp 11 Magnetic Properties of Copper-, Silver- and Gold-Based Alloys, M. Labro, M. Vochten, C. Rubbens . . . . .	330
5Yp 12 Low-Temperature Resistance Anomalies in Rhodium-3d Solute and Molybdenum-3d Solute Alloys, B.R. Coles, S. Mozumder, R. Rusby . . . . .	331
5Yp 13 Magnetic Field- and Temperature- Dependences of Susceptibility and Resistivity in Dilute Rh-Fe and Au-V Alloys, N. Sakamoto, Y. Yamaguchi, S. Waki, S. Ogawa . . . . .	332
5Yp 14 Kondo Effect in Pd, Rh, and Pt Dilute Alloys, H. Nagawawa, N. Inoue . . . . .	333
5Yp 15 The S-F Interaction in Silver-Gadolinium Dilute Alloys, A. Nakamura, Y. Nishihara, N. Kinoshita . . . . .	334
5Yp 16 (Cancelled)	(335)
Symposium on Kondo Problem . . . . .	Hall Y
6Ya 1 Kondo Effect in Normal Metals and in Superconductors, J. Zittartz . . . . .	336
6Ya 2 The Kondo Effect in Superconductors and Normal Metals, Y. Nagaoka . . . . .	337
6Ya 3 Title undecided, P.W. Anderson . . . . .	338
6Ya 4 A Comment on the s-d Problem, J. Kondo . . . . .	339
6Ya 5 Nature of the Singlet Ground State due to s-d Exchange, K. Yosida . . . . .	340
Kondo Effect . . . . .	Hall Y
6Yp 1 Experimental Evidence for Theoretical Solutions of the Kondo Problem?, G.J. van den Berg . . . . .	341
6Yp 2 Magnetic Resonance and the Kondo Problem, A. Narath . .	342
6Yp 3 Low Temperature Heat Capacities of Dilute Solutions of Fe and Cr in Cu, B.B. Triplett, N.E. Phillips . . . .	343
6Yp 4 The Magnetization as a Function of Field for Cu-Fe Alloys in the Non-Magnetic State, J.L. Tholence, R. Tournier	344
6Yp 5 NMR Studies of the Kondo Effect in Gold- and Silver-Based Dilute Alloys, K. Kume, K. Mizuno, Y. Nakamura, S. Kazama, J. Abe . . . . .	345

6Yp 6	Magnetic Field Dependance of the Hall Constant in Dilute Magnetic Alloys, P. Monod, A. Friederich . . . . .	346
6Yp 7	Electrical Resistivity of Dilute Gold-Chromium Alloys at Low Temperatures, N. Kunitomi, H. Sakamoto, Y. Nakai . . . . .	347
6Yp 8	Thermopower and Resistivity of Dilute Alloys of Cr in Cu in Magnetic Fields, A.M. Guenault, M. Read . . . . .	348
6Yp 9	Magnetic Field Effects on the Thermopowers of Dilute Magnetic Alloys, D.J. Huntley, J. Kopp, C.W.E. Walker . . . . .	(349)

#### Hall T

8Ta 1	Effects of Local Environments on Electronic and Magnetic States in Intermetallic Compounds, D.J. Sellmyer, J. Franz, G.R. Caskey, J. Ahn . . . . .	350
8Ta 2	Transport Anomalies of $\beta'$ -Phase 3d Transition-Metal Alloys T. Aoki, J.O. Brittain, Y. Yamaguchi . . . . .	351
8Ta 3	Hyperfine Fields at Dilute Fe and Co Impurities in Pd and Pt, T. Ericsson, M.T. Hirvonen, T.E. Katila, P. Reivari . . . . .	352
8Ta 4	Specific Heat of Palladium and Palladium-Iron Alloys for Low Iron Concentrations, G. Chouteau, R. Fourneau, R. Tournier . . . . .	353
8Ta 5	Effect of Ferromagnetic Ordering on the Resistive Behavior of Exchange Enhanced Alloys, M.P. Kawatra, J.A. Mydosh, J.I. Budnick, B. Madden . . . . .	354
8Ta 6	Electrical Resistivity Minimum and Magnetic Behavior of Concentrated Pt-Ni Alloys, A.I. Schindler, D.J. Gillespie . . . . .	355
8Ta 7	Origin of the Helical Spin Ordering in $\text{FeCl}_3$ , K. Katsumata, Y. Yokozawa . . . . .	(356)
8Ta 8	Evidence from Thermal Conductivity Measurements for a Jahn-Teller Effect for $\text{Mn}^{3+}$ and $\text{Cr}^{2+}$ in $\text{Al}_2\text{O}_3$ , L.J. Challis, A. M. de Goer . . . . .	(357)

#### Magnetism of Metals and Alloys . . . . . Hall T

8Ta 9	Theory of the Spin Resonance of Localized Moments in Dilute Alloys, T. Sasada, H. Hasegawa . . . . .	358
8Ta 10	Phase Transition in Hubbard Model, M. Cyrot . . . . .	359
8Ta 11	Theory for the Effect of Local Atomic Environment on the Formation of Local Magnetic Moments, K.H. Bennemann, P. Farwig, J.W. Garland . . . . .	360
8Ta 12	Oscillation of Conduction Electron Density near the Solute Atoms in Dilute Cu-Mn Alloy, K. Tompa . . . . .	361
8Ta 13	Nuclear Spin Relaxation of $\text{Dy}^{163}$ in Ferromagnetic Dy Metal at Low Temperature, J. Itoh, N. Sano . . . . .	362
8Ta 14	Electron Spin Resonance of ZnMn Dilute Alloys with Nonmagnetic Al and Cu Impurities, Y. Miyako . . . . .	(363)

#### Phase Transition and Spin Interactions . . . . . Hall T

8Tp 1	Magnetic Ordering in $\text{Ni}(\text{NH}_3)_2 \cdot \text{Ni}(\text{CN})_4 \cdot 2\text{C}_6\text{H}_6$ , S. Takayanagi, S. Nagata, T. Watanabe . . . . .	364
8Tp 2	Heat Capacity Measurements on f.c.c. Hexammine Halides, Hexanitrites $\text{K}_2\text{MBa}(\text{NO}_3)_6$ , and Ferrocyanides $\text{K}_2\text{MFe}(\text{CN})_6$ , (M = Co, Ni, Cu), H. Suga, H.W.J. Blote, E. Lagendijk, W.J. Huiskamp . . . . .	365
8Tp 3	Magnetic Resonance of Interacting Random Spin System in Metals, K. Okuda, M. Date . . . . .	366

8Tp 4	Magnetic Anomaly in the Heat Capacity of $TcF_6$ at 3.12 K D.W. Osborne, F. Schreiner . . . . .	367
8Tp 5	Concentration Dependence of the Neel Point in the Diluted 3d-Ising System $Co_p Zn_{1-p} Cs_3Cl_5$ , E. Lagendijk, W.J. Huiskamp, P.F. Bongers . . . . .	(368)
8Tp 6	Magnetic Properties and the Phase Transition in Uniaxial Ferromagnet $Cu(NH_4)_2Br_4 \cdot 2H_2O$ , H. Suzuki, T. Watanabe .	(369)
8Tp 7	The Low Temperature Heat Capacity of $GdAsO_4$ , J.H. Colwell	(370)
8Tp 8	Anomalous Magnetic Phases in Antiferromagnetic $GdAsO_4$ , B.W. Mangum, D.D. Thornton . . . . .	(371)
8Tp 9	Specific Heat of Nickel Lanthanum Double Nitrate, G. Urine, H. Fenichel . . . . .	(372)
8Tp 10	Magnetic Ordering in $CsMnCl_3 \cdot 2H_2O$ , J. Skalyo, Jr., G. Shirane, S.A. Friedberg, H. Kobayashi, I. Tsujikawa .	373
8Tp 11	Magnetic Ordering in a Linear Antiferromagnet, $CsNiCl_3$ , M. Mekata, K. Adachi, H. Takaki, N. Achiwa . . . .	374
8Tp 12	Thermal and Magnetic Properties of Linear Ferro- and Antiferro-Magnetic Substance $MC_2 \cdot 2PY$ (M;Co, Cu), K. Takeda, M. Matsuura, Y. Ajiro, S. Matsukawa, T. Haseda . . .	375
8Tp 13	Linear Heisenberg Interaction in Stable Organic Radicals, J. Yamauchi, T. Fujito, H. Nishiguchi, Y. Deguchi .	376
8Tp 14	One-Dimensional Magnetism in a Stable Nitroxyl Free Radical S. Saito, M. Kumano, E. Kanda . . . . .	377
8Tp 15	Observation of Magnetic Domains in Two Dimensional Heisenberg Ferromagnets, H. van Kempen, F.H. Mischgofsky, P. Wyder .	378
8Tp 16	Inter-Layer Spin Correlations in a Two-Dimensional Magnetic System, Y. Ajiro, N. Terata . . . . .	379

## Section E

<b>Thermal Properties . . . . .</b>	<b>Hall T</b>
9Ta 1 Low Temperature and Low Frequency Properties of Amorphous Systems, J. Blanc, D. Brochier, J. C. Lasjaunias, R. Maynard, A. Ribeyron . . . . .	383
9Ta 2 Investigation of the Thermodynamic Properties of Neon at Low Temperatures by Method of Constant Flow, Ju. A. Dedikov, V. A. Medvedev, M. P. Orlova . . . . .	384
9Ta 3 Thermal Conductivity of Liquefied Neon Isotopes, L. Bewilogua, T. <sup>3</sup> Yoshimura . . . . .	385
9Ta 4 Adsorption of He <sup>3</sup> , He <sup>4</sup> , N <sub>2</sub> and Argon on Zeolite at Low Temperatures, J. G. Daunt, C. Z. Rosen . . . . .	386
9Ta 5 Specific Heat of Tin-Germanium Telluride, W. D. McCormick, K. I. Trappe . . . . .	(387)
9Ta 6 Phonon Scattering by Vanadium Ions in Al <sub>2</sub> O <sub>3</sub> , A. M. de Goer, N. Devismes . . . . .	(388)
<b>Thermometry . . . . .</b>	<b>Hall T</b>
9Ta 7 The "Shape" Dependent Specific Heat of Cerous Magnesium Nitrate, B. M. Abraham, Y. Eckstein . . . . .	389
9Ta 8 Static Nuclear Magnetization Thermometry in the Millikelvin Region R. A. Buhrman, W. P. Halperin, S. W. Schwenterly, J. Reppy, R. C. Richardson, W. W. Webb . . . . .	390
9Ta 9 Superconducting Thermometric Fixed Points, J. F. Schooley, R. J. Soulen . . . . .	391
9Ta10 Low-Temperature Silicon Diode Thermometers, N. Sclar, D. B. Pollock . . . . .	392
9Ta11 The Measurement of the Temperature in a Dilution Refrigerator by the Nuclear Resonance in Platinum, Yu. D. Anufriev, V. P. Peshkov . . . . .	393
<b>Solid and Liquid Hydrogen . . . . .</b>	<b>Hall T</b>
9Tp 1 Theory of Raman Scattering in Solid O-H <sub>2</sub> and P-D <sub>2</sub> above and below the Transition Temperature, T. Nakamura, H. Miyagi, J. Hama, M. Fujio . . . . .	394
9Tp 2 Infrared Absorption of Solid H <sub>2</sub> due to Libron, S. Homma, H. Matsuda* . . . . .	395
9Tp 3 Phonons and Librons in Solid Hydrogen, W. Biem, F. G. Mertens .	396
9Tp 4 The Libron Spectrum of Hydrogenic Solids, C. F. Coll, III, A. B. Harris . . . . .	397
9Tp 5 Longitudinal Nuclear Relaxation Times in Liquid and HCP D <sub>2</sub> , B. Maraviglia, F. Weinhaus, S. M. Myers, H. Meyer . . . . .	398
9Tp 6 A Study of NMR Lineshapes in Solid D <sub>2</sub> , F. Weinhaus, B. Maraviglia, H. Meyer, R. L. Mills* . . . . .	(399)

Kapitza Resistance . . . . .	Hall T
9Tp 7 Experiments on the Kapitza Resistance, J. D. N. Cheeke, B. Hebral . . . . .	400
9Tp 8 Kapitza Conductance due to Adsorption and Desorption of Helium Atoms, G. A. Toombs, L. J. Challis . . . . .	401
9Tp 9 Kapitza Resistance between Dielectrics and Metal in the Normal and Superconducting States, B. S. Park, Y. Narahara	402
9Tp10 Heat Exchange between Solids and Liquid Helium below 1°K, K. N. Zinov'yeva . . . . .	403
Application of Low Temperature Devices . . . . .	Hall Z
10Za 1 Search for Fractional Charge (Quarks) Using a Low Temperature Thchnique, A. F. Hebard, W. M. Fairbank . . .	404
10Za 2 Cryogenic Gravity Meter to Study Radial Free Modes of the Earth, V. S. Tuman . . . . .	405
10Za 3 Stress Induced Shifts in Contact Potentials, S. S. Liu, P. P. Craig . . . . .	406
10Za 4 Superconductive Tunneling Junctions as Detector of Incoherent High Frequency Phonons, J. P. Schulz, O. Weis	407
10Za 5 Superconducting Weak-Link Detectors for Far-Infrared, Millimeter and Microwave Photons, R. Y. Chiao . . . . .	408
10Za 6 Josephson Junctions in Astronomy, B. T. Ulrich . . . .	409
10Za 7 Energy Loss at Very Low Frequencies in Superconducting Lead, G. A. Williams, R. H. Skinner . . . . .	410
10Za 8 Harmonic Generation of Voltages in Superconductors Subjected to A-C and D-C Magnetic Fields, W. C. H. Joiner, M. Ohmer . . . . .	(411)
Addenda	
Section C	
Fermiology (dHvA Effect)	
8Za 9 De Haas-van Alphen Effect in Indium Antimonide, M. Springford, W.B. Wampler . . . . .	412
Author Index . . . . .	413