CONTENTS

Preface		iii
1.	THE STUDY OF HYDROMAGNETIC TURBULENCE	1
2.	TURBULENCE IN HYDRODYNAMIC CHANNEL FLOWS A Semiempirical Analysis Correlation with Experiment The Friction Factor	7 7 11 13
3.	MATHEMATICAL PROPERTIES OF A TURBULENT D-C HYDROMAGNETIC FLOW Basic Equations Boundary Conditions Symmetry Properties A Partial Solution	15 15 17 19 21
4.	DIMENSIONAL ANALYSIS FOR A TURBULENT HYDROMAGNETIC FLOW Basic Analysis The Friction Factor	27 27 30
5.	EXPERIMENTAL RESULTS FOR A TURBULENT D-C HYDROMAGNETIC FLOW	32
6.	CORRELATION OF THEORY AND EXPERIMENT Empirical Determination of Functions F_1 AND F_2 An Analytical Approximation to the Function F_1	41 41 47
7.	FURTHER DEDUCTIONS FROM THE THEORY Velocity Profiles and Friction Factors Current Distributions Velocity Correlations	52 52 56 58
8.	AN APPROXIMATE ANALYSIS OF A LAMINAR INDUCTION-DRIVEN FLOW Statement of the Problem Symmetry Properties and Boundary Conditions Mathematical Basis for the Induction Flow The Approximate Solution Approximate Power Relations	61 62 62 66 71
9.	THE TURBULENT INDUCTION-DRIVEN FLOW Mathematical Basis Analogies between the A-C and D-C Flows	75 75 80
10.	CONCLUSIONS AND SUGGESTIONS FOR FURTHER WORK	84
	References	89
	Index	90