

Contents

| | |
|--|-----|
| Preface | vii |
| Units | ix |
| Notation | x |
| References Note | xi |
| 1. <i>Introduction</i> | 1 |
| 2. <i>Heat Flow in Weldments</i> | 60 |
| 3. <i>Fundamental Information on Residual Stresses</i> | 88 |
| 4. <i>Measurement of Residual Stresses in Weldments</i> | 112 |
| 5. <i>Transient Thermal Stresses and Metal Movement During Welding</i> | 148 |
| 6. <i>The Magnitude and Distribution of Residual Stresses in Weldments</i> | 189 |
| 7. <i>Distortion in Weldments</i> | 235 |
| 8. <i>The Strength of Welded Structures: Fundamentals</i> | 328 |
| 9. <i>Fracture Toughness</i> | 336 |
| 10. <i>Theoretical and Experimental Studies of the Brittle Fracture of Welded Structures</i> | 400 |
| 11. <i>The Fatigue Fracture of Weldments as it Relates to Residual Stress</i> | 449 |
| 12. <i>The Role of Residual Stress in Stress Corrosion Cracking and Hydrogen Embrittlement</i> | 478 |
| 13. <i>Effects of Distortion and Residual Stresses on Buckling Strength of Welded Structures</i> | 491 |

vi *Contents*

| | |
|---|-----|
| 14. <i>Weld Cracking and Joint Restraint</i> | 518 |
| 15. <i>Effects of Weld Defects on Service Behavior</i> | 577 |
| 16. <i>Further Discussions on Some Selected Subjects</i> | 618 |
| Index | 635 |