

Contents

I. INTRODUCTION	3
II. NATURE OF THE BAYS	8
III. SCIENTIFIC STUDIES OF THE BAYS	19
IV. HYPOTHESES BASED ON SUPPOSED TERRESTRIAL ORIGIN OF THE BAYS	30
V. HYPOTHESIS OF ANCIENT METEORITE SCARS	51
VI. HYPOTHESIS OF RECENT METEORITE SCARS	62
VII. FURTHER TESTS OF METEORITIC HYPOTHESIS	97
VIII. MAGNETIC TESTS OF THE METEORITIC HYPOTHESIS	130
IX. THE HYPOTHESIS OF COMPLEX ORIGIN	151
X. COMPETENCE OF THE HYPOTHESIS OF COMPLEX ORIGIN	195
XI. THE ARTESIAN PHASE OF THE HYPOTHESIS	221
XII. THE SOLUTION PHASE OF THE HYPOTHESIS	247
XIII. THE LACUSTRINE PHASE OF THE HYPOTHESIS	275
XIV. THE AEOLIAN PHASE OF THE HYPOTHESIS	281
XV. POSSIBLE WEAKNESSES OF THE HYPOTHESIS	318
INDEX	329

Illustrations

1. Cotton Patch Bay near Myrtle Beach, S. C.	<i>Frontispiece</i>
2. Distribution of Principal Areas of Typical Oval Bays	9
3. Oval Bays 7 Miles S of Mullins, Marion Co., S. C., Showing Parallelism of Long Axes	13
4. South Barebone Bay near Myrtle Beach, S. C., Showing Double Sand Rim about SE Half	15
5. Watts Bay near Myrtle Beach, S. C., Showing Parts of Three Sand Rims about SE Quadrant	16
6. Closely Spaced Large and Small Bays near Silver, Clarendon Co., S. C.	17
7. Oval Bays Associated with Sandy Beach Ridges and Marshy Swales near Myrtle Beach	22
8. Stages in the Change of a Lagoon into a Chain of Lakes, According to Cooke's Hypothesis of Segmented Lagoons	37
9. Sand-Atoll and Group of Crescent-shaped Keys in Mosquito Lagoon, Fla.	42
10. Bays 2 Miles W of Lewis Ocean Bay, near Myrtle Beach	52
11. Well-developed Oval Bay with Irregular and Poorly Developed Bays near Myrtle Beach	53
12. Chain of Oval Bays Paralleling Sandy Beach Ridges and Marshy Swales in Myrtle Beach Area	57
13. Cluster of Bays Occupying Curving Band of Sand between Marshy Swales	59
14. Chain of Oval Bays Paralleling Beach Ridge and Swale Topography in Myrtle Beach Area	76
15. SE Half of Big Bay 4 Miles SE of Wilmington, N. C., Showing Six or More Well-developed Sand Rims	84
16. Ten Mile Bay and Maidendown Bay near Smithboro, S. C., Bordered by Multiple Rims	86
17. Big Bay 4 Miles N of Pinewood, Sumter Co., S. C., Showing Multiple Rims	87
18. Typical Cross Profile of Sandy Rim from Inner Side Next Bay to Outer Side Bordering Plain	109

19. South Barebone Bay near Myrtle Beach, S. C., Showing Relations of Secondary Inner Rim as Interpreted by Prouty and by Johnson	111
20. Bays S of Makatoka, Brunswick Co., N. C., Showing Variations from Highly Irregular Form to More Perfect Ovals with Sand Rims	115
21. Sketch Map of Coastal Plain Showing the Probable Area of Bombardment by Meteorites According to Melton and Schriever	122
22. Comparison of Area of Abundant Meteorite Finds with Area of Abundant Bays	124
23. Magnetometer Observations around Singletary Lake, White Lake, and Large Bay NW from White Lake	132
24. Early Magnetic Survey and Later Magnetic Survey of Dial Bay Region	135
25. Lines of Flow of Water through Sand in Which a Lake Basin Has Been Excavated	157
26. Diagrams Showing Movements of Artesian Waters	160
27. Axial Trends of Basins in N and S Parts of Area of Abundant Oval Bays	167
28. Graphs Showing Regional Contrast in Axial Directions and Percent of Total Number of Oval Bays Measured Which Are Oriented in the Directions Indicated	169
29. Index Mosaic of Aerial Photographs Covering Part of Bladen Co., N. C.	172
30. Index Mosaic of Aerial Photographs Covering Part of Barnwell Co., S. C.	173
31. Effect of Artesian Flow Combined with Groundwater Flow	175
32. Salters Lake Bay, Bladen Co., N. C.	178
33. Suggs Mill Pond Bay, Bladen Co., N. C.	180
34. Complex Bay 7 Miles SW of Bishopville, Lee Co., S. C.	182
35. Open Bay W of Coward, Florence Co., S. C.	183
36. Ovoid Bays S of Elko, Barnwell Co., S. C.	184
37. Laboratory Demonstration of Behavior of Sand under Water	189
38. Hypothetical Distribution of Wind-drifted Sand Rims about Oval Bay with Dominant Winds from NW, W, and SW	206

Illustrations

xi

- | | |
|---|-----|
| 39. Elliptical and Ovoid Bays near Mullins, Marion Co., S. C., Showing Outer and Inner Rims Similarly Spaced in Adjacent Bays | 210 |
| 40. Elliptical and Ovoid Bays 5 Miles SE of Marion, Marion Co., S. C., Showing Outer and Inner Rims Similarly Spaced in Neighboring Bays | 212 |
| 41. Elliptical Bays Intimately Associated with Irregular Depressions Resembling Sinks $4\frac{1}{2}$ Miles E of Center of Wilmington, N. C. | 257 |
| 42. Blackville Bay, Barnwell Co., S. C. | 265 |
| 43. SE End of Jones Lake, Bladen Co., N. C., Showing Rim of White Sand Bordering the SE Quadrant of Its Basin | 276 |
| 44. Shallow Circular and Oval Basins E of Sarasota, Fla. | 320 |
| 45. Circular or Oval Lakes in Coastal Marshes near Charleston, S. C. | 322 |
| 46. Clamshell Lake in Vidauri District, Texas | 323 |

