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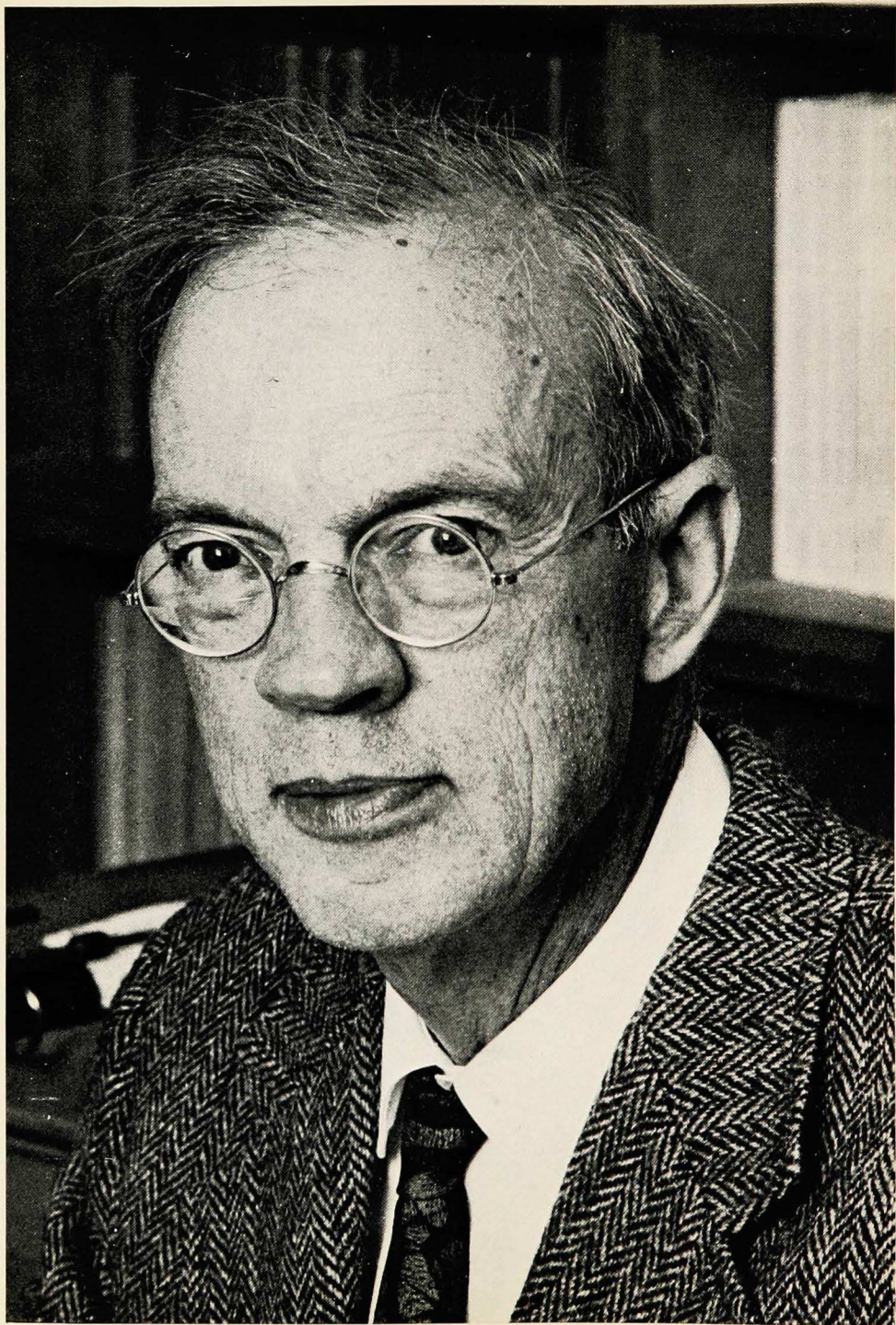
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*Photograph by Duane Suter*

*This Volume is dedicated to*

RAYMOND BRAISLIN MONTGOMERY

*on occasion of*

HIS SIXTY-FIFTH BIRTHDAY

*by some of his friends and associates in  
appreciation of his contributions  
to Physical Oceanography and Meteorology*

## RAYMOND BRAISLIN MONTGOMERY

If a scientist's achievement were gauged solely on the strength of his formal research, Raymond Braislin Montgomery's bibliography would justify the high regard in which his professional friends hold him. But this esteem is held in large part for a contribution to physical oceanography that cannot be traced via a list of writings or a list of honors or positions. It is for Montgomery's role as teacher, scholar and critic.

Montgomery's interests have ranged widely, but his specialty has become descriptive physical oceanography. To this field, which may at times invite speculation and facile deduction, he has brought precision, rigor, clarity, and insight. With the recognition that these requisite qualities are not taught by book or formula, many apprentices have made the pilgrimage and spent a year working alongside what Robert S. Arthur calls Montgomery's "enlightened critical attitude". The apprentices form part of what can rightly be referred to as Montgomery's school. Some of the most prominent descriptive physical oceanographers are among its members.

Raymond Montgomery is a man of few words, teaching his craft more by example and partnership than by formal lecture. His economy and care in expression can lead to awkwardness on the part of people who are newly acquainted with him. Not only do they often feel compelled to fill in gaps which are not present in usual glib interchange, but they are careful in speech, lest they somehow fail to measure up in Montgomery's imposing presence—imposing not because of lordliness, but because of modesty and intense intellectual honesty.

Montgomery, who may at times appear reticent or shy, has always made an effort to provide a comfortable social setting in which fellow oceanographers can interact and exchange ideas. He and his wife Polly have contributed much toward this end with their gracious and generous entertaining. Their invitations include not only close friends and descriptive physical oceanographers on pilgrimage, but also visiting speakers and newcomers to the field. The combination of Polly's cooking and Ray's fire-tending always ensures a warm and friendly interaction.

Although he has held numerous positions and visited many institutions around the world, Montgomery has never been far from Woods Hole. He was born on May 5, 1910 in Philadelphia to Thomas and Priscilla Braislin Montgomery, both biologists who had met during a summer at Woods Hole. After his father died of pneumonia in 1912, his mother went to work first as a teacher, then as the librarian of the Marine Biological Laboratory (see *Biological Bulletin*, 113. No. 1, p. 9) to meet the burden and challenge of bringing up her three sons.

Raymond enjoyed dory sailing in Woods Hole waters as a boy and later taught the art during the summer to help earn his way through Harvard. At Harvard, he employed another aquatic skill, rowing on the freshman lightweight crew. He studied physics and had avowed an interest in entering the field of physical oceanography. His entry was certainly auspicious—during his junior summer, Montgomery signed on as the junior member of the scientific party of Cruise 1 (16 July–26 August 1931) of the *Atlantis*. Captained by Columbus O'Donnell Iselin, she was sailing from Plymouth, England to Boston on her way to Woods Hole. The following year, after graduating from Harvard, he enrolled at MIT. Here he was to serve an apprenticeship, which developed into a partnership, with the renowned Carl-Gustav Rossby. After receiving his Sc.D. degree in 1938, Montgomery spent a year as National Research Council Fellow in Germany and Finland and then joined the faculty of New York University where he worked with Athelstan Spilhaus. In 1944, he moved to the Radiation Laboratory at MIT, helping Donald F. Kerr's Propagation Group by studying the structure of the atmosphere over the ocean and the effects of this structure on radio propagation.

Montgomery returned to Woods Hole in 1945 and spent the next four years there. From 1949 to 1954, except for the spring term of 1948 when he was Visiting Professor at Scripps Institution of Oceanography, he was Visiting Professor at Brown University and in 1954, he joined Pritchard and Carritt in the Department of Oceanography at Johns Hopkins. He spent a sabbatical year as Fulbright Research Scholar in Australia in 1958 and later as Visiting Professor at the University of Hawaii in 1971.

Montgomery has been particularly dedicated and responsive as a critic and reviewer. He showed an early penchant for editorship in high school, where he was in charge of the yearbook and associate editor for the literary magazine. He was the editor of the *Journal of Meteorology* in 1946–1947 and has served on the editorial board of the *Journal of Marine Research*, *Deep-Sea Research* and *The Johns Hopkins Oceanographic Studies*. With keen analytical mind and precise attention to detail, few errors, large or small, escape his eye upon review of a manuscript. Montgomery's criticism is by no means a negative sort; he seems to devote the most effort toward the polishing and correcting of worthwhile contributions and thus provides a valuable form of encouragement. In keeping with both his insistence on clarity in scientific expression and his genuine concern for people, Montgomery's harshest criticisms of a manuscript are usually a furrowed brow and the statement "I don't understand this."

Professor Montgomery's contributions as teacher and critic are mentioned because they are less matter of public record than are his research writings. His research is, however, the focus of his scholarship and the example from which he teaches, and should be noted here. Montgomery's research topics have ranged widely, but he developed three abiding interests early in his career—the equatorial current system, the spatial and temporal variations of sea level, and the descriptive representation

of water and air characteristics. The seeds of these interests were sown during his apprenticeship at MIT. With Rossby, he studied the mixed layers in the atmosphere and the ocean. His doctoral dissertation concerned a study of the Equatorial Atlantic Ocean employing the technique of isanosteric analysis. He furthered this interest during his fellowship year in Europe, spending the summer of 1939 in Helsingfors working on a paper on the dynamics of the Equatorial Counter Current with Palmén. Montgomery's study came to fruition in the summer of 1952 on the famous Cruise 16 of the *Hugh M. Smith*, when he with Townsend Cromwell and E. D. Stroup discovered the Equatorial Undercurrent in the Pacific.

Through use of tools such as the temperature-salinity diagram, the Taylor diagram, and the volumetric temperature-salinity bivariate distribution, Montgomery has evolved a precise means of characterizing air and water masses. Montgomery's school of descriptive physical oceanographers has adopted these tools and followed his lead in the application of isanosteric analysis to serial oceanographic measurements. They have shown what remarkable clues to the circulation of the world ocean can be gathered from the archives of hydrographic data.

With his interests in sea level and in transport processes, Montgomery has taken on studies which are at the crux of some physical oceanographic problems and which have often proved frustratingly intractable. His ability to recognize and identify significant research efforts has not only been helpful in his own work, but has also provided a means for encouraging students and colleagues. Because it has the force of a rare scholarship behind it, Montgomery's word is highly valued. His aid and suggestions have been manifold, not only to colleagues in the United States, but also to friends around the world, especially in Japan.

The role of critic has seldom been one that engenders friendship and warm appreciation. But because Montgomery performs this role with integrity and intellectual honesty, applying his high standards to himself, his review is sought actively. His concerned and unselfish encouragement of students and colleagues, tempered with his enlightened critical attitude, has fostered appreciation, respect and strong personal friendships. Stroup speaks for others in the preface to his thesis:

If my relationship with Professor Raymond B. Montgomery had been confined to matters connected with this dissertation, it might be possible to express my appreciation for his help. My indebtedness is of much longer standing, however, and of immeasurably wider context. I can record here only the fact of my gratitude. I have no words to convey its depth.

William C. Boicourt

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