

PREFACE

IAU Symposium No. 80, The HR Diagram - The 100th Anniversary of Henry Norris Russell was held on November 2-5, 1977 at the National Academy of Sciences in Washington D. C., in order to commemorate the birth of Henry Norris Russell on October 25, 1877 and to review current problems in the use of the Hertzsprung-Russell diagram. The IAU has sponsored two previous conferences concerned mainly with the HR diagram; The Position of Variable Stars in the Hertzsprung-Russell Diagram, a colloquium held at Bamberg in 1965 and The Hertzsprung-Russell Diagram (IAU Symposium No. 10, J.L. Greenstein, ed.) held in Moscow in 1959. In 1974 a conference, Multicolor Photometry and the Theoretical HR Diagram (Dudley Obs. Report No. 9, A.G.D. Philip and D.S. Hayes, eds.) was held in Albany, N.Y.; and in 1964 a conference, Basic Data Pertaining to the Hertzsprung-Russell Diagram, was held at the Flagstaff Station of the U.S. Naval Observatory in honor of Ejnar Hertzsprung and to dedicate the 61-inch astrometric reflector. (Vistas in Astronomy Vol. 8, A. Beer and K. Aa. Strand, eds., Pergamon Press, Oxford). Volume 12 of Vistas in Astronomy, The Henry Norris Russell Memorial Volume (1970), contains a review paper on Changing Interpretations of the Hertzsprung-Russell Diagram 1910-1940, A Historical Note by B.W. Sitterly.

It was felt that there was a need for a conference on the HR Diagram at this time because of general advances in theoretical and observational investigations of various aspects of the diagram. For example, the new four meter telescopes at Kitt Peak National Observatory and Cerro Tololo Inter-American Observatory and the Anglo-Australian four meter telescope are extending studies in the HR diagram to fainter stars and to external systems, evolutionary models of the horizontal and giant branches have advanced our knowledge of the later stages of stellar evolution, and much new information concerning the chemical abundance of individual stars in stellar systems is now available. The editors are impressed with the information becoming available concerning variations in the morphology of the HR diagram, both in terms of sequences in the diagram and in terms of stellar densities along the sequences, due to parameters such as stellar age, chemical composition, mass loss, initial mass function and rotation.

A proposal sponsored by IAU Commissions 29, 35, 36, 37 and 45 was submitted to the IAU Executive Committee at the Grenoble meeting. The Executive Committee appointed the scientific organizing committee consisting of A.G. Davis Philip (Chairman), Immo Appenzeller, A.A. Boyarchuk, Pierre Demarque, Robert Dickens, Keiichi Kodaira, B. Paczynski, Stephen Strom, Sydney van den Bergh and Nolan Walborn. The local organizing committee was chaired by E.R. Dyer with Roger Bell, R.E. Berendzen, Benjamin Peery, A.G. Davis Philip, Nancy Roman, Vera Rubin and K.Aa. Strand as members.

Two hundred and seven persons from twenty different countries attended the sixteen sessions held in the superb lecture hall of the National Academy of Sciences. The chairmen of the sessions were:

I	A. G. Davis Philip	IX	Robert J. Dickens
II	Lyman Spitzer	X	Robert P. Kraft
III	Keiichi Kodaira	XI	M. Golay
IV	Immo Appenzeller	XII	George Wallerstein
V	Nolan Walborn	XIII	Vytas Straižys
VI	Philip C. Keenan	XIV	Paris Pismis
VII	Jesse L. Greenstein	XV	Pierre Demarque
VIII	W. W. Morgan	XVI	John Norris

In the four days of the symposium 79 papers were presented and 13 additional papers were posted in a poster session. Of the authors of the spoken papers, 64 were U.S., 44 were foreign and in the total were 18 women. It was gratifying that we were able to have such a high representation of both non-U.S. and women astronomers at the symposium.

The proceedings of the symposium have been printed in two volumes. The scientific sessions (III-XVI) are to be found in this volume; the first two sessions have been published separately as In Memory of Henry Norris Russell in Dudley Observatory Report No. 13, A.G. Davis Philip and David H. DeVorkin, eds. So that a complete record of the symposium will appear in this volume, a copy of the Table of Contents of the historical volume will be found on pages xvi-xvii.

The proceedings of the symposium have been edited from camera-ready manuscripts submitted by the authors. The discussion was prepared from handwritten sheets passed out to the people who participated in the discussion. Typed versions of the discussion were passed back to individuals for checking during the symposium. The whole discussion (in some cases discussion was transcribed from tape recordings) was then retyped and mailed back for final proof-reading. Author camera-ready manuscripts which were different from the elite type-face were retyped, as were papers whose format did not agree with the IAU format. A few papers that exceeded the number of allotted pages were revised by the editors. Individual authors have been made responsible for obtaining permission to copy material from other publications. We have made some effort to make the proceedings uniform throughout; for example whenever the phrase HR diagram appears it is in this form with no periods or hyphens. However, since we had a limited budget for retyping and since the value of the proceedings is much increased by rapid publication we have not corrected every difference. The order of the papers in this volume has been changed somewhat from the order in which papers were presented in the symposium. The HR diagram on the cover of this book is from the article by Houk and Fesen, Fig. 1 on page 92.

Many organizations have helped during the last year. Yale University Observatory and Louisiana State University paid for the mailing of hundreds of announcements concerning the symposium. Financial support for the meeting and preparation of the proceedings was provided by the National Science Foundation, The International Astronomical Union, Dudley Observatory and the Astronomical Society of New York.

Many people helped during the symposium and in making the volume ready for publication. There is not enough room here to thank all such persons (see Martha Liller's banquet speech in Dudley Observatory Report No. 13). We will mention a few persons who made a major contribution. E.R. Dyer, chairman of the Local Organizing Committee, did a superb job in the local arrangements and in seeing that everything ran smoothly. Mary Bongiovanni took care of the discussion sheets during the conference and did almost all the typing after the conference. Kristina Philip helped in many ways throughout the whole period.

A. G. Davis Philip

Donald S. Hayes, editors

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