

PROGRAM

of the

One Hundred-Eleventh Meeting

of the

AMERICAN

ASTRONOMICAL SOCIETY

YALE UNIVERSITY OBSERVATORY

NEW HAVEN, CONNECTICUT

AUGUST 26-29, 1962

ANNOUNCEMENTS

REGISTRATION on Sunday through Monday is at Stiles and Morse Colleges, Tower Parkway and Broadway, New Haven and Monday through Wednesday at the Law School, Grove and York Streets, New Haven.

MEAL TICKETS must be purchased at registration.

SWIMMING: Payne-Whitney Gymnasium Exhibition Swimming Pool free to members and guests Monday and Tuesday 2:00-6:00 p.m. (bring own suits).

MAIL AND TELEGRAMS should be addressed to The American Astronomical Society, Yale University Observatory, 135 Prospect Street, New Haven, Connecticut. The telephone number at Yale Observatory is ST 7-3131 ext. 657, 753, and 2685.

THE PERKIN-ELMER CORPORATION, which is hosting the reception before the Society Dinner, has invited the Society to visit its facilities in Norwalk, Connecticut. Buses provided by Perkin-Elmer will leave New Haven at 1:30 p.m. on Wednesday, August 29, to return by 5:00 p.m. Reservations for this visit must be made by Monday.

BETHANY STATION VISITS: Free buses leave from Stiles and Morse Colleges on Sunday at 3:00 and 4:30 p.m., and on Wednesday at 1:30 p.m.

REPRINTS OF THE CONSTITUTION are available free from the Secretary's Office to members upon request.

THE OFFICE OF THE SECRETARY, as of September 1, 1962, will be: The University of Illinois Observatory, Urbana, Illinois. All communications to the Secretary should henceforth be addressed there.

FUTURE MEETINGS: The next meeting, the 112th, will be at Green Bank (White Sulphur Springs), December 27-29, 1962; the 113th, at the University of Arizona and Kitt Peak National Observatory, Tucson, April 17-20, 1963; the 114th, at College, Alaska, July, 1963; the 115th, in Washington, D. C., December 26-28, 1963; the 116th, at Flagstaff, Arizona, June, 1964; and the 117th, with the AAAS, in Montreal, December, 1964.

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PROGRAM

Sunday, August 26

- 12:00 noon, on Registration. Stiles and Morse Colleges.
2:00 p.m. Council Meeting. Observatory Classroom.
3:00-5:30 p.m. and Visits to Bethany Observatory Station, leaving from
4:30-7:00 p.m. Stiles and Morse Colleges.

Monday, August 27

- Early Registration Stiles and Morse Colleges *or* Law School.
9:00 a.m. Welcome by PROVOST KINGMAN BREWSTER, JR.
Law School Auditorium.
9:10 a.m.-12 noon Session for Papers. Law School Auditorium.
12:00 noon Society Photograph.
1:00-4:00 p.m. Ladies' Program. Details to be given at registration.
2:00-5:00 p.m. Symposium, "Astrometry," Law School Auditorium.
Chairman, DIRK BROUWER,
Yale University Observatory.
1. "Systematic Errors in the AGK2 and final reductions in the AGK3 Program," V. DIECKVOSS,
Hamburger Sternwarte.
2. "Current Status of the International Reference Star Program," F. P. SCOTT, *U.S. Naval Observatory.*
3. "Current work on Southern Zone Catalogues at the Yale Observatory," DORRIT HOFFLERT, *Yale University Observatory.*
Comments by ARNOLD KIEMOLA, *Yale University Observatory.*
4. "Proper Motions of Open Star Clusters," S. VASILJEVSKIS, *Lick Observatory.*
5. "Astrometry with Large Reflectors," K. A. STRAND, *U. S. Naval Observatory.*
Retiring Presidential Address, G. M. CLEMENCE,
U.S. Naval Observatory, Law School Auditorium.
8:00 p.m.

Tuesday, August 28

- 9:00-9:30 a.m. Business Session. Law School Auditorium.
9:30 a.m.-12:10 p.m. Session for Papers. Law School Auditorium.
10:00 a.m.-3:30 p.m. Ladies' Program. Trip to Mystic Seaport.
2:00-5:00 p.m. Session for Papers. Law School Auditorium.
6:00 p.m. Reception.
6:45 p.m. Society Dinner.

Buses for Reception and Society Dinner leave from S. & M. Colleges from 5:30 to 6:15 p.m.; after dinner, buses returning to Law School in time for Russell Lecture.

8:30 p.m.

Henry Norris Russell Lecture, GROTE REBER.

Wednesday, August 29

- 9:00 a.m.-12:30 p.m. Session for Papers. Law School Auditorium.
10:00 a.m.-12 noon Ladies' Program.
1:30-5:00 p.m. Visit to Perkin-Elmer Corporation facilities in Norwalk, Connecticut.
2:00-4:30 p.m. Visit to Bethany Observing Station.

PROGRAM OF PAPERS

Subject to Council approval the following papers are placed on the program:

Monday, August 27, 9:15-10:40 a.m.

1. Planetary Distances According to General Relativity, G. M. CLEMENCE, *U.S. Naval Observatory*. (5 min.)
2. On Some Singular Orbits of an Earth-Moon Satellite with a High Area-Mass Ratio, G. COLOMBO and D. A. LAUTMAN, *Smithsonian Astrophysical Observatory and Harvard College Observatory*.
3. A Contribution to the Theory of Critical Inclination of Close Earth Satellites, SHINKO AOKI (introduced by P. Musen), *Theoretical Division, Goddard Space Flight Center*.
4. Secular Perturbations of Asteroids with High Inclination and Eccentricity, YOSHINDE KOZAI, *Smithsonian Astrophysical Observatory*.
5. Comparative Spectrophotometry of Selected Areas on the Lunar Surface, GEORGE V. COYNE, S. J. (introduced by F. Heyden, S. J.), *Georgetown College Observatory*.
6. A Model of the Lunar Ionosphere, HERSHEL WEIL and MURRAY L. BARASCH (introduced by F. Haddock), *Radio Astronomy Observatory, University of Michigan*.
7. The Magnetosphere of the Moon, THOMAS GOLD, *Cornell University*.
10:40 a.m.-12 noon
8. The Atmosphere of Mercury, GEORGE B. FIELD, *Princeton University Observatory*.
9. Evidence for Nitrogen Dioxide in the Martian Atmosphere, C. C. KIESS, C. H. CORLISS, and H. K. KRESS, *Georgetown College Observatory and National Bureau of Standards*.
10. The Statistical Spectrum of Jupiter at Decimeter Wavelengths, T. D. CARR, A. G. SMITH, *Dept. of Physics, University of Florida*; C. S. HIGGINS, *Radiophysics Lab., Commonwealth Scientific & Ind. Res. Org., Sydney*; H. BOLLHAGEN, J. MAY, *Mapu Radioastronomical Obs., University of Chile*.
11. A model for the Escape of Decimeter Radiation from Jupiter via Field-Aligned Ducts, THOMAS D. CARR, *Department of Physics, University of Florida*.
12. A Statistical Analysis of Jupiter's Decimeter Radiation, 1950-1961, JAMES N. DOUGLAS, *Yale University Observatory*.
13. Longitude Effects in Jovian Decimetric Radio Emission, HARLAN J. SMITH, *Yale University Observatory*. (5 min.)
14. Recent Spectroscopic Investigations of Jupiter and Saturn, HYRON SPINRAD, GUIDO MUNCH, LAURENCE M. TRAFTON, *Jet Propulsion Lab., California Institute of Technology*.

Tuesday, August 28, 9:30-10:40 a.m.

15. Influx Rate Fluctuations of Micron-Size Dust Particles During the 1959 Leonid Meteor Shower, W. M. ALEXANDER (introduced by J. Kupperian, Jr.), *Goddard Space Flight Center, NASA*.
16. A Photoelectric Spectrophotometer with Applications to Planetary Aurorae and Stellar Flares, JAMES P. RODMAN and HARLAN J. SMITH, *Yale University Observatory*.
17. Limiting Magnitude Studies with the Image Orthicon, WILLIAM T. POWERS (sponsored by J. A. Hynek), *Dearborn University*.
18. Performance of Multistage Image-Amplifying Tubes; Astronomical Applications; and Proposed Use with Fabry-Perot Etalons for Stellar Spectroscopy, T. DUNHAM, JR., *Mount Stromlo Observatory*.
19. Interferometric Stellar Spectroscopy, LAWRENCE MERTZ (introduced by S. Goldstein), *Block Associates, Inc.*
20. Multifrequency 23 to 13 Mc Solar Radio Observations, KENNELM W. PHILIP, *Yale University Observatory*.
21. The Spectrum of Coherent Electron Waves in the Solar Corona, J. M. MALVILLE, *University of Michigan*.
10:50 a.m.-12:10 p.m.
22. Theoretical Models for the Magnetic Field Distribution of Bipolar Regions in the Solar Corona, LUDWIG OSTER, *Boeing Scientific Research Labs. and Yale University Observatory*.
23. The High-Luminosity, Fully-Convective Contracting Sun, I, D. EZER and A. G. W. CAMERON, *Institute for Space Studies, NASA*.
24. The High-Luminosity, Fully-Convective Contracting Sun, II, A. G. W. CAMERON, *Institute for Space Studies, NASA*.
25. Beta Decay Inhibition in Stellar Interiors, JOHN N. BAHCALL and VERN L. PETERSON, *Astronomy Dept., Indiana University*.
26. Depth Dependence of Turbulence in the Solar Photosphere, DONALD C. SCHMALBERGER, *Astronomy Department, Indiana University*.
27. The Emission of Hydromagnetic Waves from Sunspot Umbrae, ROBERT E. DANIELSON, *Princeton University Observatory*.

Tuesday, August 28, 2:00-3:20 p.m. Session A

28. Excitation of Metal Lines in Flares and in Active Prominences, E. TANDBERG-HANSSSEN, *Higb Altimide Observatory*.
29. Continuous Absorption in the Solar Atmosphere by the Quasi H₂ Molecule, THEODORE P. STECHER, *Goddard Space Flight Center, NASA*.
30. Revised Abundances of Some Metals in the Sun, LAWRENCE H. ALLER, *The Observatory, University of Michigan*.
31. Computer Program for a Steady-State Gas, HOLLIS R. JOHNSON, *Yale University Observatory*.
32. Steady-State Atomic Populations in Stellar Atmospheres, MYRON LECAR, *Yale University Observatory and Institute for Space Studies, NASA*.
33. Exact Solution of a Class of Non-Grey Milne Problems, JOHN C. STEWART, *General Atomic Division, General Dynamics Corp.*
34. Emission from a Rapidly Rotating Stellar Atmosphere, GEORGE W. COLLINS II, *Washington Observatory*.

2:00-3:20 p.m. Session B

35. A Variable Star Search in M53, JAMES CUFFEY, *Goethe Link Observatory*.
36. Stellar Duplicity, CHARLES E. WORLEY, *U.S. Naval Observatory*.
37. On the Distribution of Binary Stars Among the Bright Stars, J. ALLEN HYNNEK, *Dearborn Observatory*.
38. A Final Model of β Lyrae, SERGEI GAPOSCHKIN, *Harvard College Observatory*.
39. A Tentative Model of Beta Lyrae on the Assumption of a Less Massive Primary, SU-SHU HUANG, *Goddard Space Flight Center, NASA*.
40. The V/R Variations of some Bright Stars, DEAN B. MCLAUGHLIN, *The Observatory, University of Michigan*.
41. UBV Photometry of DH Cephei, ARNOLD M. HEISER, *Dyer Observatory*.

Tuesday, August 28, 3:30-5:00 p.m.

42. Simultaneous Spectroscopic and Photoelectric Observations of RR Lyrae during Rising Light, GEORGE W. PRESTON and JOSEF I. SMAK, *Lick Observatory, University of California*.
43. A Discussion of the Composition of the Peculiar Star ϵ Centauri, GEORGE WALLERSTEIN, *Berkeley Astronomical Dept., University of California*.
44. Atmosphere of ϵ 3 Tauri, L. H. ALLER and W. P. BIDELMAN, *Astronomy Department, University of California*.
45. Continuous H₂ Emission in B-Star Atmospheres, A. B. MEINEL, *Seward Observatory*.
46. On the Nature of the Wolf-Rayet Phenomenon, D. NELSON LIMBER, *Yerkes Observatory*.
47. The χ 4430 Band and Small Interstellar Particles, R. STOBCKLY (introduced by I. Spitzer), *Princeton University Observatory*.
48. OB Spectral Group Classifications as Distance Indicators, A. R. UPGREN, *Sprawl Observatory*.
49. A Kinematic Determination of the Angular Velocity of the Sun about the Center of the Galaxy, VERA C. RUBIN, *Georgetown College Observatory*.

Wednesday, August 29, 9:00-10:40 a.m.

50. 1417 Mc/s Observations of M31, JOHN W. LEIBACHER (introduced by A. E. Lilley), *Harvard College Observatory*.
51. An Attempt to Observe 21-cm Line Emission from Intergalactic Hydrogen, S. J. GOLDSTEIN, JR., *Harvard College Observatory*.
52. Polarization of the Radio Emission of Taurus-A, Cygnus-A, and Centaurus-A, C. H. MAYER, T. P. MCCULLOUGH, and R. M. SLOANAKER, *Radio Astronomy Branch, U. S. Naval Research Laboratory*.
53. A Novel Interferometer for Studies of Discrete Radio Sources, JAMES N. DOUGLAS and CLINTON C. BROOKS, *Yale University Observatory*.
54. On the Spectra of Radio Sources, I. WOLTYER, *Leiden University Observatory*.
55. Model-Independent Correlation of Stars and Neutral Hydrogen, GEORGE B. FIELD and EMERY S. FLETCHER, *Princeton University Observatory*.
56. The Formation of HII Regions, PETER O. VANDERVOORT, *Yerkes Observatory*.
57. Dynamics of Spherical Stellar Systems: Properties of Theoretical Models, and Comparison with Clusters and Elliptical Galaxies, RICHARD W. MICHIE, *Astronomy Department, University of California*.
58. Mass Distribution in Messier 33, JOHN C. BRANDT, *Berkeley Astronomical Department, University of California*. (5 min.)

Wednesday, August 29, 10:50 a.m.-12:30 p.m.

59. Abundances of Morphological Types among Galaxies in Clusters and in the Field, J. NEYMAN, E. I. SCOTT and W. ZONN, *University of California*.
60. Precision of the Estimates Relating to the Selection Factor of Galaxies, ALLAN H. MARCUS (introduced by J. Neyman), *University of California*.
61. Luminosity of Galaxies in Clusters and in the Field, J. NEYMAN and E. I. SCOTT, *University of California*.
62. The Evolution of Massive Stars after Helium Burning, CHUSHIRO HAYASHI and ROBERT C. CAMERON, *Dept. of Nuclear Science, Kyoto University and Theoretical Div., Goddard Space Flight Center, NASA*.
63. A Study of Degeneracy in Very Light Stars, SHIV S. KUMAR, *Institute for Space Studies, NASA*.
64. The Direction of Time and the Equivalence of "Expanding" and "Contracting" World-Models, D. I. SCHUMACHER and HENRY G. HORAK, *University of Kansas*.
65. Departures from LTE in Free-Free Emissions from Non-Maxwellian Gases, LUDWIG OSTER, *Yale University Observatory*.
66. An Interim Interstellar Radiation Field, THEODORE P. STECHER and JAMES E. MULLIGAN, *Goddard Space Flight Center, NASA*. (5 min.)

The following members and guests have indicated that they will be present at the New Haven meeting:

Adler, Mrs. Adler, Bakos, Barney, Brandt, C. Brooks, E. Brooks, Mrs. Brooks, Brouwer, Cameron, H. Carr, T. Carr, Cleaver, Mrs. Cleaver, Clemence, Mrs. Clemence, Collins II, Mrs. Collins, Coyne, Danielson, Mrs. Danielson, M. Davis, J. Douglas, Duncombe, Mrs. Duncombe, Edmondson, Mrs. Edmondson, Elliott, Jr., Ezer, C. Federer, Jr., Felling, Mrs. Felling, Field, P. Gaposchkin, S. Gaposchkin, Garstrang, Gibson, Gingerich, Gold, Goldstein, Gross, Gursche, Haddock, Heiser, D. Hoffer, M. Hoffer, Holzinger, Horak, Mrs. Horak, Huang, Hynek, Hollis Johnson, Mrs. Johnson, Karandikar, C. C. Kiess, Mrs. Kiess, Klemola, Klock, Kozai, Kumar, H. Lane, Lautman, Lecar, Levine, Limber, Linnell, Londak, Malville, Maran, Marsden, McCuskey, Mrs. McCuskey, McLaughlin, Mrs. McLaughlin, McVittie, Meinel, Meltzer, Mrs. Meltzer, Michie, Milione, Mrs. Milione, Morrison, O'Handley, O'Keefe, Mrs. O'Keefe, Olsen, Oster, Mrs. Oster, G. Peters, J. Peters, Mrs. Peters, Powers, Reber, Risley, Rodman, R. Rubin, V. Rubin, Schmalberger, Mrs. Schmalberger, Sloan, Smiley, Mrs. Smiley, Harlan Smith, Southworth, Spitzer, Jr., Stecher, J-P Swings, Mrs. Swings, P. Swings, V. G. Szebehely, Tandberg-Hanssen, F. Thomson, M. Thomson, M. M. Thomson, Mrs. Thomson, Uppgren, Jr., Van Arnann, Mrs. Van Arnann, Vandervoort, Van Wijk, Wallerstein, Wehinger, Westerhout, Weston, Whitford, Witherell, Wolfer, Worley.

HARLAN J. SMITH
Acting Secretary

New Haven, Connecticut
August 6, 1962