easy explanation for the formation in situ of the hot Jupiters (e.g., 51 Pegasi B); in either case, post-formational orbital migration must be invoked to explain the present location of hot Jupiters. Jupiter and Saturn, on the other hand, apparently experienced little or no orbital migration.

27.06

Hydrodynamic Simulations of Jupiter’s Atmosphere: Comparison with HST Observations

A. A. Simon, R. F. Beebe (NMSU), T. E. Dowling (U. of Louisville)

Using the Hubble Space Telescope (HST) we have obtained global data of Jupiter over a two-year timespan from July 1994 to October 1996. The resolution of the HST Planetary Camera (175 km/pixel) allows us to measure the sizes, drift rates and interactions of over two dozen long-lived vortices in the southern hemisphere, including the Great Red Spot, the three White Ovals, and several smaller anticyclones and cyclones. A key question is whether the atmosphere’s vertical structure is homogeneous or heterogeneous. In particular, the presence or absence of water clouds has a direct effect on static stability and on the atmosphere’s radius of deformation (vortex-interaction distance). Data at 7 deg N latitude from the Galileo Entry Probe indicate a dry atmosphere, whereas recent data from the Galileo Orbiter Photopolarimeter-Radiometer suggest otherwise. We are using the Explicit Planetary Isentropic-Coordinate (EPIC) atmospheric model (Dowling et al. 1998, Icarus, in press) to test the effects of heterogeneity on vortex interactions. The EPIC model integrates the nonlinear, primitive, hydrostatic equations with entropy (potential temperature) as the vertical coordinate. The lower boundary condition is an adiabatic abyssal layer, corresponding to Jupiter’s convecting interior, with provision made for the deep-seated circulation. We are studying a range of temperature profiles (dry vs. moist) and variations of the zonal-wind profile with respect to height to determine what is necessary to reproduce the HST observations.

27.07

HST/STIS Imaging of Saturn’s Far-UV Aurora

J.T. Trauger, K.R. Stapelfeldt (JPL), J.T. Clarke, G.S. Ballester (U. Mich.), and the WFPC2 Science Team

We report the first images of Saturn’s Far-UV aurora with STIS on board the Hubble Space Telescope in October 1997, revealing details of the auroral emissions from atomic and molecular hydrogen in the northern and southern circumpolar auroral zones. Two STIS imaging modes have been used to provide discrimination between hydrogen Lyman-a and H2 emissions between 1200-1650 Å. Both atomic and molecular emissions are seen in the STIS clear imaging mode. The addition of a SrF2 longpass blocker discriminates against Lyman-a and only the molecular emissions are seen. These images are compared with previous FUV imaging of Saturn’s aurora with WFPC2 in October 1995 and October 1994. The observed auroral features have been modeled to unfold the latitude, longitude, and vertical extent of the emissions. We confirm that the auroral emissions are tightly confined to latitudes near 76° in the north and south, with a persistent brightening fixed in local time within the dawn sector. These STIS images provide the first new observational insights to the physical mechanisms that power Saturn’s aurora since the Voyager encounters sixteen years ago.

Session 28: HAD II: Modern Astronomical History

Oral Session, 10:00-11:30am

Monroe

28.01

Maria Mitchell’s Comet - a Challenge Once More?

P.B. Boyce (AAS & Maria Mitchell Obs.), A.P. Graham (U. of Virginia & Maria Mitchell Obs.), V. Strelinski (Maria Mitchell Obs.)

Introductory talk to display 38.01.

28.02

65 Volumes of Astronomy and Astrophysics Abstracts: Interesting Statistics

A. G. D. Philip (ISO and Union College), K. D. Philip (ISO)

Introductory talk to display presentation 38.02.

28.03

Now We Are Ten: The AAS Tenth, Decennial Meeting at Yerkes Observatory in August 1909

D. E. Osterbrock (UCO/LCO/UCSC)

The tenth meeting of the Astronomical and Astrophysical Society of America (later to become the AAS), held in August 1909, was also its tenth-anniversary (of decennial) meeting. Fifty-three members were present, as contrasted with the 1400 expected for the 194th, Centennial meeting to be held in Chicago in May-June 1999, and forty-one papers were presented, rather than the 1000 predicted for next year. Other similarities and differences between meetings then and now will be described and illustrated.

Simon Newcomb, the first AAS President, had died in July 1909, and Edward C. Pickering, who had succeeded him in 1905 and was to remain President until 1919, eulogized him at the Yerkes meeting. Two Committees, on Luminous Meteors and on Comets, respectively, presented their reports, the latter’s dealing mostly with plans for Comet Halley at its 1910 apparition. A high-level Special Committee issued a statement decrying a newspaper furor over establishing communication with Mars, which they said was then “outside the range of contemporary science.”

Six of the members present at the 1909 meeting were women. Joel Stebbins, later to be Councilor, Secretary, Vice President and President, presented his first AAS paper, on his new selenium (photo-resistive) photometry. Frank Schlesinger, another future Society President, was also present and read an instrument-design paper. Ten of the papers were given by Yerkes and University of Chicago astronomers, including three by E. E. Barnard and two by Kurt Laves. Another six papers from distant Lick Observatory members were read in absentia. S. W. Burnham, who was at the Yerkes meeting, was the one famous astronomer who never joined the Society. Finally, the Council authorized publication of a Decennial Book, to provide a record of the first ten years of the young Society.

28.04

Origins of Space Astronomy at the University of Wisconsin

J.M. Lattis (UW-Madison Space Astronomy Lab)

The Astronomy Department of the University of Wisconsin-Madison was one of the earliest and most successful centers of activity in the field of space astronomy. This paper will discuss the early development of space astronomy at UW-Madison and argue that its opportunity and success in that field of research can be traced to three factors: 1. Astronomical research interests in photometric techniques and systems. 2. Experience with the new technology of photovoltaic photometry and its associated instrumentation. 3. An institutional commitment by the university in the mid-1950s to broaden its support for astronomical research.

28.05

Radio Stars or Radio Nebulae? - The Uncertainties of 1953

W.T. Sullivan III (U. Washington)

By the early 1950s radio astronomers in England and Australia had assembled a handful of catalogues giving flux densities (at 100 MHz) and positions for a total of about 200 radio sources. But only a half dozen of these sources had suggested optical identifications and there raged a debate