RedLaSer, Red de Estudiantes de La Serena, is a newly formed network of public and private, city and rural schools. CTIO staff are participating in this provincial-level educational outreach effort in Chile, which reached 21 schools in the Elqui Province—including 162 teachers, 6,588 pupils, and 134 parents—during the period July through December 2000. (Also see the Public Outreach section.)
This report consists of summary statistics and other data on NOAO observing programs, publications, telescope usage, personnel changes, and visiting scientists for the fiscal quarter ending December 31, 2000. Quarterly highlights for the Educational Outreach and Public Outreach programs are also described here. The appendices contain a comprehensive list of all PI’s and collaborators, program titles, telescopes used, and observing hours associated with the quarter’s observing programs, as well as the annual safety reports for FY 2000.

Scientific highlights and current updates on NOAO initiatives, new capabilities, instrumentation, and operational activities will be published in the upcoming NOAO Newsletter, No. 65, March 2001.

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Observing Programs

Forty-eight observing programs were carried out at CTIO this quarter; 12 of these were thesis programs. At KPNO, total observing programs numbered 61, of which 12 were thesis programs.

<table>
<thead>
<tr>
<th>CTIO Observing Programs by Type (US vs Foreign)</th>
<th>KPNO Observing Programs by Type (US vs Foreign)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Months Ending</td>
<td>12/00</td>
</tr>
<tr>
<td>Programs (US)</td>
<td>26</td>
</tr>
<tr>
<td>Programs (non-US)</td>
<td>10</td>
</tr>
<tr>
<td>Thesis (US)</td>
<td>9</td>
</tr>
<tr>
<td>Thesis (non-US)</td>
<td>3</td>
</tr>
<tr>
<td>Total Programs</td>
<td>48</td>
</tr>
</tbody>
</table>

Comprehensive lists of all PI's, Co-I's, and collaborators, as well as program titles, telescopes used, and observing hours associated with this quarter's observing programs are attached here as Appendices A and B for CTIO and KPNO, respectively.

PT's, Co-I's, and program titles for US science observing programs at the International Gemini Observatory are listed in Appendix C; those for the HET and MMT, which are Public Access observing programs that were established through the support of the National Science Foundation, are listed in Appendix D.

Data showing total proposal requests by telescope and oversubscription rates are published in the NOAO Newsletter.

Publications Lists on the Web

A new feature has been added to the NOAO Web site—KPNO Publications Lists for FY 1990 through FY 2000 are now available at www.noao.edu/noao/library/noaopubs.html.

The KPNO bibliography tracks publications by fiscal year (Oct. 1–Sept. 30). Each file currently gives the total number of publications in the list; this number will be separated into refereed and non-refereed totals. The CTIO lists will also be added to this page, and the lists will include journal links.
Observing Programs and Publications

Publications Based on Research Using NOAO Facilities

The tables below report the number of publications received by NOAO libraries during FY 2000. The categories include:

- **Telescope**: Papers published by NOAO or visiting scientists based on scientific research using a specific KPNO or CTIO telescope.

- **Telescope, Unspecified**: Papers by NOAO or visiting scientists based on scientific research using CTIO or KPNO facilities where a specific telescope is not named, and papers by NOAO scientists in which no telescope was used (a theoretical paper, for example).

- **CCS and ETS**: Papers by NOAO Central Computer Services and Engineering and Technical Services staff.

- **Non-NOAO Facilities**: Papers published by NOAO scientific staff based on research conducted at non-NOAO facilities (such as the HST, for example).

<table>
<thead>
<tr>
<th>Telescope</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-m</td>
<td>86</td>
</tr>
<tr>
<td>1.5-m</td>
<td>55</td>
</tr>
<tr>
<td>0.9-m</td>
<td>54</td>
</tr>
<tr>
<td>1.0-m</td>
<td>19</td>
</tr>
<tr>
<td>0.9-m Curtis Schmidt</td>
<td>14</td>
</tr>
<tr>
<td>0.6-m Lowell</td>
<td>1</td>
</tr>
<tr>
<td>Radio Telescope</td>
<td>1</td>
</tr>
<tr>
<td>Unspecified</td>
<td>26</td>
</tr>
<tr>
<td>Non-NOAO Facilities</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total CTIO</strong></td>
<td><strong>256</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Telescope</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-m</td>
<td>45</td>
</tr>
<tr>
<td>WIYN 3.5-m</td>
<td>32</td>
</tr>
<tr>
<td>2.1-m</td>
<td>30</td>
</tr>
<tr>
<td>Coude Feed</td>
<td>8</td>
</tr>
<tr>
<td>0.9-m</td>
<td>31</td>
</tr>
<tr>
<td>Burrell-Schmidt</td>
<td>2</td>
</tr>
<tr>
<td>1.3-m</td>
<td>3</td>
</tr>
<tr>
<td>Unspecified</td>
<td>6</td>
</tr>
<tr>
<td>CCS and ETS</td>
<td>1</td>
</tr>
<tr>
<td>Non-NOAO Facilities</td>
<td>55</td>
</tr>
<tr>
<td><strong>Total KPNO</strong></td>
<td><strong>213</strong></td>
</tr>
</tbody>
</table>
Cerro Tololo Inter-American Observatory (CTIO)

In the quarter ending 31 December 2000, the observing programs of Principal Investigators accounted for 69% of available telescope hours; 12% of CTIO telescope time was used by NOAO scientific staff observers. Almost 6% of available telescope hours was allocated to scheduled maintenance (including instrument tests, engineering, and equipment changes).

Total “downtime” for CTIO telescopes (hours lost to weather and equipment problems) was 13%—of this, 12% was lost to bad weather and only 1% to equipment problems.
Telescope Usage and Performance Data

Kitt Peak National Observatory (KPNO)

In the quarter ending 31 December 2000, 53% of total available telescope hours at KPNO went to the observing programs of Principal Investigators; 10% were devoted to those of NOAO scientists. Scheduled maintenance (including instrument tests, engineering, and equipment changes) accounted for less than 1% of total telescope hours.

Total “downtime” (hours lost to weather and equipment problems) for KPNO telescopes was 36.6%. Almost all these lost observing hours were due to bad weather (33.1%), with only 3.5% lost to equipment problems.

<table>
<thead>
<tr>
<th>Telescope</th>
<th>Hours Available</th>
<th>% Hrs. Used By:</th>
<th>% Hrs. Lost To:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PI's</td>
<td>Staff</td>
</tr>
<tr>
<td>4-m</td>
<td>1064</td>
<td>58.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>WIYN</td>
<td>392</td>
<td>60.2%</td>
<td>10.5%</td>
</tr>
<tr>
<td>2.1-m</td>
<td>1030</td>
<td>45.7%</td>
<td>15.0%</td>
</tr>
<tr>
<td>CF</td>
<td>1002</td>
<td>57.6%</td>
<td>8.0%</td>
</tr>
<tr>
<td>0.9-m</td>
<td>302</td>
<td>32.8%</td>
<td>12.3%</td>
</tr>
<tr>
<td>All Telescopes</td>
<td>3790</td>
<td>52.8%</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>% Hrs. To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled</td>
<td>52.8%</td>
</tr>
<tr>
<td>Maintenance</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

4 NOAO Quarterly Report – 1st Quarter FY 2001
PUBLIC OUTREACH ACTIVITIES

NOAO-Tucson Public Outreach

Public Outreach manages all activities at the Kitt Peak Visitor Center, including the Center’s retail operations and educational exhibits, the Kitt Peak Docent program, daily tours of Kitt Peak facilities, and the increasingly popular fee-based nighttime observing programs for the general public. Public Outreach also coordinates all media and filming requests involving Kitt Peak facilities and personnel. Among this quarter’s highlights:

• A feature article describing the Advanced Observing Program at Kitt Peak appeared in the October 2000 issue of Astronomy magazine. The six-page article, written by Adam Block, Lead Observer, described the activities, equipment used, and experiences of AOP participants, and included many images of deep-sky objects taken by guest observers. This article provided national recognition of the program’s success.

• “Stargazing Secrets of Kitt Peak,” an informative article written by Steven White, Observing Technician for the Nightly Observing and Advanced Observing Programs, was published in the November/December 2000 issue of Mercury magazine.

• Adam Block, Lead Observer for the Nightly Observing and Advanced Observing Programs at the Visitor Center Observatory, together with Bob and Linda Satterwhite, guests who participated in the Advanced Observing program, were awarded the “Image of the Month” by the Santa Barbara Instrument Group for NGC 7293, the Helix Nebula. For more information on this image, see www.sbig.com/sbwhtmls/gallery.htm.

Kitt Peak Visitor Center
Summary of Visitors
October - December 2000

<table>
<thead>
<tr>
<th>Group/Program</th>
<th>No. of Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>General public tours</td>
<td>4,123</td>
</tr>
<tr>
<td>School groups K-12</td>
<td>352</td>
</tr>
<tr>
<td>Special tours</td>
<td>134</td>
</tr>
<tr>
<td>Nightly Observing Program</td>
<td>1,150</td>
</tr>
<tr>
<td>Advanced Observing Program</td>
<td>37</td>
</tr>
<tr>
<td>Total Visitors</td>
<td>5,796</td>
</tr>
</tbody>
</table>

NGC 7293 (Helix Nebula)
The Kitt Peak Visitor Center hosted a special night of stargazing and meteor watching for 25 guests. These participants were treated to the November Leonid meteor shower in addition to the regular Nightly Observing Program.

Public Outreach personnel attended a meeting of the Southwestern Consortium of Observatories for Public Education (SCOPE) held at the National Solar Observatory in Sunspot, New Mexico. Meeting participants toured the many new, hands-on exhibits in the NSO Visitor Center, which present topics in both solar and nighttime astronomy.

Approximately 300 people from the Veteran Motor Car Club of America visited Kitt Peak and participated in the daily tours and activities at the Visitor Center. Many attendees drove antique vehicles to the summit of Kitt Peak.

A group of 50 members attending the National Association of Interpreters Conference visited Kitt Peak and received behind-the-scenes tours of the Mayall 4-meter and the WIYN 3.5-meter telescopes, and the McMath-Pierce solar telescope facility.

NOAO–CTIO Public Outreach

CTIO’s second major outreach seeding effort culminated in the successful, initial pilot program RedLaSer 2000—over 6,588 students from 21 local schools in the Elqui Province of Chile took part in planetarium presentations during the period July through December 2000.

The planetarium, a portable, inflatable STARLAB, along with funds for operational support, were donated by Gemini South to AURA’s Observatory in Chile (CTIO) for educational use in the local community. RedLaSer, a newly-formed network of public and private, city and rural schools worked together with astronomers at the University of La Serena, their “Centauri” undergraduates, the Mamalluca Municipal Observatory, the US National Science Foundation, Cerro Tololo, Gemini, SOAR, and AURA in a wide-ranging, rapidly-growing educational outreach effort at the provincial level. The fledgling RedLaSer network helped the schools organize into local groupings centered on a school that had sufficient room to set up the planetarium. RedLaSer’s grassroots program has just been awarded a grant by Chile’s National Science Foundation, CONICYT, to continue local outreach work in 2001.

This program is just the beginning of an effort to extend the teaching of astronomy into schools throughout Chile, and to increase the awareness of Chile’s natural heritage of dark, transparent skies. We expect that this heightened awareness of astronomical activity in the Elqui Province will aid in efforts to control light pollution. Additional information may be found at www.ctio.noao.edu/ and www.ctio.noao.edu/AURA/redlasers/. Another site, which presents a user-operable PowerPoint presentation on controlling light pollution in Chile, may be found at www.ctio.noao.edu/light_pollution/iau50/lpppt/index.htm.
Educational Outreach is responsible for information requests, scientific press and media relations, and educational outreach programs. Highlights for this quarter include:

**Educational Programs**

- Twenty astronomers and 23 teachers attended the 5th annual Project ASTRO workshop held October 13–14 at Kitt Peak and NOAO–Tucson. This brings to 250 the total number of ASTRO partners trained through NOAO’s efforts. The workshop goals were to extend the concepts from the book *Did You See the Moon Last Night?—Scientific Inquiry through Writing, Art, and Observation* into the area of authentic scientific inquiry and to foster a collaboration with teachers and astronomers to assist student investigations of the moon. This year’s workshop was partially funded by a NASA IDEAS Grant.

- NOAO–Tucson passed the chairmanship of the Project ASTRO National Network to the Boston site, with lead institutions the Harvard–Smithsonian Center for Astrophysics and the Boston Museum of Science. NOAO held the position of Chair for the 11-site Project ASTRO National Network during its initial year of operation.

- A proposal to support the continued development of the RBSE Teacher Enhancement Program was submitted to the NSF Education and Human Resources Teacher Retention and Renewal Program in October. If successful, the program would develop a Distance Learning course, reach six times as many teachers as the original RBSE program, and have stable funding for five years.

- An update to the RBSE CD-ROM was sent to all active participants in the RBSE Program; a survey to determine participant status was distributed and results compiled.

- Four display posters describing ASTRO, RBSE, and work done by RET participants were developed for the AAS meeting:

  *Did You See the Moon Last Night?—Scientific Inquiry through Writing, Art, and Observation*, S. Jacoby and G. Beal (NOAO).

  *Current Astronomy Topics in the Pre-college Science Classroom*, C. Weehler (San Antonio Independent School District, San Antonio, TX), S. Hart (Pinson Valley High School, Pinson, AL), and S. Jacoby (NOAO).

  *Real Research in the Classroom—Solar Active Longitudes*, T. Stagg (Girard College), M. Gearen (Punahou High School), S. Jacoby (NOAO/EO), H. P. Jones (NASA/GSFC), and C. J. Henney and F. Hill (NSO).

  *The Use of Astronomy in Research-Based Science Education*, S. Jacoby and T. Rector (NOAO), J. Lockwood (TERC), and D. McCarthy (University of Arizona).

- A RBSE2 committee meeting held December 13 featured guest speaker Kathy Stiles, who is Co-Director of the National Academy for Science and Mathematics Education Leadership (NASMEL). She presented an overview of the NASMEL program and how it might be integrated into the RBSE2 summer workshop.
Educational Outreach

Media

• In November 2000, the Hubble Space Telescope Heritage project released images which featured colliding galaxies in NGC 6745 taken by Roger Lynds of NOAO. Following advance contacts of local media by the NOAO Public Information Officer, the image appeared on Page A9 of the November 2nd issue of the Arizona Daily Star and Page 1 of the November 4th issue of the Tucson Citizen newspapers. The Citizen item was later picked up by the Associated Press newswire.

• Nick Suntzeff of CTIO was interviewed on the nightly KUAT-TV magazine show “Arizona Illustrated” on the evening before the premiere of the PBS NOVA documentary “Runaway Universe,” some of which was filmed at CTIO and included several interviews with NOAO staff members. (A tape was later played for NOAO-Tucson employees over the lunch hour.)

• An NOAO November 14 news release—“Ancient Stars In Milky Way Reveal Colorful Epochs of Heavy Element Formation”—featured research performed by Catherine Pilachowski and Taft Armandroff of NOAO, which was published in the November 20th issue of the Astrophysical Journal. The news release received coverage in the November 25th issue of Science News and in Britain’s Astronomy Now magazine; other media interviews were conducted by reporters from USA Today and Science magazine.

• Two Current Science articles were posted to the NOAO Web pages—“Through a Stellar Lens, Darkly: Limits on Distant Jupiters” and “When Galaxies Collide.”

Photo/Imaging Services

Preparations for the January 2001 197th AAS Meeting included developing materials for an expanded NOAO exhibit, support for press activity, and poster presentations for individual science papers, as follows:

• Two 10-foot-wide displays were developed: one featured the NOAO Deep Wide-Field Survey for the NOAO exhibit and the other the Project ASTRO National Network.

• A poster originally developed to publicize the First Workshop on the Ground-Based O/IR System held in Phoenix in October was modified for display at the AAS Meeting.

• An additional exhibit poster featuring the ATST was prepared.

• A brochure describing the Project ASTRO National Network was developed for distribution at the AAS Meeting and throughout the year (5,000 copies were printed).

• A poster describing astronomical uses of spectroscopy was printed (2,000 copies) for distribution at the AAS Meeting and at NSO/Sac Peak.

• A US Gemini Program brochure showcasing what the program offers was produced for distribution at the AAS conference.
Educational Outreach

• Five thousand bookmarks featuring NOAO images were printed for distribution at the AAS meeting, for inclusion with all NOAO employee’s paychecks, and for use in the EO office in response to image requests from the general public.

• ASTRO brochures and a complementary poster were created for the AAS meeting to be offered by Ginny Beal during her Poster Exchange session on January 9.

• The Imaging Lab continued to work on updating the Kitt Peak brochure, produced business envelopes and stickers for NSO, finalized the NSO logo, created a holiday card for GONG, and created a new design for the NOAO Newsletter.

Service

• On December 20, Monica Ramirez, a student assistant in the EO office, presented information on “Astronomy as a Career” to Gridley Middle School 8th graders in two separate career classes.

Web Pages

• Work continues on the total redesign of the NOAO Web site. To date, the USGP portion is complete, groundwork on the KPNO section has begun, FAQs have been updated, and a Web-based application form has been created for the KPNO/REU program.

• Two science highlights and four press-related items were posted to the Web site.

• NOAO images were featured on the NASA Web site as Astronomy Picture of the Day five times this quarter—10/10, 10/17, 11/2, 11/28, and 12/11.

• Twenty-seven images have been added to the NOAO image gallery.

• The NOAO-Tucson server received a total of 728,968 hits during the quarter. (NOAO Outreach, Education Outreach, and Imaging together received a total of 258,421 hits.) The NOAO Web server statistics recorder is being improved to allow for more meaningful statistical reporting for next quarter.

Science and Information Requests

<table>
<thead>
<tr>
<th>Type/Origin of Request</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Discover Your Universe” brochures mailed</td>
<td>400</td>
</tr>
<tr>
<td>Requests/inquiries about astronomy/science (telephone, letter, e-mail, and walk-ins)</td>
<td>217</td>
</tr>
<tr>
<td>Requests/inquiries re NOAO images **</td>
<td>90</td>
</tr>
<tr>
<td>Total</td>
<td>707</td>
</tr>
</tbody>
</table>

**Does not include images downloaded from the NOAO Image Gallery.
Personnel Changes and Visiting Scientists

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Position</th>
<th>Division/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/01/00</td>
<td>Hugo Schwarz</td>
<td>Associate Astronomer</td>
<td>CTIO</td>
</tr>
<tr>
<td>11/01/00</td>
<td>Nicole van der Blied</td>
<td>Assistant Scientist</td>
<td>CTIO</td>
</tr>
<tr>
<td>11/27/00</td>
<td>Behzad Abarshie</td>
<td>Software Engineer II</td>
<td>ETS</td>
</tr>
<tr>
<td>12/04/00</td>
<td>Barry M. Starr</td>
<td>Engineering Supervisor</td>
<td>ETS</td>
</tr>
<tr>
<td>12/08/00</td>
<td>Kathie Coil</td>
<td>Admin. Coordinator for Education Outreach and Public Information</td>
<td>NOAO</td>
</tr>
<tr>
<td>12/15/00</td>
<td>Kevin Krisciunas</td>
<td>Research Associate</td>
<td>CTIO</td>
</tr>
</tbody>
</table>

Completed Employment

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Position</th>
<th>Division/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/19/00</td>
<td>Suzan Ecker</td>
<td>Secretary 3</td>
<td>CTIO</td>
</tr>
<tr>
<td>11/28/00</td>
<td>Edward Ajhar</td>
<td>Research Associate</td>
<td>NTSS</td>
</tr>
<tr>
<td>12/26/00</td>
<td>Patrick Nelson</td>
<td>Scientific Programmer II</td>
<td>CCS</td>
</tr>
</tbody>
</table>

Leave without Salary (transferred from CTIO)

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Position</th>
<th>Division/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/14/99</td>
<td>Germán Schumacher</td>
<td>Computer Prog.</td>
<td>CTIO to SOAR</td>
</tr>
<tr>
<td>04/01/00</td>
<td>Stephen Heathcote</td>
<td>Assoc. Astron./Tenure</td>
<td>CTIO to SOAR</td>
</tr>
</tbody>
</table>

Visiting Scientists (one month or longer)

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Institution</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/01/99</td>
<td>Fernando Santoro</td>
<td>SOAR, Brazil</td>
<td>AURA-O</td>
</tr>
<tr>
<td>10/16/00</td>
<td>Gabriella Raimondo</td>
<td>Oss. Astron. Teramo</td>
<td>CTIO</td>
</tr>
</tbody>
</table>

Chilean Economic Data

<table>
<thead>
<tr>
<th>Month Ending</th>
<th>10/00</th>
<th>11/00</th>
<th>12/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI Change</td>
<td>0.6%</td>
<td>0.3%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Cum. Change in CPI FY 2000</td>
<td>0.6%</td>
<td>0.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Avg. Mo. Peso/Dollar Rate</td>
<td>565.37</td>
<td>571.94</td>
<td>580.37</td>
</tr>
<tr>
<td>Monthly Dollars Changed</td>
<td>$780,000</td>
<td>$700,000</td>
<td>$940,000</td>
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</table>

NSF Foreign Travel Fund

<table>
<thead>
<tr>
<th>Quarter Ending</th>
<th>Amount</th>
<th>Foreign Institution Visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/31/00</td>
<td>$559.62</td>
<td>UKIRT, Hawaii</td>
</tr>
</tbody>
</table>
APPENDIX A. OBSERVING PROGRAMS—CTIO

October–December 2000: Forty-eight scientific programs, including twelve thesis programs listed below, were carried out at CTIO during this quarter. Students are indicated by a (T) for thesis students, (G) for non-thesis graduate students, and (U) for undergraduate students. The telescope used and nights assigned (hours worked) are specified. Service Observing programs are denoted by S.O. instead of nights assigned.

US/Foreign Thesis Programs (12)

G. Bendo (T), R. Joseph, W. Vacca (University of Hawaii): “Near-Infrared Spectroscopy of 30 Dor.” 2(17)1.5-m

Y.-H. Chu, R. Gruendl, S. Points, B. Wakker (University of Illinois at Urbana-Champaign), C. Danforth (T), W. Blair, C. Howk, K. Sembach, R. Shelton (Johns Hopkins University): “3-D Structure of the ISM in the Magellanic Clouds.” 5(45)4-m

J. Claria, A. Ahumada (T) (Observatorio Astronomico de Cordoba, Argentina), E. Bica (Universidade Federal do Rio Grande do Sul, Brazil), D. Geisler (Universidad de Concepcion, Chile): “Astrophysical Parameters of Distant Anticenter Open Clusters and the Radial Metallicity Gradient in the Galactic Disk.” 6(51)0.9-m

A. Crotts, S. Lawrence, B. Sugerman (T) (Columbia University), P. Bouchet, N. Suntzeff, S. Heathcote (Cerro Tololo Inter-American Observatory): “Evolution of SN 1987A into a Supernova Remnant: IR Imaging.” 1(10.5)4-m

D. Geisler (Universidad de Concepcion, Chile), L. Girardi (Universita di Padova, Italy), E. Bica (Universidade Federal do Rio Grande do Sul, Brazil), J. Claria, A. Ahumada (T) (Observatorio Astronomico de Cordoba, Argentina): “Investigating the Nature and Extent of a Newly Discovered Giant Branch Clump Evolutionary Phase.” 2(17.6)4-m, 3(26)1.5-m

B. Nichol (Carnegie Mellon University), T. McKay, P. Fischer, E. Sheldon (G) (University of Michigan), J. Frieman, M. Joffre (T), J. Mohr (University of Chicago): “Weak Lensing Masses of Nearby Clusters of Galaxies: Finishing a Complete Sample of Clusters.” 4(38.5)4-m
APPENDIX A. OBSERVING PROGRAMS—CTIO

K. Rines (T), M. Geller (Harvard-Smithsonian Center for Astrophysics), A. Diaferio (Università degli Studi di Torino, Italy): “Large Scale Mass-to-Light Profiles of Nearby Galaxy Clusters.” 7(49)CS

T. Shanks, N. Metcalfe, R. Fong, G. Busswell (T), P. Outram (University of Durham, UK): “Bright Galaxy Counts.” 7(60)CS

T. Smecker-Hane, T. Bosler (T) (University of California, Irvine), A. Cole (University of Massachusetts, Amherst), J. Gallagher, III (University of Wisconsin, Madison): “The Chemical Evolution of the Large Magellanic Cloud.” 4(38.16)4-m

L. Strolger (T) (University of Michigan), C. Smith, N. Suntzeff, R. Schommer, P. Candia (Cerro Tololo Inter-American Observatory), M. Phillips (Las Campanas Observatory, Chile), L. Ho (Carnegie Observatories), E. Rubenstein (Yale University), M. Hamuy (G) (University of Arizona), R. Covarrubias (University of Washington), A. Clocchiatti (Pontificia Universidad Católica de Chile), J. Maza (Universidad de Chile), J. Leyton (Cerro Tololo Inter-American Observatory): “Wide-Field Low-z SN Search with the NOAO Mosaic.” 15(116) 0.9-m

US/Foreign Investigator Programs (36)

B. Anthony-Twarog, B. Twarog (University of Kansas), W. Schuster (Universidad Nacional Autónoma de México): “Galactic Structure from Open Clusters: Photometric Characterization of Reddening, Distance and Abundance.” 6(54)0.9-m

R. Chandar, H. Ford (Johns Hopkins University): “An Empirical Calibration of Age and Metallicity Makers in Intermediate Age Star Clusters.” 4(37)1.5-m

A. Clocchiatti, P. Arevalo (U), C. Rada (U) (Pontificia Universidad Católica de Chile), N. Suntzeff (Cerro Tololo Inter-American Observatory), B. Schmidt (Mount Stromlo and Siding Spring Observatories, Australia): “The Risetime of Distant Type Ia SNe: A Test of SN Evolutionary Trends with Look-Back Time.” 1(9)4-m

A. Cole, M. Weinberg, M. Skrutskie, S. Nikolaev (G) (University of Massachusetts, Amherst): “Kinematics of LMC Carbon Stars: A Search for Tidal Debris.” 3(26)4-m

D. Geisler, W. Gieren, J. Seguel (G), R. Muñoz (G), J. Arenas (Universidad de Concepción, Chile), V. Smith (University of Texas, El Paso), S. Majewski (University of Virginia): “Photometric Followup of Space Interferometry Mission Grid Giant Star Candidates.” 7(34)0.9-m

M. Gregg (University of California, Davis), M. Drinkwater (University of Melbourne, Australia), M. Hilker (Pontificia Universidad Católica de Chile), S. Phillipps, J. Deady (G) (University of Bristol, UK), H. Ferguson, D. Alves (Space Telescope Science Institute), W. Couch (University of New South Wales, Australia): “Dissecting Fornax.” 4(38)4-m
APPENDIX A. OBSERVING PROGRAMS—CTIO

M. Guerrero, Y.H. Chu, R. Gruendl, A. Caulet (University of Illinois at Urbana-Champaign): “Circumstellar Nebulae Around Massive Stars.” 5(45)0.9-m

E. Guinan, I. Ribas, E. Fitzpatrick, L. DeWarf, F. Maloney (Villanova University), V. Niemela (Universidad Nacional de La Plata, Argentina): “Calibrating the Cosmic Distance Scale: An Accurate Distance to the LMC Using Eclipsing Binaries.” 8(65)4-m

S. Hameed (G) (New Mexico State University), D. Thilker (National Radio Astronomy Observatory), N. Devereux (Embry-Riddle Aeronautical University): “HII Region Luminosity Functions of Spiral Galaxies.” 6(50.5)1.5-m

T. Henry, W.-C. Jao (G) (Georgia State University), C. Anguita, M.T. Ruiz, L. Gonzalez (Universidad de Chile), P. Ianna, M. Begam, R. Pujals, J. Subasavage (University of Virginia), R. Méndez (European Southern Observatory), P. Seitzer (University of Michigan), A. Miranda, R. Leiton (Cerro Tololo Inter-American Observatory): “In Search of Nearby Stars: A Parallax Program at CTIO.” 6(49.5)1.5-m, 12(104)0.9-m

G. Jacoby (Kitt Peak National Observatory), O. DeMarco (University College London, UK): “The Chemical History of the SMC Derived from Faint Planetary Nebulae.” 5(40)4-m

B. Jannuzi, A. Dey (Kitt Peak National Observatory): “The NOAO Deep Wide-Field Survey.” 8(71.5)4-m

J. Kennefick (Oxford University, UK), E. Monier, P. Osmer, A. Conti (G) (Ohio State University), P. Hall (University of Toronto, Canada), M. Smith (Cerro Tololo Inter-American Observatory), R. Green (Kitt Peak National Observatory): “A Search for Quasars at 5 < z < 6 from a Large-Area BTC Multicolor Survey: Spectroscopy of Candidates over 20 Square Degrees.” 2(14)4-m

A. Landolt (Louisiana State University): “UBVRI Photoelectric Photometric Sequences.” 13(102)1.5-m

M. Ledlow (Gemini Observatory), F. Owen (National Radio Astronomy Observatory), G. Morrison (California Institute of Technology): “An Evolutionary Sequence of Cluster Evolution, Star Formation, & Galaxy Activity: An Optical/Radio/X-Ray Study.” 5(42.5)1.5-m

S. Majewski, K. Westfall (U), R. Patterson, J. Ostheimer (G), P. Frinchaboy (G) (University of Virginia), W. Kunkel (Las Campanas Observatory, Chile), K. Johnston (Wesleyan University): “Extratidal Populations of the Carina & Sculptor dSphs.” 3(20)4-m

P. Massey (Kitt Peak National Observatory), A. Duffy (U) (Gettysburg College): “Where do Wolf-Rayet Stars Come From? The Binary Frequency of WR + OB Systems Compared in the SMC, LMC, and Milky Way.” 5(51.24)1.5-m

R. Mennickent, P. Mella (U) (Universidad de Concepción, Chile), C. Sterken (Brussels University, Belgium), P. Candia (Cerro Tololo Inter-American Observatory): “Monitoring Very Old Dwarf Novae and the Quest for Brown Dwarf Like Secondaries.” 8(52.5)0.9-m
Appendix A. Observing Programs—CTIO

G. Meurer (Johns Hopkins University), H. Ferguson, P. Knezek, S. Oey (Space Telescope Science Institute), R. Webster, M. Drinkwater, V. Kilborn, M. Meyer (G), A. Karrick (G) (University of Melbourne, Australia), R. Kennicutt (University of Arizona), C. Smith (Cerro Tololo Inter-American Observatory), K. Freeman, M. Putman (Australian National University, Australia), L. Staveley-Smith (Australia Telescope National Facility, Australia): “Star Formation in HI Selected Galaxies.” 10(80)1.5-m

B. Miller (Gemini Observatory), C. Martin (California Institute of Technology): “Deep Ha Imaging of Fornax Dwarf Irregular Galaxies.” 3(28.5)1.5-m

D. Norman (State University of New York): “Determining the Redshift of Foreground Mass Overdensities in the Fields of z > 1 QSOs.” 3(28.5)1.5-m

K. Olsen, R. Schommer, N. Suntzeff (Cerro Tololo Inter-American Observatory), B. Miller (Gemini Observatory): “The Globular Cluster Systems of the Sculptor Group.” 4(23)4-m

B. Oppenheimer (University of California, Berkeley), N. Hambly, A. Digby (G) (University of Edinburgh, UK): “The Local Space Density of Halo White Dwarfs.” 4(40)4-m

J. Parker (Southwest Research Institute), P. Massey (Kitt Peak National Observatory), J. Harris (G) (University of California, Santa Cruz): “The Enigma of the IMF of Massive Stars Found in the Extreme ‘Field’ of the Magellanic Clouds.” 6(23)4-m

K. Rakos, H. Maitzen (University of Vienna, Austria): “CCD 4 Filter Photometry of Globular Clusters and Three Clusters of Galaxies.” 13(70.5)CS

M. Reed (G), S. Kawaler (Iowa State University), D. Kurtz (University of Cape Town, South Africa), J. Matthews (University of British Columbia, Canada): “Asteroseismology of the Magnetic Rapidly Oscillating Ap Star HR 1217 Using the Whole Earth Telescope.” 14(61.5)1.5-m

M.T. Ruiz (Universidad de Chile), S. Zepf, W. van Altena (Yale Observatory), R. Méndez (European Southern Observatory), C. Lidman (European Southern Observatory), R. Guzmán (Yale Observatory): “A Large-Volume Survey of Halo White Dwarfs.” 1(10)4-m

C. Smith (Cerro Tololo Inter-American Observatory), F. Winkler, E. Galle (U) (Middlebury College), Y.-H. Chu (University of Illinois): “The UM/CTIO Magellanic Cloud Emission-Line Survey.” 4(42.82)1.5-m, 5(37)CS

N. Suntzeff (Cerro Tololo Inter-American Observatory), B. Schmidt (Mount Stromlo & Siding Spring Observatories, Australia), P. Challis, S. Jha (Harvard-Smithsonian Center for Astrophysics): “A Critical Test for Cosmic Acceleration.” 2(20.16)4-m, 6(41.5)1.5-m

K. Venn, A. Brooks (G) (Macalester College), R. Rolleston (Queen’s University, Belfast), D. Lennon (Isaac Newton Group, La Palma, España): “Massive Stars in the Magellanic Bridge.” 4(32.5)4-m
S. Wachter (Cerro Tololo Inter-American Observatory), B. Johnson (U) (University of California, Los Angeles): "Low Mass X-Ray Binary X0614 + 009 for Orbital Period Modulation." 4(36)0.9-m

R. Walterbos, M. Bransford, J. Helmbold (G) (New Mexico State University), G. Bothun (University of Oregon), E. de Blok (Australia National Telescope Facility, Australia): "Deep H-Alpha Imaging of Low Surface-Brightness Galaxies." 5(37)0.9-m

R. Williams, R. Petre (NASA Goddard), Y.-H. Chu (University of Illinois at Urbana), C. Smith (Cerro Tololo Inter-American Observatory): "The Physical Structure of Evolved Supernova Remnants." 3(26)4-m

J. Willick (Stanford University), M. Hudson (University of Victoria, Canada), J. Lucey, R. Davies (University of Durham, UK), D. Schade (Dominion Astrophysical Observatory, Canada), R. Smith (Pontificia Universidad Católica de Chile), N. Suntzeff (Cerro Tololo Inter-American Observatory), G. Wegner (Dartmouth College): "A Fundamental Plane Peculiar Velocity Survey of Rich Clusters within 200 h^3 Mpc." 3(27)4-m

N. Zacharias, T. Rafferty, K. Johnston, M. Zacharias, D. Hall (U.S. Naval Observatory), C. de Vegt (Hamburg University, Germany): "Establishing an Extragalactic Reference Frame Link for the UCAC Project." 4(37)0.9-m

MICHIGAN Program. P. Seitzer (University of Michigan), M. Hernandez (Cerro Tololo Inter-American Observatory), R. Leiton (Cerro Tololo Inter-American Observatory). 15(132)CS
APPENDIX B. OBSERVING PROGRAMS—KPNO

October–December 2000: During this period, 61 scientific programs, 12 of which were thesis programs, were carried out. Graduate and undergraduate students are indicated by a (T) for thesis students, (G) for non-thesis graduate students and (U) for undergraduate students.

US/Foreign Thesis Programs

The Mass Function in H+Chi Persei
A. Bragg (T), S. Kenyon (Harvard-Smithsonian Center for Astrophysics) WIYN 2n (8 hrs)

Deciphering the Orion Nebula by Velocity Mapping
T. Doi (T), P. Hartigan, C. O’Dell (Rice University), H. Doi 4m 2.5n (10 hrs)

Binary Mass Transfer and the Spin-Up of Massive Stars
D. Gies, T. Josephs (T), D. Wallace (G), M. McSwain (G), W. Huang (G) (Georgia State University) WIYN 4n (40 hrs)

H-alpha and X-Ray Variations in SS433 and Other Massive X-Ray Binaries
D. Gies, M. McSwain (T), D. Wingert, D. Wallace (G), W. Huang (G) (Georgia State University) CF 26n (196 hrs)

Toward a Complete Near-Infrared Spectroscopic and Imaging Survey of Giant Molecular Clouds
E. Lada, R. Elston, D. Dahari (T), C. Roman (T) (University of Florida), J. Alves (European Southern Observatory), C. Lada, A. Muench (T) (Harvard-Smithsonian Center for Astrophysics), J. Najita (National Optical Astronomy Observatories), J. Williams, J. Julian (University of Florida), R. Green (National Optical Astronomy Observatories), D. Hon, S. Raines (University of Florida), J. Elias, R. Joyce (National Optical Astronomy Observatories)

The Infrared Ellipsoidal Variations of Soft X-Ray Transients: Measuring the Mass of the Black Hole Primary
D. Leeber-Gelino (T), T. Harrison, B. McNamara, C. Gelino (T) (New Mexico State University) 2.1m 7n (34.5 hrs)

Near-Infrared Imaging of Protostellar Clusters
S. Megeath (Harvard-Smithsonian Center for Astrophysics), J. Pipher (University of Rochester), P. Myers (Harvard-Smithsonian Center for Astrophysics), D. Peterson (T) (University of Rochester) 2.1m 3n (34 hrs)

Near-IR Spectroscopy of Lyman Break Galaxies in the Field of Q2233+1310
P. Moth (T), R. Elston, M. Horrobin (University of Florida), J. Elias (National Optical Astronomy Observatories) 4m 1.5n (4 hrs)
Appendix B. Observing Programs—KPNO

A New Approach to Exploring the Halo of M31
J. Ostheimer (T), S. Majewski, R. Patterson, J. Crane (G) (University of Virginia) 4m 4.5n (61 hrs)

Absolute Properties of Binary Stars
J. Sabby (T), C. Lacy (University of Arkansas) CF 5n (62.5 hrs)

Local Lyman Alpha Forest: Relation Between Absorbers and Galaxies
J. Stocke, K. McLin (T), S. Penton, B. Gibson, J. Shull (University of Colorado), T. Rector (National Optical Astronomy Observatories) WIYN 3n (31 hrs)

Wide-Field Low-Z Sn Search With the NOAO Mosaic
L. Strolger (T) (University of Michigan), R. Smith, N. Sunzteff, R. Schommer (National Optical Astronomy Observatories), M. Phillips (Las Campanas (Carnegie Observatory), L. Ho Observatories), E. Rubenstein (CTIO), M. Hamuy (G) (University of Arizona), R. Covarrubias (National Optical Astronomy Observatories), A. Clocchiatti (Pontificia Universidad Catolica de Chile), J. Maza (Universidad de Chile), J. Seguel (Universidad de Concepcion), J. Krick (University of Michigan), T. Bowers (U) (University of Arizona)

Completion of a Survey for Disk Lines Around Rapidly-Rotating a Stars
H. Abt, D. Willmarth (National Optical Astronomy Observatories) CF 9n (48.5 hrs)

A Deep Survey of Star-Forming Galaxies at Z~ 1
K. Adelberger (G), C. Steidel, M. Hunt (G) (California Institute of Technology) 4m 4n (36.5 hrs)

Deep Imaging Survey of Nearby Star-Forming Clouds
J. Bally, B. Reipurth, K. Yu (T) (University of Colorado) 0.9m 8.5n (27.5 hrs)

Stellar Populations and Dust in Galaxies in Close Pairs: Measuring the Impact of Interactions
E. Barton (Dominion Astrophysical Observatory), S. Kenyon, M. Geller (Harvard-Smithsonian Center for Astrophysics) 2.1m 8.5n (32.5 hrs)

The Metallicity Dependence of the Cepheid Period-Luminosity Relation
D. Bersier (Harvard-Smithsonian Center for Astrophysics), P. Wood, J. Mould (Australian National University), J. Hoessel (University of Wisconsin, Madison) WIYN Queue (9.55 hrs)

Near-Earth Objects: A Multi-Wavelength Population and Exploration Assessment
R. Binzel, S. Bus, A. Rivkin (Massachusetts Institute of Technology) 4m 2n (0 hrs)

Multi-Color Imaging of Damped Ly-alpha Absorbing Galaxies at Z<1.6
H. Chen, J. Prochaska (Carnegie Observatories), K. Lanzetta, N. Yahata (G) (SUNY at Stony Brook) 4m 1n (12.5 hrs)
APPENDIX B. OBSERVING PROGRAMS—KPNO

Is Lithium Produced in Active Stellar Atmospheres?
D. Christian (Space Telescope Science Institute), M. Mathioudakis (Queen's University) 4m 2n (8 hrs)

A Statistical Measure of Galaxy Evolution
A. Connolly (University of Pittsburgh), A. Szalay (Johns Hopkins University), M. Davis (University of California, Berkeley), R. Brunner (California Institute of Technology), G. Szokoly, B. Jain (Johns Hopkins University) 4m 4n (50 hrs)

The Mega Survey: Mapping Microlensing in M31
A. Crotts, R. Uglesich (G) (Columbia University), G. Gyuk (University of California, San Diego), A. Gould (Ohio State University), P. Sackett (Kapteyn Astronomical Institute), L. Widrow (Queen's University), K. Kuijken (Kapteyn Astronomical Institute) 4m 3n (31 hrs)

The Mega Survey: Mapping Microlensing in M31
A. Crotts, R. Uglesich (G) (Columbia University), G. Gyuk (University of California, San Diego), A. Gould (Ohio State University), P. Sackett (Kapteyn Astronomical Institute), L. Widrow (Queen's University), K. Kuijken (Kapteyn Astronomical Institute) 4m 3n (31 hrs)

A Deep Near-Infrared Survey of M33
R. Gehrz, R. Humphreys (University of Minnesota), J. Huchra, S. Willner (Harvard-Smithsonian Center for Astrophysics), C. Woodward (University of Wyoming), S. Strom (National Optical Astronomy Observatories), T. Jones (University of Minnesota), P. Barmby (Harvard-Smithsonian Center for Astrophysics), E. Polomski (University of Minnesota) 2.1m 5n (40.5 hrs)

Cycles and Long-Term Variability in Solar-Type Stars
M. Giampapa (National Optical Astronomy Observatories) WIYN 0.5n (8 hrs)

Optical Followup of Selected High Latitude Chandra Fields
P. Green, B. Wilkes, H. Tananbaum (Chandra X-ray Center), B. Jannuzi (National Optical Astronomy Observatories), S. Mathur (Ohio State University), P. Smith (National Optical Astronomy Observatories), C. Foltz (University of Arizona) 4m 3n (14 hrs)

Champlane: Measuring the Faint X-Ray Binary and Stellar X-Ray Content of the Galaxy
J. Grindlay, P. Edmonds, J. McClintock, P. Zhao, M. Garcia (Harvard-Smithsonian Center for Astrophysics), A. Cool (San Francisco State University), S. Wachter, D. Hoard (National Optical Astronomy Observatories), P. Green, B. Wilkes, J. Drake, V. Kashyap (Harvard-Smithsonian Center for Astrophysics), C. Bailyn (Yale University), H. Cohn (Indiana University) 4m 2n (22.5 hrs)

H II Region Luminosity Functions of Spiral Galaxies
S. Hameed (G) (New Mexico State University), D. Thilker (National Radio Astronomy Observatory), N. Devereux (Embry-Riddle Aeronautical University) 3.5n (13.5 hrs)

Observing the Orbits of Symbiotic Stars and Other Evolved Late-Type Binary Systems
K. Hinkle, R. Joyce (National Optical Astronomy Observatories), F. Fekel (Tennessee State University) CF 4n (37 hrs)
APPENDIX B. OBSERVING PROGRAMS—KPNO

Metal Abundances and the Temperature Scale for Hot H-Rich White Dwarfs
J. Holberg (University of Arizona), M. Barstow (University of Leicester), I. Hubeny (NASA Goddard Space Flight Center), M. Burleigh (University of Leicester), T. Marsh (University of Southampton), N. Bannister (University of Leicester) 4m 2n (0 hrs)

A Wide-Field Search for Saturnian Moons
M. Holman (Smithsonian Astrophysical Observatory), B. Gladman (Observatoire de Nice), J. Kavelaars (McMaster University), J. Petit (Observatoire de Nice), P. Nicholson (Cornell University), H. Scholl (Observatoire de Nice), T. Grav (University of Oslo) 4m 3n (44.5 hrs)

Star Formation in the Thick Disk of NGC 891?
J. Howk (Johns Hopkins University), B. Savage (University of Wisconsin, Madison) 4m 3n (17 hrs)

A Fundamental Plane Peculiar Velocity Survey of Rich Clusters Within 200 H\(^{-1}\) Mpc
M. Hudson (University of Victoria), J. Lucey (University of Durham), D. Schade (Dominion Astrophysical Observatory), R. Smith (Universidad Catolica de Chile), N. Suntzeff (National Optical Astronomy Observatories), G. Wegner (Dartmouth College), R. Davies, S. Moore (University of Durham) 4m 1n WIYN 4n (16.5 hrs)

Large Scale Structure as Measured by Quasar Absorbers and Galaxies
C. Impey, C. Peir\(\text{y}\), D. McIntosh (University of Arizona) WIYN 2n (15 hrs)

The NOAO Deep Wide-Field Survey

Mass Transfer in Interacting Galaxies
W. Keel (University of Alabama), K. Borne (NASA Goddard Space Flight Center) WIYN 2n (22.5 hrs)

A Deep Survey of Star Formation in Nearby Galaxy Clusters
R. Kennicutt (University of Arizona), S. Sakai (National Optical Astronomy Observatories), C. Moss (Vatican Observatory), M. Whittle (University of Virginia), J. Moustakas (G) (University of Arizona) 0.9m 3n (15.5 hrs)
### Appendix B. Observing Programs—KPNO

#### Testing Cosmic Acceleration
R. Kirshner (Harvard-Smithsonian Center for Astrophysics), B. Schmidt (Mt. Stromlo & Siding Spring Observatory), N. Suntzeff (National Optical Astronomy Observatories), T. Matheson (Harvard-Smithsonian Center for Astrophysics)

Supernova Light Curves
R. Kirshner (Harvard-Smithsonian Center for Astrophysics), P. Garnavich (University of Notre Dame), S. Jha (G), P. Challis, T. Matheson (Harvard-Smithsonian Center for Astrophysics)

#### Probing the Evolution of Compact Radio Galaxies
A. Koekemoer, C. O'Dea, S. Baum (Space Telescope Science Institute)

#### Probing Interstellar Structure at the Smallest Scales
J. Lauroesch, D. Meyer, S. Cartlidge (G) (Northwestern University)

#### A Search for Terrestrial Trojan Asteroids
J. Luu (Leiden University), N. Evans (Oxford University)

#### A Deep Variability Survey Around High Redshift Clusters
S. Majewski (University of Virginia), A. Saha (National Optical Astronomy Observatories), M. Bershady (University of Wisconsin), J. Hoessel, S. Crawford (G) (University of Wisconsin, Madison)

#### The Resolved Stellar Content of Local Group Galaxies Currently Forming Stars

#### Discovery of Faint Kuiper Belt Objects With the MOSIAC Cameras
R. Millis, M. Buie (Lowell Observatory), R. Wagner (Ohio State University), J. Elliot (Massachusetts Institute of Technology), L. Wasserman (Lowell Observatory), S. Kern (U) (Massachusetts Institute of Technology)

#### Nuclear Lightcurve Observations of Short Period Comets
B. Mueller, N. Samarasinha, T. Lauer (National Optical Astronomy Observatories)

#### A Measurement of the Neutrino Cooling Rate in a Hot White Dwarf
M. O'Brien, H. Bond (Space Telescope Science Institute), S. Kawaler (Iowa State University)

#### The KBO/SDO/Centaur Recovery Program
J. Parker (Southwest Research Institute)

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**B.5 NOAO Quarterly Report – 1st Quarter FY 2001**
Appendix B. Observing Programs—KPNO

The Abundances of the Iron Group Elements in Early B Stars
G. Peters (University of Southern California), J. Grigsby (Ball Aerospace)  CF  7n  (40 hrs)

The Nova Rate in Galaxies of Different Hubble Type
(National Optical Astronomy Observatories)  0.9m  3n  (10 hrs)

Finding Our Neighbours
I. Reid (University of Pennsylvania), D. Monet (U.S. Naval Observatory), J. Liebert
(University of Arizona), J. Gizis, J. Kirkpatrick (IPAC, JPL/IAPC), K. Cruz (T)
(University of Pennsylvania)  2.1m  1n  (10 hrs)

A Coudé Feed Stellar Spectra Library
J. Rose (University of North Carolina, Chapel Hill), F. Valdes (National Optical
Astronomy Observatories), R. Gupta (Inter-University Centre for Astronomy/Physics),
H. Singh (Sri Venkateswara College), C. Reynolds (G) (University of North Carolina,
Chapel Hill), D. Bell (National Optical Astronomy Observatories), L. Bartholomew (G)
(University of North Carolina, Chapel Hill), K. Concannon (G) (University of North
Carolina-Chapel Hill)  CF  10n  (27 hrs)

Finding the Stellar Component of Hi-Selected Galaxies
J. Rosenberg (G), S. Schneider (University of Massachusetts)  2.1m  5n  (56 hrs)

Io Torus Observations: Cassini Support & Chlorine Inventory
N. Schneider, M. Burger (G) (University of Colorado)  4m  4n  (31 hrs)

Testing the Young Galaxy Hypothesis: RR Lyrae Stars in Leo A
E. Skillman (University of Minnesota), A. Saha, A. Dolphin (National Optical
Astronomy Observatories), J. Gallagher (University of Wisconsin, Madison), E. Tolstoy
(European Southern Observatory), M. Mateo, R. Dohm-Palmer (University of Michigan),
A. Cole (University of Massachusetts at Amherst)  WIYN  4n  (37.5 hrs)

Multislit Spectroscopy of the Bright End of an Infrared-Selected Field Galaxy Survey
D. Stern, P. Eisenhardt (JPL, California Institute of Technology), R. Elston (University
of Florida), S. Stanford (University of California, Davis), K. Wu (University of Florida),
H. Spinrad (University of California, Berkeley), A. Connolly (University of Pittsburgh)
  4m  2n  (25 hrs)

The Distribution of Dark Matter in Spiral Galaxies
R. Swaters (Carnegie Institution of Washington), R. De Jong (University of Arizona)  4m  3.5n  (14 hrs)
Appendix B. Observing Programs—KPNO

Deep Lens Survey
J. Tyson (AT&T Bell Laboratories), G. Bernstein (University of Michigan), I. Dell'Antonio (Brown University), D. Wittman, D. Kirkman, G. Kochanski (AT&T Bell Laboratories), T. Lauer (National Optical Astronomy Observatories), T. Broadhurst (University of California, Berkeley), R. Cen (Princeton University), J. Cohen (California Institute of Technology), A. Gonzalez (University of California, Santa Cruz), W. Hu (Institute for Advanced Study), N. Kaiser (University of Hawaii), R. Schommer (National Optical Astronomy Observatories), D. Spergel (Princeton University), G. Squires (California Institute of Technology), C. Stubbs (University of Washington), G. Wilson (Brown University), A. Becker (U) (University of Washington), D. Zaritsky (University of Arizona), V. Ellinger (G) (Princeton University), D. Loomba (G) (University of New Mexico)

Beryllium Abundances as a Test of Mixing in Red Giants
G. Wallerstein (University of Washington), D. Duncan (University of Chicago), C. Charbonnel (Observatoire Midi-Pyrenees), G. Gonzalez (University of Washington)

Phase Locked Spectroscopy of the Crab Pulsar
P. Wehinger (University of Arizona), R. Much (Space Science Department of ESA, NL), J. Fordham (University College London), S. Wyckoff (Arizona State University), A. Carraminana (INAOE), R. Michel (Instituto de Astronomia, UNAM)

High-Resolution Spectra of Is Absorption Lines Toward Fuse H₂ Targets
D. Welty (University of Chicago), T. Snow (University of Colorado), D. Morton (Dominion Astrophysical Observatory)

Imaging of Dwarf Galaxy Candidates
A. Whiting (U. S. Naval Academy), G. Hau (Universidad Catolica de Chile), M. Irwin (University of Cambridge)
APPENDIX C. OBSERVING PROGRAMS—GEMINI, HET, AND MMT

GEMINI (INTERNATIONAL GEMINI OBSERVATORY)

October–December 2000: During this period, observations were obtained at the International Gemini Observatory for the following US science programs:

“QSO Host Galaxies: The Link to Nuclear Properties”
T. Boroson, R.F. Green, National Optical Astronomy Observatory

“Multiplicity and Circumstellar Structure of Deeply Embedded Herbig-Haro Energy Sources”
B. Reipurth, C. Aspin, University of Colorado; P.A. Bouchet, National Optical Astronomy Observatory

“Probing Newly Discovered Exozodiacal Vegas-type Dust”
S. Fajardo-Acosta, C.A. Beichman, JPL/California Institute of Technology

“Probing Dusty Protostellar Binaries in the mid-IR”
L.W. Hartmann, N. Calvert, L. Allen, Harvard-Smithsonian Center for Astrophysics; C. Telesco, R.S. Fisher, R.K. Pina, University of Florida

HET (HOBBY-EBERLY TELESCOPE AT McDONALD OBSERVATORY)

This is the first quarter during which observations have been obtained at the Hobby-Eberly telescopes under the Public Access program established through the support of the National Science Foundation. Under this agreement, 162 nights will be made available to the astronomical community through NOAO for a period of at least six years. Since the HET is queue-scheduled, this number of nights is equivalent to 168 hours per year of actual data collection once the Hobby-Eberly telescope is in full operation.

October–December 2000: During this period, observations were obtained for the following science programs:

“The Ubiquity of MgII Absorbing Galaxies”
D. Bowen, R. Kim, X. Fan, Princeton University; D.G. York, S. Burles, G. Richards, University of Chicago; T.M. Heckman, Johns Hopkins University; D. Vanden Berk, Fermi National Accelerator Lab (6 hours)
MMT (6.5-m TELESCOPE OF THE MMT OBSERVATORY)

This is the first quarter during which observations have been scheduled at the 6.5-m telescope of the MMT Observatory under the Public Access program established through the support of the National Science Foundation. Under this agreement, 162 nights will be made available to the astronomical community through NOAO for a period of at least 6 years. When the 6.5-m telescope is in full operation, the community can expect to receive 27 nights per year.

October–December 2000: During this period, observations were obtained for the following science programs:

“High Resolution Mid-Infrared Imagings of a Dust Torus around Proto-Planetary Nebulae”
T. Ueta, M. Meixner, University of Illinois; A. Dayal, IPAC, JPL/IAPC; L.K. Deutsch, Boston University; G.G. Fazio, J.L. Hora, Harvard Smithsonian Center for Astrophysics; W.F. Hoffman, P. Hinz, University of Arizona (October 8, 2000)

“Calibration of the Infrared Array Camera Onboard ISO”
B. Ali, A. Dayal, IPAC, JPL/IAPC; L.K. Deutsch, Boston University; G.G. Fazio, J.L. Hora, Harvard Smithsonian Center for Astrophysics; W.F. Hoffman, P. Hinz, University of Arizona (October 9, 2000)

“The Helium Abundance in IZw18”
E. Skillman, University of Michigan; R.C. Kennicutt, Jr., University of Arizona (November 20, 2000)

“High-Quality Near-UV Spectra of BL Lac Objects”
T.A. Rector, National Optical Astronomy Observatory; J.T. Stocke, University of Colorado (November 21, 2000)

“A Survey of Low-Redshift High Column Density QSO Absorption Line Systems”
OSHA Recordable Occupational Injuries and Illnesses

The following is a compilation of information found on the 2000 OSHA 200 Logs for the Tucson and KPNO operations. As required by 29CFR 1904.5, Annual Summary, this information will be posted at each respective site by 1 February 2001. (1999 data have been included below for the purpose of comparison.)

<table>
<thead>
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</tr>
<tr>
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As seen from this information, there has been a 200% decrease in lost time injuries and a 300% decrease in injuries without lost workdays. It should be noted that this places NOAO at 96% below the national average for injuries/illnesses as compared to other organizations in our Standard Industrial Classification.

Lost Time Injuries/Illnesses

- No lost time injuries during this calendar year.
Injuries/Illnesses With No-Lost Time

- An engineering staff member sustained a foreign object injury to right eye when he inadvertently poked self in eye with pencil. Employee was treated by family physician and released. No permanent damage occurred.

Vehicle Accidents

There were no vehicle accidents reported during cy00.

Training

- Thirty-four KPNO staff members attended first-aid/CPR training.
- One Tucson staff member received refresher training for Asbestos Worker Certification.
- Ninety-two percent of staff received initial Hazard Communication Training.

Environmental

After lengthy negotiations, Pima County Department of Environmental Air Quality (PCDEQ) has determined that NOAO is exempt from air quality permitting.

NOAO still maintains Conditionally Exempt Small Quantity Generator status with the Arizona Department of Environmental Quality, Hazardous Waste Section.

OSHA Complaints

No OSHA complaints were received during CY00.

Security

A proposal was submitted to the NOAO Director for provision of increased security and heightened security awareness. A number of the proposed measures were approved with implementation commencing on 15 December 2000.
APPENDIX E
AOSS ANNUAL SAFETY REPORT FY 2000

The following is the safety report for CTIO, with the principal activities performed during last year.

One of the most significant accomplishments during this period was the safety award presented to AURA last December by the “Mutual de Seguridad de la Cámara Chilena de La Construcción,” the organization that administers our compulsory social insurance contribution and controls the Accident Prevention Law 16744 concerning labor accidents. This merit award was granted to AURA, Inc. in recognition of outstanding results in accident prevention, where we have achieved the ostensible record of zero (0) disabling accidents for two consecutive years on Cerro Tololo, and for the commitment and dedication of its executives and workforce in the eradication of safety hazards.

This award is granted only to a select group of organizations that have achieved results of excellence in their safety performance, and it is a powerful incentive for workers to maintain the quality of their work and best practices.

Another milestone is the fact that the SOAR building and enclosure are near completion with no accidents reported during the 11 months of work on the site.

Continuing with the plan for the progressive upgrade of the main access road to the Observatory, 2.6 km of guardrail were installed in the sections that were considered to be of highest hazard potential to the users.

Other important highlights of the Safety work during the period under report are the completion of the fire detection and alarm system and the installation of safety exit charts in all telescope buildings at CTIO.

Activities of the Safety Expert were essentially oriented to continuing to promote adherence to existing safety regulations and norms, and to conducting a systematic analysis of hazards, continuous improvement and feedback, as well as routine activities detailed below:

1. Assist all functional areas in the organization
2. Promote safety at the workplace
3. Accident investigation and reporting
4. Plan and conduct periodical safety inspections at workplace
5. Assist the Safety Committees
6. Give safety talks
7. Keep and publish statistical safety data and trends
8. Write and distribute safety manuals and regulations
The Safety expert divides his time for the activity described above in the following manner: one day in La Serena, one day on Cerro Tololo and one day on Cerro Pachón. Additional time was devoted to safety support at the SOAR building and enclosure construction on Cerro Pachón.

The following is an account of the main routine activities performed in this area:

Safety Program

1. Planned Inspections

   - According to the Safety Program, a total of 50 planned inspections were performed throughout year 2000: 13 for CTIO, 17 for Gemini, 16 for SOAR, and 4 for AOSS.

2. Accident investigation

   - During this period, a total of two disabling accidents were reported by Gemini South. One was caused by contact with a moving object (an operating drill), and the other was a fall. Action has been taken to place more emphasis on the safety activity of the Gemini South telescope.

   - AOSS and CTIO have been free of disabling accidents for 26 months, an historical record for our organization.

   - There were a total of two vehicle accidents, both of which involved Gemini staff, resulting only in material losses

<table>
<thead>
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<th>Organization</th>
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</tr>
<tr>
<td>AOSS</td>
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</tbody>
</table>

3. Safety Training

   - During FY 2000, a total of eight safety training courses were given, which is by far the highest number ever in the history of the observatory. The number of workers who participated are listed in the following table:
### 4. Emergency Preparedness

- Emergency preparedness work has been kept up at a dynamic pace, especially on account of continuous training of rescue brigades, inspection of fire fighting equipment and installations, renovation of worn and obsolete fire fighting material, procurement of rescue material, etc.

- The rescue brigade has been kept fully operative and alert during this period. They played a key role in the rescue of the AOSS contractor Martin Bruna, (who, on October 2, 2000 turned over on Km 12.5, with no personnel injuries) arriving at the site of the accident only 20 minutes after it had happened.

- Two emergency transceiver radio sets were installed on Km 5 and 8 respectively, on the Cerro Pachón access road. These radios have been equipped with solar cells and batteries to ensure continuous operating autonomy for emergency purposes.

### 5. Activity performed together with experts from the Mutual de Seguridad Cámara de la Construcción

- There were several meetings with officials, of diverse executive levels and areas of expertise, of the Mutual de Seguridad de la Cámara Chilena de la Construcción. They also conducted three mandatory physical inspections at our operation sites.

### 6. Work Safety Analysis

- We reviewed the procedures for the use of personal protective equipment and the policies and procedures for the safety and control of sub-contractors. At present we are working on the definition of a new procedure manual for improved emergency response at Gemini, whereas the SOAR procedure was updated.
7. Occupational Health and Hygiene

- The Mutual de Seguridad performed 65 physical exams of observatory workers to check for the possibility of work-related injuries or illnesses (vision tester exam, audiometry, spirometry and urine tests to detect the possible presence of heavy metals). Coincident with the results from these exams, they gave an ad-hoc talk on occupational health and hygiene. None of the workers were found ill. This activity has been scheduled to take place once every two years.

8. Safety Meetings

- In addition to the routinely scheduled meetings, a number of occasional meetings were held in order to address urgent or specific concerns, i.e. annual work program, training program, compound safety issues, night driving conditions, etc.

9. Safety and Hygiene Committees

- According to the mandate of the Chilean Law, new members for the Safety Committees of La Serena and Cerro Tololo were elected on July 17, 2000. The term is for a period of two years. Current members for Cerro Tololo are Oscar Sáá (President), Rolando Puño (Secretary) plus 10 other nominal and surrogate committee members. La Serena Safety Committee is composed by Oscar Rivera (President) and Eduardo Segovia (Secretary) plus 10 other nominal and surrogate committee members.

- In addition, during this period the new Safety Committee of Cerro Pachón was created, as per the initiative of Gemini officials. This Committee is still undergoing internal organization, its members will be welcomed and supported by the existing Safety Committees to ensure the success of their mission.

10. Environmental Issues

- Thanks to a recycling initiative, an inventory of scrap auto batteries was carried out under the supervision of an authorized disposal company, Sorena of Santiago, to properly discard these contaminating items.

- The new dump on Cerro Tololo has been kept in efficient operation since it was inaugurated in April '99 and is monitored regularly for sanitary control purposes. It was decided, however, to bury the garbage in a regular manner to prevent the proliferation of rodents and insects.
Legal background

The following are the main legal bodies that regulate the safety, hygiene and professional illness activities in Chile.

- Law 16.744: Mandatory work accident and professional health hazards insurance
- D.S. Nro. 54: Safety and Hygiene Committees
- D.L. 745: Minimal sanitary conditions at the workplace
- D.S. Nro. 40: Safety Prevention Regulations
- D.L. Nro. 67: Exemption, reductions, surcharges of additional premium rate New 24.11.99
- D.L. 594: Minimal sanitary conditions at the workplace New 31.03.2001