

above, with the continuum work divided roughly equally between Swedish and Finnish groups. Most of the data have been obtained at 90 GHz, although the groups have been striving to get also more 230 GHz observations.

The obvious starting point has been to get acquainted with the new part of the sky. Several surveys of the southern skies are now in progress. N. Whyborn is observing a complete sample of bright, flat-spectrum radio sources below declination  $-25^\circ$ , and a similar survey between  $0^\circ$  and  $-25^\circ$  is in progress by E. Valtaoja. These surveys are first steps in gathering basic knowledge of Southern hemisphere sources: their high frequency spectra, variability, degree of compactness, etc., data which can be used both for statistical studies and for selecting exciting individual objects as targets for future investigations.

Selected subsets of sources have also been observed: southern BL Lacs and highly polarized quasars (H. Teräs-ranta), radio quiet quasars (A. Kus), and sources observed in TDRS satellite space VLBI experiments (R. Booth). As the sources typically are observed at two or more epochs for variability es-

timates, most of the work is still in progress.

The Finnish group has used SEST to extend their long-time monitoring programme to higher frequencies. About 12 of the most active and well-known equatorial blazars have been observed roughly semimonthly in Chile. Although the "high" (i.e., Northern) declinations of some of these sources have caused some grumbling in the programme committee, the SEST data fill a crucial gap between lower frequencies (Metsähovi, Itapetinga, Crimea) and IR observations (Hawaii) in what remains the most extensive international effort to understand the radio behaviour of AGN. Multifrequency monitoring has made possible the separation of outbursts from the underlying other components, showing that shocked jet models give at least a first approximation of what is going on in variable radio sources. Much remains to be done, however: even the best observed quasar, 3C 273, continues to behave in a highly erratic and surprising manner.

Harri Teräs-ranta from the Metsähovi Radio Research Station summarizes the experience of the first year as follows: "90 GHz flux measurements are now

relatively routine work. The actual rms levels achieved with 30 min integration times have been from 40 to 80 mJy. 230 GHz observations require good weather, and it would be better to have the observing run spread over a longer time span with several shorter sessions to maximize the chances of success. The observing times should be nearly 1 hour for one source if rms values of 0.2 Jy are to be expected."

## Future Programmes

The future will probably see a shift from general surveys to dedicated monitoring of selected sources, hopefully with increasing co-operation from other Southern telescopes to get the most out of the observations. With new receivers and increased experience, submillimetre observations will come to the forefront: one of the challenges is to follow the entire early evolution of a synchrotron flare in order to develop second-generation models for the growth of shocks in relativistic jets.

Still another field where SEST's impact will certainly be felt in the future is millimetre VLBI, both on the ground and in space.

## Visiting Astronomers

(October 1, 1989 – April 1, 1990)

Observing time has now been allocated for Period 44 (October 1, 1989 – April 1, 1990). The demand for telescope time was again much greater than the time actually available.

The following list gives the names of the visiting astronomers, by telescope and in chronological order. The complete list, with dates, equipment and programme titles, is available from ESO-Garching.

### 3.6-m Telescope

*Oct. 1989:* Marano/Cappi/Held, Bender et al., Kudritzki/Husfeld/Gehren/Groth/Butler/Baade/Rosa/Humphreys/Hummer, Ögelman/Gouiffes/Melnick/Hasinger/Pietsch/Pedersen, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Nissen/Schuster, Fleming, Guzzo/Tarengi, Iovino/Shaver/Cristiani/Clowes/Pierre, de Lapparent et al.

*Nov. 1989:* de Lapparent et al., Guzzo/Collins/Nichol, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Gry/Jourdain de Muizon/Lagrange-Henri/Vidal-Madjar/Ferlet, Wampler, Molaro/Castelli/Bonifacio, de Boer et al., Schwöpe/Beuermann, Breysacher/Azzopardi/Lequeux/Meyssonier/Westerlund, de Boer et al., Marano/Mignoli/Zitellic/Zamorani.

*Dec. 1989:* Barbieri/Clowes/Cristiani/Iovino/La Franca/Vio, Melnick/Gopal-Krishna/Steppe/van Drom, Ögelman/Gouiffes/

Melnick, Hasinger/Pietsch/Pedersen, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Ardeberg/Lindgren/Lundström, de Boer et al., Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Madejsky/Rabolli/Vega/Bassino, Hamann/Schmutz/Wessolowski, Tadhunter/Fosbury/Morganti/Danziger/Di Serego Alighieri.

*Jan. 1990:* Lortet/Testor/Schild, Ögelman/Gouiffes/Melnick/Hasinger/Pietsch/Pedersen, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Perrier/Mariotti/Mayor/Duquennoy, Renzini/D'Odorico/Greggio/Bragaglia, Melnick/Gopal-Krishna/Steppe/Van Drom, Surdej et al., Chiosi/Bertelli/Bressan, Nasi/Ortolani/Vallenari/Gratton/Meylan, Heske/Jourdain de Muizon.

*Feb. 1990:* Jourdain de Muizon/D'Hendecourt, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Ögelman/Gouiffes/Melnick/Hasinger/Pietsch/Pedersen, D'Odorico, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Wehrse/Hessman, Bergeron/Petitjean/D'Odorico, Sparks/Macchetto/Ögerle, Norgaard-Nielsen/Joergensen/Hansen.

*March 1990:* Boulesteix/Capaccioli/Corradi/Le Coarer, Duval/Boulesteix/Monnet/Corado, Ögelman/Gouiffes/Melnick, Hasinger/Pietsch/Pedersen, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Reipurth/Dubath/Mayor, Capellaro/Held, Bender et al., Balkowski/Kraan-Korteweg/Maurogordato, Mazure et al.

### 3.5-m NTT

*Jan. 1990:* Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Schneider/Giraud/Wambsganss, Bignami/Caraveo/Mereghetti/Mignami, Mellier/Fort/Soucal.

*Feb. 1990:* Miley et al., Surdej et al.

*March 1990:* Barthel/Djorgovski/Tytler, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Tsvetanov/Fosbury/Tadhunter, Bergeron et al., Bender et al.

### 2.2-m Telescope

*Oct. 1989:* MPI TIME, Van der Kruit/De Jong RS, Hunt/Mandolesi/Wade, Ferraro/Brocato/Fusi Pecci/Buonanno, Piotto/Bresolin/Capaccioli/Ortolani, Bertola et al.

*Nov. 1989:* Bertola et al., Collins/Guzzo/Nichol, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, test new array (Moorwood), des Boer et al., Barbieri et al., de Boer et al., Appenzeller/Wagner/Weigelt/Barth/Weghorn/Grieger, Surdej et al.

*Dec. 1989:* Weigelt/Barth/Grieger/Weghorn, de Boer et al., Paresce/Panagia/Gilmozzi, Rafanelli/Capaccioli/Marziani/Schulz H. Tadhunter/Fosbury/Morganti/Danziger/Di Serego Alighieri, Reipurth/Olberg/Cameron/Booth, Rafanelli/Capaccioli/Marziani/Schulz H.

*Jan. 1990:* Busarello/Longo/Feoli, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, MPI TIME.

*Feb. 1990:* Van der Veen/Blommaert/Habing, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Schwarz/Moneti, Pottasch/Manchado/Garcia Lario/Sahu, Nota/Clampin/Paresce/Ferrari, Falomo/Maraschi/Tanzi/

Treves, Hansen/Joergensen/Norgaard-Nielsen, Deneffeld/Martin J.M./Bottinelli/Gouguenheim, Tosi/Focardi/Greggio/Marconi.

*March 1990:* Miley et al., Ortolani/Capaccioli/Piotto, Capaccioli/Bresolin/Della Valle/Piotto, Held/Capaccioli/Richtler/Wagner, Van Haarlem/Katgert, Bienayme/Crézé/Robin, Bender et al., Durret/Bergeron/Petitjean.

### 1.5-m Spectrographic Telescope

*Oct. 1989:* Thevenin/Jasniewicz, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Boisson/Collin-Souffrin/Joly/Ward, Johansson L./Bergvall.

*Nov. 1989:* Balkowski/Maurogordato/Proust, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Gehren/Steenbock/Reile/Axer/Burkert/Fuhrmann, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Cappel/Focardi/Gregorini/Garilli/Maccagni, Prieur/Oosterloo/Wilkinson/Sparks/Carter, Barbieri et al., Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson.

*Dec. 1989:* Longo/Busarello/Ceriello, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Pasquini/Brocato/Barbuy/Pallavicini, Hunger/Heber/Groote, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Pakull/Motch/Bianchi/Buermann, Reipurth/Olberg/Cameron/Booth, Lub/De Rooter.

*Jan. 1990:* Lub/De Rooter, Lortet/Testor, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Gerbaldi et al., Renzini/D'Odorico/Greggio/Bragaglia, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Lundgren, Bhatia/Chiosi/Piotto/Ortolani/Bertelli/Vallenari/Malagnini/Macgillivray, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Courvoisier/Bouchet/Blecha.

*Feb. 1990:* Simon/Haefner/Pfeiffer, Ritter/Schoembs, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Ehrenfreund/Foing, Pottasch/Manchado/Garcia Lario/Sahu, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson.

*March 1990:* Van Genderen/Van der Hucht/Schwarz/De Loore, Tagliaferri/Cutispoto/Giommi/Pallavicini/Pasquini, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Tagliaferri/Cutispoto/Giommi/Pallavicini/Pasquini, Gerbaldi et al., Courvoisier/Bouchet/Blecha, Gahm, Bianchini/Sabbadin/Friedjung.

### 1.4-m CAT

*Oct. 1989:* Holweger/Lemke, Pasquini, François, Danks/Massa/Crane, North.

*Nov. 1989:* North, Spite E./Spite M. Maceroni/Van't Veer/Vilhu, Lagrange-Henri/Vidal-Madjar/Ferlet/Beust.

*Dec. 1989:* Vladilo/Molaro/Centurion/Monai, Foing/Crivellari/Beckman/Char/Jankov/Byrne/Lagrange-Henri/Schrijver, Pallavicini/Giampapa/Cutispoto, Foing/Crivellari/Beckman/Char/Jankov/Byrne/Lagrange-Henri/Schrijver, Vidal-Madjar/D'Hendecourt/Ferlet/Léger, Magain/Zhao.

*Jan. 1990:* Reimers/Toussaint, Schröder/Huensch/Reimers, Foing/Collier-Cameron/Vilhu/Gustafsson/Ehrenfreund, Pettersson/Westerlund, Gredel/Van Dishoeck/Black, Waelkens/Lamers/Waters, Cremonese/D'Onofrio/Marziani, Benvenuti/Porceddu.

*Feb. 1990:* Benvenuti/Porceddu, Reimers/

Toussaint, Lillenthal/De Boer, Baade/Van Kerkwijk/Waters/Henrichs/Van Paradijs, Pottasch/Parthasarathy/Manchado/Garcia Lario/Sahu, Clausen, Crane/Blades/Penprase.

*March 1990:* Vreux/Magain/Hutsémekers/Manfroid, Tagliaferri/Cutispoto/Giommi/Pallavicini/Pasquini, Lèbre/Gillet, Cayrel de Strobel, Gratton/Gustafsson/Eriksson, de Jager/Nieuwenhuijzen/Van Genderen, Lanz/Mathys/Gerbaldi/Faraggiana, Baade/Van Kerkwijk/Waters/Henrichs/Van Paradijs, Pallavicini/Schmitt/Tagliaferri.

### 1-m Photometric Telescope

*Oct. 1989:* Hoffmann/Geyer/Neukum/Gonano/Mottola, Di Martino/Neukum/Mottola/Gonano/Rebhan/Hoffmann, Hoffmann/Geyer/Neukum/Gonano/Mottola/Rebhan, Hunt/Mandolesi/Wade, Johansson L./Bergvall, Fleming, Liller/Alcaino/Alvarado/Wenderoth, Johansson L./Bergvall.

*Nov. 1989:* Johansson L./Bergvall, Bouvier/Bertout/Martin E., Heske, Richtler/De Boer/Seggewiss, Barbieri et al.

*Dec. 1989:* Barbieri et al. Vidal-Madjar/Lagrange-Henri/Beust/Ferlet/Foing/Char, Gieren.

*Jan. 1990:* Gieren, Courvoisier/Bouchet/Blecha, Reipurth/Olberg/Cameron/Booth, Foing/Collier-Cameron/Vilhu/Gustafsson/Ehrenfreund, Walker/Matthews/Wehlau, Bouvier/Bertout/Basri/Bouchet/Imhoff/Bastien/Malbet, Walker/Yang/Matthews, Cremonese/D'Onofrio/Marziani.

*Feb. 1990:* Krautter/Barwig/Schoembs/Starrfield, Simon/Haefner/Pfeiffer/Ritter/Schoembs, Schneider H./Weiss/Kuschnig/Rogl, Trefzger/Labhardt/Spaenhauer, Nieto/Bender/Capaccioli/Davoust/Poulain/Prugniel, Poulain/Davoust/Nieto/Prugniel.

*March 1990:* Poulain/Davoust/Nieto/Prugniel, Houdebine/Foing/Buttler/Panagi, Courvoisier/Bouchet/Blecha, Gerbaldi/Faraggiana, Van der Hucht/Thé/Williams, Gahm, Munari/Whitelock/Massone.

### 50-cm ESO Photometric Telescope

*Oct. 1989:* Catalano E.A./Schneider/Leone, Carrasco/Loyola.

*Nov. 1989:* Carrasco/Loyola, Bouvier/Bertout/Basri/Bouchet/Imhoff/Bastien/Malbet, Poretti/Antonello/Mantegazza, Maceroni/Van't Veer/Vilhu, Schober.

*Dec. 1989:* Schober, Cutispoto/Pasquini/Giampapa/Ventura/Pallavicini/Giampapa/Cutispoto, Foing/Collier-Cameron/Vilhu/Gustafsson/Ehrenfreund.

*Jan. 1990:* Foing/Collier-Cameron/Vilhu/Gustafsson/Ehrenfreund, Schröder/Hünsch/Reimers, Foing/Collier-Cameron/Vilhu/Gustafsson/Ehrenfreund, Bouvier/Bertout/Basri/Bouchet/Imhoff/Bastien/Malbet, Sinacholopoulos.

*Feb. 1990:* Sinacholopoulos, Group for Long Term Photometry of Variables, Trefzger/Labhardt/Spänhauer, Tagliaferri/Cutispoto/Giommi/Pallavicini/Pasquini.

*March 1990:* Tagliaferri/Cutispoto/Giommi/Pallavicini/Pasquini, Schneider H./Jenkner/Maitzen, Carrasco/Loyola.

### GPO 40-cm Astrograph

*Oct. 1989:* Debehogne/Machado/Mourao/Caldeira/Vieira/Netto/Zappala/De Sanctis/

Lagerkvist/Protitch-B./Javanshir/Wosczyk. *Nov. 1989:* Madsen/West.

*Dec. 1989:* Dommanget.

*Jan. 1989:* Dommanget, Duerbeck/Seitter/Tsvetkov.

*Feb. 1990:* Scardia, Debehogne/Machado/Caldeira/Vieira/Netto/Zappala/De Sanctis/Lagerkvist/Mourao/Protitch-B./Javanshir/Wosczyk.

*March 1990:* Debehogne/Machado/Caldeira/Vieira/Netto/Zappala/De Sanctis/Lagerkvist/Mourao/Protitch-B./Javanshir/Wosczyk, Munari/Lattanzi/Massone.

### 1.5-m Danish Telescope

*Oct. 1989:* DANISH TIME, Mayor et al., Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Johansson L./Bergvall, Focardi/Da Costa/Willmer/Alonso, Deneffeld/Martin J.M./Bottinelli/Gouguenheim.

*Nov. 1989:* Mazure et al., Jörsäter/Hester/Bergvall, Jörsäter/Hester/Lindblad/Van Moorsel, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson. DANISH TIME.

*Dec. 1989:* DANISH TIME. Mayor et al., Ardeberg/Lindgren/Lundström, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, Rafanelli/Schulz H./Marziani, Chiosi/Bertelli/Bressan/Nasi/Ortolani/Vallenari/Gratton/Meylan.

*Jan. 1990:* Chiosi/Bertelli/Bressan/Nasi/Ortolani/Vallenari/Gratton/Meylan, Danziger/Bouchet/Gouiffes/Lucy/Wampler/Fransson, DANISH TIME.

*Feb. 1990:* DANISH TIME, Andersen/Nordström/Mayor/Olsen, Nordström/Andersen, Griffin R.F./Griffin R.E.M./Mayor/Clube, Reipurth/Lindgren/Mayor, West, Della Valle/Cappellaro/Rosino/Turatto, Bender et al.

*March 1990:* Bender et al., Mermilliod/Mayor, DANISH TIME.

### 50-cm Danish Telescope

*Oct. 1989:* Group for Long Term Photometry of Variables.

*Nov. 1989:* Group for Long Term Photometry of Variables, Ardeberg/Lindgren/Lundström.

*Dec. 1989:* Ardeberg/Lindgren/Lundström, Foing/Crivellari/Beckman/Char/Jankov/Byrne/Lagrange/Schrijver, Group for Long Term Photometry of Variables, Sterken, DANISH TIME.

*Feb. 1990:* DANISH TIME, Gosset/Manfroid/Vreux, Vreux/Magain/Hutsémekers/Manfroid.

*March 1990:* Vreux/Magain, Hutsémekers/Manfroid, Franco.

### 90-cm DUTCH TIME

*Oct. 1989:* DUTCH TIME, Trefzger/Pel/Blaauw.

*Nov. 1989:* Van Paradijs/Van der Klis/Telt-ing, DUTCH TIME.

*Dec. 1989:* Van Genderen, Lub/De Rooter, De Loore/Hensberge/Verschueren/David/Blaauw.

*Jan. 1990:* De Loore/Hensberge/Verschueren/David/Blaauw, Van Genderen, DUTCH TIME.

*Feb. 1990:* DUTCH TIME, Van Kerkwijk/Waters/Henrichs/Van Paradijs, Lub/Dickens.

*March 1990:* Van Genderen/Van der Hucht/Schwarz/De Loore/DUTCH TIME.