From Telescope to MPC: Organizing the Minor Planets

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The IAU Minor Planet Center in Cambridge, Massachusetts, continues to receive astrometric observations at an ever-increasing rate. Much of the current increase arises from the convenience of CCD imaging, even by many advanced amateur astronomers. The majority of the observations reported are of minor planets that are not yet among the 6500 or so that have been numbered and have good orbital solutions. Observers are encouraged to communicate (in the same e-mail message) positions of any given object on two neighboring nights. It can also improve efficiency if they don't try to identify the objects they observe. Such identification, even of numbered minor planets, is automatically included in the MPC processing, and an erroneous identification can stall this operation. The other principal source of gross error is in the time (or date!) of observation. Objects that cannot be identified with numbered minor planets, other multiple-opposition minor planets, long-arc single-opposition minor planets or same-opposition minor planets already under observation are given MPC provisional designations, and representative two-night Väisälä orbits are filed for comparison with observations reported subsequently. If appropriate, general orbit solutions and orbit improvements are made, and automatic searches are then made for less obvious identifications, which—if successful—lead to further orbit improvements and new numberings of minor planets. New observations and orbits are published monthly in the *Minor Planet Circulars*, which are available in printed and electronic (with modification) form. Unusual objects, including those observed near the earth or beyond Neptune, are isolated for special treatment, which includes the immediate publications of results on the *Minor Planet Electronic Circulars*. Although it has long been possible for subscribers to the MPC Computer Service to extract published orbits from the MPC files and to compute ephemerides, this feature has recently been extended to allow the computation of ephemerides from orbits on file that have not yet been published. Some low-precision data on unusual objects are also made available free-of-charge in the MPC's WWW homepage. Although the monthly activity of the MPC is now higher than ever before, improved computer hardware and software have allowed this to be accomplished with more time to spare than ever before, and this efficiency nurtures itself. The MPC's most important product is its massive collection of astrometric observations, which now number very nearly one million. This includes many observations of comets, and there are ongoing efforts to re-reduce and incorporate into the collection many of the previously-excluded micrometric observations from the nineteenth and early-twentieth centuries.