ANNUAL REPORT OF THE
CENTRAL BUREAU FOR ASTRONOMICAL TELEGRAMS

1994

Continuing the downward trend of the previous year, the number of *IAU Circulars* issued during 1994 was 208, the least for any year since 1988. The principal reason for the decrease has been the introduction, by arrangement with the Minor Planet Center, of the series of *Minor Planet Electronic Circulars*. This was the first full year of operation of that new service, which is offered at no extra charge to subscribers to the electronic version of the *IAU Circulars*, and which has significantly relieved the *IAU Circulars* by handling most of the data on unusual minor planets (or what are classed as such), including a number of objects that have been discovered beyond the orbit of Neptune.

The most exciting celestial event of the year was undoubtedly the collision of the numerous components of comet 1993e with Jupiter during July 16–22. The groundwork for this had been set on several *IAU Circulars* in 1993, the prediction following the comet's reappearance in the morning sky in December yielding impact times for the nine brightest components that were good to the quoted precision of 0.1 day. During "impact week" 15 consecutive *Circulars* documented the impacts in a rather concise manner. Much of the material included in this documentation was edited from the gigantic volume of material transmitted directly among observers via the automatic e-mail "exploder" set up for this purpose at the University of Maryland. At the same time, access to many of the electronic images themselves was immediately and freely available over the internet on numerous observatory "home pages" of the "world-wide web".

Instant broadcast communication of the above-mentioned types will obviously be the wave of the future. Exploders in Arizona and Japan automatically relay observations of supernovae, novae and variable stars generally. Useful though these can be for alerting observers to routine observations and supporting data, there is of course little guarantee concerning the reliability of the information. This is a particularly troublesome point when exploders are used to relay reported claims of discoveries of new objects. Misinformation and disinformation are then rampant, and even when a claimed discovery turns out to be correct, there has frequently been widespread confusion because of an erroneous or incomplete position specified for a nova or an erroneous NGC number for the host galaxy to a supernova. Since the exploders serve hundreds, if not thousands, of professional and amateur astronomers, the total amount of time spent on wild-goose chases, or even just asking and answering questions that should be straightforward, is absolutely enormous. When the

Central Telegram Bureau receives the report of an alleged discovery, it generally asks a few experienced astronomers (professional and amateur, spectroscopists and astrometrists) for confirmation. Since these confirmers are more-or-less the same people actually able adequately to confirm reports relayed via exploder, little time is lost between confirmation and publication on an *IAU Circular* of a discovery announcement that has a reasonable chance of being reliable and complete—and the total effort spent on anserine pursuits is minimized.

Twenty-three comets, about half of them new discoveries, were given provisional designations in 1994. This was very much the year for observations of split comets, for in addition to 1993e, the new periodic comet 1994o was seen to have five components, while one of the year's returning comets had three.

The year brought 37 discoveries of supernovae, the one in M51 on April 2 having been independently found by four groups of amateur astronomers (two visually, two using CCDs) during a 12-hour interval. Three galactic novae in the magnitude range 7–11 were reported by Japanese amateur astronomers, and an intense x-ray nova in Scorpius was also widely observed at optical and radio wavelengths.

The introduction of the *Minor Planet Electronic Circulars* was part of a package designed to utilize electronic communication and to encourage users to subscribe generally to the electronic information provided by the Central Bureau, thereby reducing the expense of printing and mailing the postcard versions of the *IAU Circulars*. The number of Computer Service subscribers (almost all of whom receive the *IAU Circulars* directly by e-mail), increased from 298 in January to 358 in December, during which time the number of subscribers to the printed version decreased from 619 to 531. In another year or so there should be a cross-over in the numbers of "electronic" and "printed" subscribers, the process being accelerated by a change in subscription-rate structure at the beginning of 1995 that maintained the cost of a *combined* electronic and printed subscription but reduced the fraction for electronic alone from 50 to 40 percent.

As has been the case for several years now, the majority of the *Circulars* were prepared by Associate Director Daniel W. E. Green, some being by the undersigned and a few by Gareth V. Williams. Williams also introduced several new features into the Computer Service, including lists of novae and supernovae, a set of the *IAU Circulars* since 1982 and a complete cross-referenced index back to 1922. As Administrator for the Planetary Sciences Division of the Harvard-Smithsonian Center for Astrophysics, Donna Thompson has borne the principal responsibility for the administrative work of the Central Bureau, with part-time assistance from Muazzez Lohmiller.

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Director of the Bureau