ANNUAL REPORT OF THE
CENTRAL BUREAU FOR ASTRONOMICAL TELEGRAMS

1990

A total of 216 *Circulars* were issued during 1990, one more than the average of the three preceding years. The number of 'telegram books' issued, 43, was one more than the average of the 26 preceding years, i.e., since the Central Bureau first moved to the Smithsonian Astrophysical Observatory.

The year was a record one for supernovae, with reports of 35 new objects, as well as six more from 1989 and five from even earlier years. It is particularly gratifying to note that only two of the 1990 discoveries were not followed up photometrically or spectroscopically by other observers.

As in 1989, there were reports of 13 new Apollo objects. There were also nine Amors, the first case of a Mars 'Trojan' (1990 MB), a moderately deep Mars crosser, and a Jupiter crosser (1990 UL_3) that later had to be reclassified as a comet (P/Shoemaker-Levy 2, 1990p). Although the brighter objects were quite well observed by others, and there was particular interest in the fact that 1990 MB could maintain its relationship with Mars for more than 10^6 years, the use of the IAU *Circulars* for announcing very faint objects unlikely to be observed by other than the discoverers was questioned. After all, the *Minor Planet Circulars* are generally able to give more extensive information about all minor planets and with a delay of no more than a month. The point would be reconsidered if it could be shown that there are other observers, but it otherwise seems sufficient for the Central Bureau briefly to mention only those faint discoveries that seem to be of unusual interest.

The object originally classed as a minor planet was one of ten new cometary discoveries during the year, and there were six recoveries of short-period comets. Although 1990c became one of the brightest and most conveniently observed comets in recent years, it did so with very little fanfare, popular interest apparently having been subdued by the rather dismal failure a few months earlier of $1989c_1$.

No new galactic novae were confirmed during 1990, but there was a recurrence of V3890 Sgr, and two novae were recorded in the Large Magellanic Cloud. The red giant MWC 560 was a persistent source of interest during the year, as its companion star apparently developed and rapidly ejected a shell in a novalike outburst. As is rather expected to occur a couple of years after aphelion, Saturn developed a white spot in September that ventually girdled the planet's entire equator. A particularly significant discovery announced on *Circulars* in October was of a pair of massive stellar sources at the center of the Galaxy.

The number of subscribers to the printed edition slowly increased from 700, the lowest since the Central Bureau moved to Cambridge, in January to a maximum of 752 in October, although this was still less than the number at any time prior to the last rate increase in 1986. By the end of 1990 the number of subscribers to the Computer Service had risen to 207, of whom 142 can passively receive the *Circulars* by e-mail. As noted in last year's report, however, the reduction in the number of subscribers to the printed edition, evidently due to the secondary dissemination of electronic versions of the *Circulars*, is of concern, for the increased rate of production of the *Circulars* since 1986 has significantly increased the Bureau's expenses. Monthly subscription rates were therefore increased in September for the printed *Circulars* by $33\frac{1}{3}$ percent (to \$10.00 and \$6.00, depending on whether invoices are required or not) and for the Computer Service/e-mail by $66\frac{2}{3}$ (to \$12.50 and \$7.50, respectively).

Much of the scientific operation of the Bureau and most of the preparation of the *Circulars* has been performed by Associate Director Daniel W. E. Green, who is also responsible for the telegram accounts. Three *Circulars* were prepared by Gareth V. Williams, who also provided some assistance with orbit computations and with proof-reading. Richard Thompson at IPSO again undertook the redissemination of telegrams to Australia and New Zealand. Donna Thompson continued to serve as the Bureau's administrative assistant, with part-time help from student volunteer Ned Jastromb during June to August and from Bridget McCabe during November and December.

Brian G. Marsden
Director of the Bureau