became four rays wavering across the sky, eventually swirling to form a huge spiral overhead, looking exactly like a spiral galaxy seen face on. Other displays were farther north at 20° to 30° altitude above the north horizon. At one point this became a ball of light, bouncing back and forth about 20° either side of true north. The speed of this bolus was about 20° per second and must have had a velocity of 200 000 km per hour. The back and forth movement must have been the bolus of particles in a circular orbit and seen edge on. The bolus appeared some 5° in diameter and so about 20 km in true diameter. Other lesser displays were to east of north with bright pointing down to the horizon. By 21h 30m the sky was clear, but Mr White was getting a little chilled as the temperature was −25°C though there was no wind. The camera shutter froze open several times and it had to go inside his sweater to be warmed up. This was his first aurora, and it was a stunning sight.

On February 4 from 1830 to 2030 hours at the same position, the temperature was again −25°C. There was a display for most of this time. Rays from zenith to horizon at 20°/30° azimuth. Most activity was in the northern part of the sky, with huge bows across this area from 30° to 40° east and west of north. This faded by 2030 hours. Colours on both days were green to yellow, though some red showed on photographs.

On February 6/7 from 1930 to 0300 hours an aurora was seen from on board MV Nord-Norge coastal steamer to Hammerfest. Rays were observed from the zenith to the SW horizon and later to NNW; low curtains were also seen far to north, and at 2230 hours arcs observed to far south. At 0200 diffuse rays ran from NNE to SSW. The sky then clouded and no more aurorae were seen.

Mr White said he had gone to Tromsø to learn. He reported that his photographic equipment was not really good enough, but with 10 sec. exposure he had got 30 prints from over 70 exposures. He hoped to be able to return to North Norway next winter, and would be better prepared. Nevertheless this had been a superb beginner's experience and focused his interest on the Aurora Section, where he hoped to be of some use.

Thanking Mr White, the *President* called on Mr Robin Scagell to speak on the subject of Solar Haloes.

SOLAR HALOES

Mr Scagell reported that on 1883 September 5 the Reverend S. E. Bishop in Hawaii wrote: "Permit me to call attention to the very peculiar corona or halo extending 20° to 30° from the Sun, which has been visible every day with us, and all day, of whitish haze with pinkish tint, shading off into lilac or purple against the blue. I have seen no notice of this corona observed elsewhere. It is hardly a conspicuous object." *Mr Scagell* went on to say that John Bortle in *The Astronomer* 1984 January, had written as follows: "Comments on C. J. R. Lord's remark that during September '83 the sky round the sun was bright due to 'strong forward scattering even on the clearest of days' ".

Mr Scagell was quite surprised to see this, as the only mention of a phenomenon which in his latitude was a striking daytime feature since at least 1983 August was that known as the 'Bishop's Ring'. It had been reported in 1983 October 29 that the Bishop's Ring had been noted almost daily since perhaps late August. It appears as a great white disk of light surrounding the Sun; the rim of the disk is fairly well defined and a striking rusty colour. Beginning about this time, the twilight colours, and especially the 'purple light' have become significantly more intense. *Mr Scagell* then showed many slides illustrating the phenomenon. Following a short discussion the *President* thanked Mr Scagell and then announced that the Council had awarded the Goodacre Medal to Mr Howard Miles and the Stevenson Medal to Mr Paul Doherty. The news of both awards was warmly received by the meeting. The *President* then called upon Dr David Whitehouse to speak on 'The Rescue of the Solar Maximum Mission'.

RESCUE OF "SOLAR MAXIMUM" MISSION

Following his brief opening remarks outlining the forthcoming Space Shuttle mission, *Dr Whitehouse* then screened the NASA film 'The Rescue of the Solar Maximum Mission' showing how the United States intended to repair the Solarmax Satellite in orbit, in detail, or even retrieve it should this prove necessary. After the film, *Dr Whitehouse* remarked that if successful, this signalled the advent of an exciting period in space exploration as it would be possible to make this cheaper by servicing satellites in orbit. At present, he said, there were three or four more satellites which could be serviced. Later in 1984 there would be an attempt to undertake full scale satellite refuelling in space.

The *President* then adjourned the meeting until Saturday 1984 April 14 at 1430 hours.

P. J. Weston

Letters to the Editor

MOLECULAR EMISSION FROM THE HEAD OF COMET P/CROMMELIN 1818 I

Dear Sir

The comet P/Crommelin has attracted the attention of a large number of scientists during its recent apparition in 1984 February. During its earlier returns (in 1818, 1873, 1928 and 1956) the motion of Comet Crommelin holds the record for gravitational stability during the nineteenth and twentieth centuries. The 1983 recovery[1], independently by L. Kohoutek on August 9–10 at Calar Alto and by S. Wyckoff and P. A. Wehinger at Kitt Peak on August 13, confirms that the non-gravitational forces on Comet Crommelin continue to be very small. The absence of non-gravitational effects can indicate a comet to be essentially inert.

Comet Crommelin is chosen as the favourable candidate to observe prior to Comet Halley. The most important results of the Comet Crommelin 'dry run' will be to check the capability of the instrument with which Comet Halley is to be observed. The purpose of the present observations

Table I

Basic Data of Comet Crommelin

Date 1984 March (UT)	*RA (1984)*	*Dec. (1984)*	*Δ (a.u.)*	*r (a.u.)*	*Mag*	*Remarks*
3·6	$02^h\ 14^m1$	$-4°\ 40'0$	0·860	0·775	9^m25	Observations hampered by clouds
4·6	$02^h\ 19^m4$	$-5°\ 03'5$	0·855	0·780	9^m27	Observed
5·6	$02^h\ 25^m5$	$-5°\ 31'2$	0·848	0·788	9^m30	Observed
8·6	$02^h\ 44^m2$	$-6°\ 55'0$	0·830	0·810	9^m38	Observations hampered by clouds

of Comet Crommelin is to exercise the entire International Halley Watch (IHW) prior to the observations of Comet Halley.

Scientifically, it will be desirable to improve our knowledge of the physical characteristics of Comet Crommelin, since relatively little is known about it. Previous articles in *International Halley Watch Newsletter* Nos. 3 and 4 (1984) have reviewed the results of existing observations[2], but as we all know, cometary behaviour is usually very difficult to predict.

In order to participate in the 'Trial Run on Comet Crommelin', and to investigate the behaviour of Comet Crommelin, we have made spectrophotometric observations of the Comet using the 1·04-metre reflector. The Comet was observed on two nights during 1984 March 4 and 5 using a Hilger and Watts monochromator at the Cassegrain focus of the reflector. An exit slot of 0·7 mm, admitting 50Å of the spectrum to fall on the photomultiplier was used for taking spectral scans. The spectral scans were obtained in the wavelength range λλ3200–6500Å. The date of observations along with the measured co-ordinates at the time of observations are given in Table I. The heliocentric distance (r), geocentric distance (Δ) and magnitudes of the comet in Table I are interpolated values obtained from the data given in the *Handbook of the British Astronomical Association*, 1984.

The most prominent emission features noticed from the spectrum scans are the CN($\Delta V=0$) emission at λ3883Å and C_2($\Delta V=0$, +1 and −1) emission at λ4695, λ5165 and λ5538Å respectively. The CN($\Delta V=0$) at λ3883Å is the strongest emission feature in the whole spectrum followed by C_2($\Delta V=0$) emission at λ5165Å, C_2($\Delta V=+1$) at λ4695Å and C_2($\Delta V=-1$) at λ5538Å respectively in strength. The CN($\Delta V=0$) emission at λ3883Å was found merged with CH emission at λ3890Å and C_3($\Delta V=0$) emission at λ4050Å. Very weak emission features of CN($\Delta V=-1$) at λ4200Å and C_2($\Delta V=+2$) + CH($\Delta V=0$) at λ4358Å were also found present in the scans. No trace of Na I emission was found in this comet.

Yours faithfully

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References

1 Kohoutek L., Wyckoff S. and Wehinger P. A., *Brit. astron. Assoc. Circ.*, No. 637 (1983).
2 Edberg S. J., *IHW Newsletter* No. 3 and 4 (1984).

THE YOUNG CRESCENT MOON AT APOGEE; 30·9 HOURS OLD

Dear Sir

Claims to the first sighting of the young crescent Moon are usually based on the number of hours from New Moon rather than the elongation from the Sun, which would be a fairer guide. The former requires that the Moon is at perigee (for the highest angular separation per hour), and my own personal record stands at 23·1h on 1971 March 27 at 1830 UT—an angular separation of 15° from the Sun.

On 1984 April 2 at 1905 UT I improved on this 'record' with a sighting of the crescent with an angular separation of 14° from the Sun—despite the fact that a near extreme apogee[1] occurred on 1984 March 29 at 16h and New Moon on 1984 April 1 at 1210 UT. During this recent observation the Moon was well south of the ecliptic—thus not aiding the attempt, but a computer program and the planet Mercury close by helped to pinpoint this pleasing sight.

A pair of 10×50 binoculars were necessary for both observations in a bright but crystal clear western sky—the faintest sliver of the crescent extending about 120° at most. The Moon was only 5° above the horizon on the latter occasion.

Yours faithfully

Maurice Gavin

79 Ardrossan Gardens, Worcester Park, Surrey, KT4 7AX.

Reference

1 *Sky & Telesc.*, **67** (3), 261 (1984 March).

INDIVIDUAL PERCEPTIONS

Dear Sir

I have long been aware that differences in the individual health of people may make them have different perceptions of the world. In the astronomical world one example personally struck me some months ago when I was observing a comet. This observation followed a long period when I suffered from influenza and low grade infection in the neck and head. Owing to the high and awkward altitude of the comet, I was obliged to bend my neck to a considerable degree in order to observe the celestial visitor with hand-held binoculars. In making an estimate of the comet's magnitude, I noticed that after about a minute of pronounced 'neck-bending' on my part the comet's image dimmed slightly. Regrettably, I did not measure the degree of light diminution. The brighter version of the comet's image reappeared only after a 'rest period' of lowering my head and then resuming the observation by means of the 'bent-neck' position.

I repeated similar neck-bending procedures a few times and, to my dismay, the comet's image dimmed slightly on every occasion. This suggested to me that the blood supply to my eyes and/or brain was being partly constricted, perhaps caused by my earlier poor health. It also suggested to me that some of my magnitude estimates of other celestial bodies might be affected. Indeed, more importantly, other observer's magnitude estimates under similar awkward conditions might be affected, too.