

# THE JUNIOR ASTRONOMER

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*The Journal of the  
Junior Astronomical Society*

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VOL. 2. No. 2.

NON-MEMBERS 1s. 6d.

OCTOBER, 1954

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## THE JUNIOR ASTRONOMICAL SOCIETY

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### **Early Days in the Martian Canal Controversy I** by Richard Baum.

When observed in a small telescope the planet Mars at first appears as a tiny reddish-yellow disk somewhat brighter at its outer edge and striped over with greyish-green shadings. At either end of the globe bright spots or hoods—the polar caps—may be perceived, their visibility being dependent on the inclination of the axis to the Earth, and thus the Martian season. The reddish-hued continents which give Mars his characteristic fiery colour, are seen in moments of good seeing—i.e., intervals of steadiness in the ocean of air above us, through which we are at present forced to observe our companion worlds—to be criss-crossed with narrow dusky markings or streaks, the famous so-called "canals". It is this type of feature more than any other that has endowed Mars with the means to command the popularity he has enjoyed for over half a century, both in lay and scientific quarters.

The story began back in 1877 during the extremely close approach that took place on September 5th. An Italian astronomer by name Giovanni Schiaparelli, Director of the Milan Observatory, had resolved to utilise this favourable opposition in order to undertake a trigonometrical survey of the planet's surface. It was whilst engaged upon this work that he made the discovery that was to touch off one of the greatest astronomical discussions of modern times. Schiaparelli found that the once supposed featureless continents were covered over with fine gossamer-like network of dusky streaks that required the finest of seeing conditions to reveal their existence. To these features utterly unlike anything that had ever been seen before, Schiaparelli gave the name "canali," which in Italian means a channel. Unfortunately, but perhaps fortunately, for the science in the long run this was freely translated into canal, which as well we know has an entirely different interpretation in the English vocabulary—an artificial waterway. Thus began the controversy over the reality of these markings which was destined to reach its peak at the turn of the present century. Yet though the heat of the discussion has long since waned, a dull glow still exists as a phantasm of its former eminence, serving to remind us of those early, exciting days of Martian discovery when bulletins of Mars studies from world wide sources were read as avidly as reports from the frontline in wartime, and were looked forward to with the same expectations.

At first Schiaparelli alone was able to see the canali, but later the distinguished Irish astronomer Burton discovered what appeared to be traces of them, whilst subsequent examinations of the older drawings of Dawes, Lockyer, Holden and Secchi showed that they too, had noted indications of linear features but had failed to recognise them as out of the ordinary run of things in the Martian topography.

At the opposition of 26th December, 1881, the planet was farther from the Earth than it had been in 1877 and 1879, but it stood higher in the skies of the northern hemisphere, thus being favourably placed for observation in spite of the smaller apparent diameter of the disk. Under these conditions then it is not surprising to learn that Schiaparelli was enabled to confirm his earlier reports and make new discoveries relating to them. Between December, 1881, and February, 1882, the Milan astronomer, using the fine 8½ inch refractor of the observatory, kept Mars under survey, constantly improving his knowledge of the planets geography, or more correctly areography. Much to his surprise he found that in as many as twenty cases the canali had given birth to a second channel that ran parallel to the original, just as if the Martian trench-diggers had decided that one canal was not enough to meet the demands of the population! The distance between each of the two components was found to average out to 300 miles. This even stranger aspect gave rise to an increased sceptical general opinion as to the reality of the single and double canals, and many theories were advanced to account for them as products of illusory processes. Flammarion considered the doubling, or germination as it was called, as of similar origin to terrestrial mirages with which travellers are so well acquainted. Stanislaw Meunier thought the cause lay in oblique reflection from the overlying mist layers above the canals, whilst Schiaparelli regarded the phenomena as a periodical one, depending on the time of the Martian year. In spite of the universal condemnation of the whole canaliform system the great Italian master continued his work, and within a short time began to receive support from other observers.

Perrotin and Thollon in 1886 and 1888 using the great refractor of the Nice Observatory saw them: and Stanley Williams, a well-known English amateur employing a comparatively tiny instrument, succeeded in detecting no fewer than seven double canals. Subsequently they were seen at the Lowell Observatory in Arizona Territory during the latter years of the last decade of the nineteenth century.

(To be concluded)

## Some Observations of the Solar Eclipse of June 30th, 1954 by P. J. Cattermole and A. Baker.

The First Contact was not observed, as cirro-cumulus cloud obscured the solar disk at the critical moment. The premier observation was taken at 11.29 G.M.T., and a drawing made at 11.29.5. No blue sky was visible, the sky being covered with cirro-cumulus.



FIG. 1.

A drawing of the total partial phase of the Solar eclipse of June 30th, 1954, by P. J. Cattermole at East Grinstead. 3-inch O.G. by projection.

Up till 12.35, a power of 130 was employed on a 3-in. O.G., the Sun's image being projected on to a white papered board. However, it was found that a power of 80 gave a much better result.

Drawings were made at 11.35, 11.45, 11.50, 11.55, 12.00, 12.15, 12.17, 12.22 and 12.27 G.M.T. Colour was noticed round the Sun's limb. For a few seconds at 12.27.5 a blurred image of the Sun appeared, and then disappeared as quickly as it had come. Rays were noticed coming from the disk, as seen

through a sun-cap (which was frequently used throughout).

Predicted time of greatest magnitude approaching.

12.27 and 12.30: more drawings taken between these times, but no appreciable difference noted. 12.30: nearly 75 per cent. of the disk obscured by the Moon. 12.31: Rays gone. 12.32.5: another drawing. 12.33: U-shaped Sun. Absence of birds has been noticed. 12.34.75: 75 per cent. of the Sun covered. Drawing taken, sun-cap observations, excitement at "observatory." Slight darkness during the past few minutes. 12.35.5: drawing. 12.37: drawing; it is getting lighter here. 12.38, 12.38.5: drawings—Moon moving off. 12.40: colour round edges appears again. Birds start singing and flying again. 12.42, 12.45 and 12.46.5: more sketches. 12.46.5: more light appearing from the N.E. reaches of the solar disk; Moon moving away. 12.50, 12.53.5 and 12.58: last drawings and observations.

Just managed a drawing at school at 13.25, through sun-cap, rough and only approximate. Site: East Grinstead, Sussex.

### Articles for the Journal

Contributions should be sent to the Secretary.

Until our Journal can be enlarged, **short** articles not needing diagrams or photographs are preferred.

## Summer Star Gazing in Italy by Sylvia J. Tomalin.

5.9.54.

Night! Soft velvety Italian night, with seemingly countless myriads of stars suspended over the heat-filled earth and motionless sea. . . .

There is an enchantment somehow, about star gazing in Italy which is lacking at home. The magic of the night sky is there always, whether noticed through a London haze, gazed at from a hammock in a country garden, enjoyed from the banks of the Arno, or wondered at from the sands of a forgotten beach on the Versilian Riviera. But the Italian magic is more potent than the English. . . .

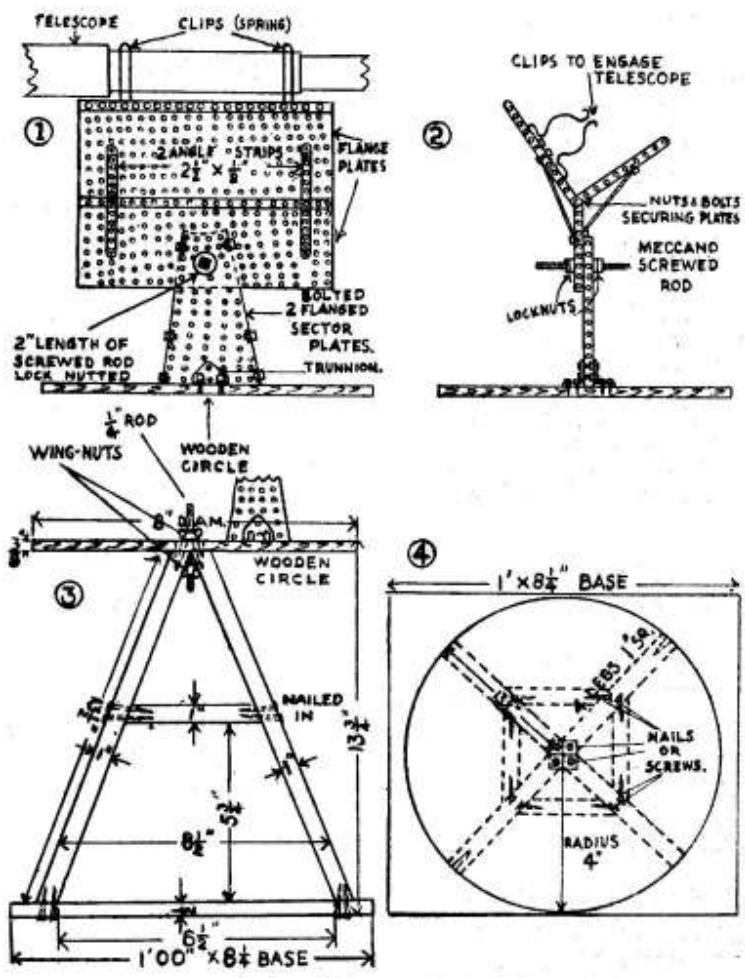
Imagine yourself on a deserted Versilian shore on a warm summer's night. The four days' old moon is bending low over the sea admiring her golden reflection in the rippling waters. Venus sinks ever lower in the west, and below her is another star of equal size—or is it a distant fishing boat putting out her nets under the eye of the pagan goddess? Sea and sky are one—as, turning to the opposite horizon, you find rocks and sky are one. That fire, way up in the marble wastes,—(surely no one is camping so high)—then it must be a star peeping over the mountain peaks below Perseus. In this magical atmosphere of uncertainty even the winking beam of the lighthouse on one of those far-away Ligurian promontories seems to flit backwards and forwards over the moonlit waves like a June firefly in a Tuscan garden. . . .

The magic is there! you are in Italy! What more could you want?

## How to Make a Simple Telescopic Stand by E. L. Barry.

Before commencing the actual construction of the stand, it will be necessary to catalogue all the required parts, together with their respective costs; these data are as follows:—

| <b>Meccano Parts.</b>       |   |                | s. | d. |
|-----------------------------|---|----------------|----|----|
| No. 52.                     | Flanged Plates, $5\frac{1}{2}$ in. x $2\frac{1}{2}$ in.     | 3 parts needed | 3  | 0  |
| No. 54                      | Flanged Sector Plates, $4\frac{1}{2}$ in.                   | 2 „            | 1  | 5  |
| No. 48a.                    | Double Angle Strips, $2\frac{1}{2}$ in. x $\frac{1}{2}$ in. | 4 „            | 1  | 0  |
| No. 126.                    | Trunnions   | 2 „            | 0  | 5  |
| No. 81.                     | Screwed Rod, 2in.   | 1 „            | 0  | 2  |
| No. 37.                     | Nuts and Bolts  | 24 „           | 1  | 9  |
| TOTAL                       |   |                | 7  | 9  |
| <b>Miscellaneous Parts.</b> |   |                |    |    |
| 1                           | 5ft. 6in. length of 1in. square wood                        |                | 1  | 4  |
| 2                           | Spring Clips to engage telescope                            |                | 1  | 0  |
| TOTAL COST OF STAND         |   |                | 10 | 1  |



Now let us construct the Meccano part of the stand. With the aid of nuts and bolts fasten 2 flange plates (Nos. 52) together so that they lie at right angles to each other. Then, with the addition of a further plate, form the letter Y (Figs. 1 and 2). It will be found necessary to bend the plates in order to obtain this formation. Secure the Y to the two flanged sector plates (No. 54, Fig. 2) by means of a 2in. length of Meccano screwed rod lock-nutted on either side (Fig 2), and bolt on two trunnions which in turn are screwed on to a wooden circle 8in. in diameter (Fig. 2). Strengthen the Y with 4 double angle strips (48a) as shown in the plan.



Now for the wooden part of the stand. First purchase a 5ft. 6in. length of wood 1in. square, and saw it into four 18 $\frac{1}{2}$ in. lengths for the legs. Saw the remaining foot into four 3in. lengths for the supports (Fig. 3). Proceed as shown in Figs. 3 and 4, and construct the quadruple. Obviously, the wood on which the trunnions rest does not need to be circular, so long as the wood used is strong enough.

The base for the stand is not absolutely necessary, but it aids the stability of the stand. Nail on the circle of wood, and the stand is complete.

Place the telescope in the two spring clips, and one will find that the Y-shaped structure will move up and down in a perpendicular plane. To rotate the stand in a horizontal plane, one must move the whole device. However, if you desire the circle of wood to rotate, it is a simple matter to screw the trunnions in a position away from the centre, and drill a hole right through the centre of the wood and insert a 4in. length of  $\frac{1}{4}$ in. screwed rod (obtainable at any hardware store) and screw two wing-nuts on to the rod, as shown in Fig. 3.

### **J.A.S. ASTRONOMICAL GROUPS**

Members living in the following areas should communicate with the nearest Group Director, unless they have already done so.  
CAMBRIDGE.—Director: Mr. J. Peters, 25 Thornton Road, Cambridge.

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LONDON (CENTRAL).—Director, Mr. E. H. Noon, Morley College, 61 Westminster Bridge Road, London, S.E.1.

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NORTHUMBERLAND.—Secretary: Mr. A. S. Fedrick, 17 Bolbec Road, Newcastle-on-Tyne.

SURREY.—Director: Mr. E. H. Noon, Norman Cottage, Pond Piece, Sheath Lane, Oxshott, Surrey.

### **NEW GROUPS ARE URGENTLY NEEDED**

All members are asked to look through the Society's List of Members and communicate with those living in their area and endeavour to form a new Group. A Group may start with a minimum of three members willing to visit each others homes for periodical meetings.

The Senior Member of the proposed Group should then inform the Society's Secretary:—

Mr. E. W. Turner, 35a Third Ave., Walthamstow, London, E.17, who will then give any further assistance that may be needed.

## SOCIETY NEWS

**Report of the J.A.S. Summer Meeting, 1954, August 21st.** Held at Morley College. The President, E. H. Noon, in the Chair.

About 50 members and friends attended the Meeting, and were amply rewarded by hearing our Patron, Dr. Porter, warn us of the dangers of regarding "those text-books" as complete guides for all occasions. "Do not regard the text-books as sacred," said Dr. Porter. "Remember, the writer is only human; and what he leaves out is often more important than what he puts in."

This was the first time that Dr. Porter has addressed the J.A.S. in person, though we hope that it will be but the first of many occasions. He certainly encouraged us to look beyond the written word, and taught us to master our text-books instead of allowing them to master us.

The second speaker was Patrick Moore, our Vice-President, who gave us a very vivid picture of the planet Mars in the light of the earliest and latest observations. We all envied Mr. Moore's powers of exposition, and the lucid way in which he held the attention of every member present.

Another interesting account was given by Mr. C. A. Bailey, who also was addressing the J.A.S. for the first time. He told us, in a very charming manner, of the enthusiasm of J.A.S. members in Ireland. We learned something of the recent rapid growth of the Irish Astronomical Society, and how it caters for many young members who require guidance. No doubt the forthcoming Planetarium will prove of great assistance.

During the meeting, the President gave a brief résumé of the aims of the J.A.S., and of its rapid progress during the past Session. A large number of drawings and photographs were exhibited, and the lunar drawings by Peter Cattermole were particularly noteworthy.

E.H.N.

### **J.A.S. Expedition to Greenwich, 1954, July 24th.**

On Saturday, July 24th, our President arranged an expedition to Greenwich Observatory, and at 1.30 some 34 members and friends gathered at Westminster Pier. Among those present were Mr. Bearpark; two new and keen members, Kenneth and Alan Withey; and Lars Helander, a most welcome visitor from Sweden.

Strangely enough there was no rain, and after a journey down the river we arrived at Greenwich. In the famous Octagon Room, built by the first Astronomer Royal, Mr. Noon gave a most instructive address upon the history of Greenwich and those who controlled it in the years gone by.



In the Transit Room, next to be visited, we were met by Mr. E. A. Whitaker, the well-known lunar observer, who is on the Observatory staff, and had been good enough to sacrifice a free afternoon on our behalf. We were thus able to see the time-keeping department, the observatory buildings, and finally the great 36-inch Yapp Reflector itself. We also saw the aluminising plant where mirrors are treated, and Mr. Whitaker explained in detail how this was done. It was 5.30 before we left. As the Yapp telescope is to move to Herstmonceux later this year, it is unlikely that many more people will see the "old Greenwich" as it has always been, and we were most grateful to Mr. Whitaker for making this possible. A pleasant tea followed in the Maritime Museum Restaurant, and many friendly contacts were made before we began the journey back by river.

In the courtyard outside the Octagon Room, I took a photograph of the J.A.S. party. It has printed fairly well, and if any member would like a copy I shall be glad to forward one.

PATRICK MOORE

#### **The 1954 Solar Eclipse: Points of View**

From an office top roof, Miss H. Ganz, a London member, saw the Sun at mid-phase looking like a new moon on its back, whilst pigeons flew to rest in a Church tower.

From the belt of totality, Lars Helander, a Swedish member, should have seen everything, but only saw "heavy, awfully grey clouds."

From an aeroplane in high northern latitude, the Astronomer Royal looked in vain for signs of aurorae during totality.

From Strömstad, in Sweden, several J.A.S. members, including the President, Mr. Gordon Bearpark and Mr. Patrick Moore, had a splendid view of the corona and prominences.

From Strömstad, our Patron, Dr. Porter, broadcast his impressions to many thousands who have so many times enjoyed his monthly broadcasts on "The Night Sky".

#### **FORTHCOMING EVENTS**

- |      |       |   |
|------|-------|---|
| Oct. | 5th.  | City Literary Institute, Stukeley St., Drury Lane, W.C.2. Course in Elementary Astronomy commences. |
| „    | 6th.  | Oxshott Astronomical Group. Open Meeting.   |
| „    | 21st. | Kingston Astronomical Group. Open Meeting.  |
| „    | 23rd. | Stoke D'Abernon Group (Surrey). Open Meeting.   |
| Nov. | 13th. | Visit Science Museum, South Kensington.<br>Exhibition of Historic Astronomical Books.               |

Members wishing to attend any of these events should contact Mr. E. H. Noon, Norman Cottage, Pond Piece, Sheath Lane, Oxshott, Surrey. (Oxshott 297).

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Session 1954/1955.

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