

APRIL-MAY-JUNE 1971

EDITOR:
Frank McCullough



THE OPPOSITION OF MARS

by

KENNETH WILSON

This summer amateur astronomers will be presented with the best opportunity to view Mars until the 21st Century. At opposition, August 10 (2:00 A.M.), Mars will have an apparent diameter of 24.9 seconds of arc and a magnitude of -2.6 (brighter than Jupiter). This will make it a conspicuous object between Zeta and Theta Capricorni. On the following evening, at 9:00 P.M., Mars will reach its closest approach to the earth at a distance of 34,900,000 miles.

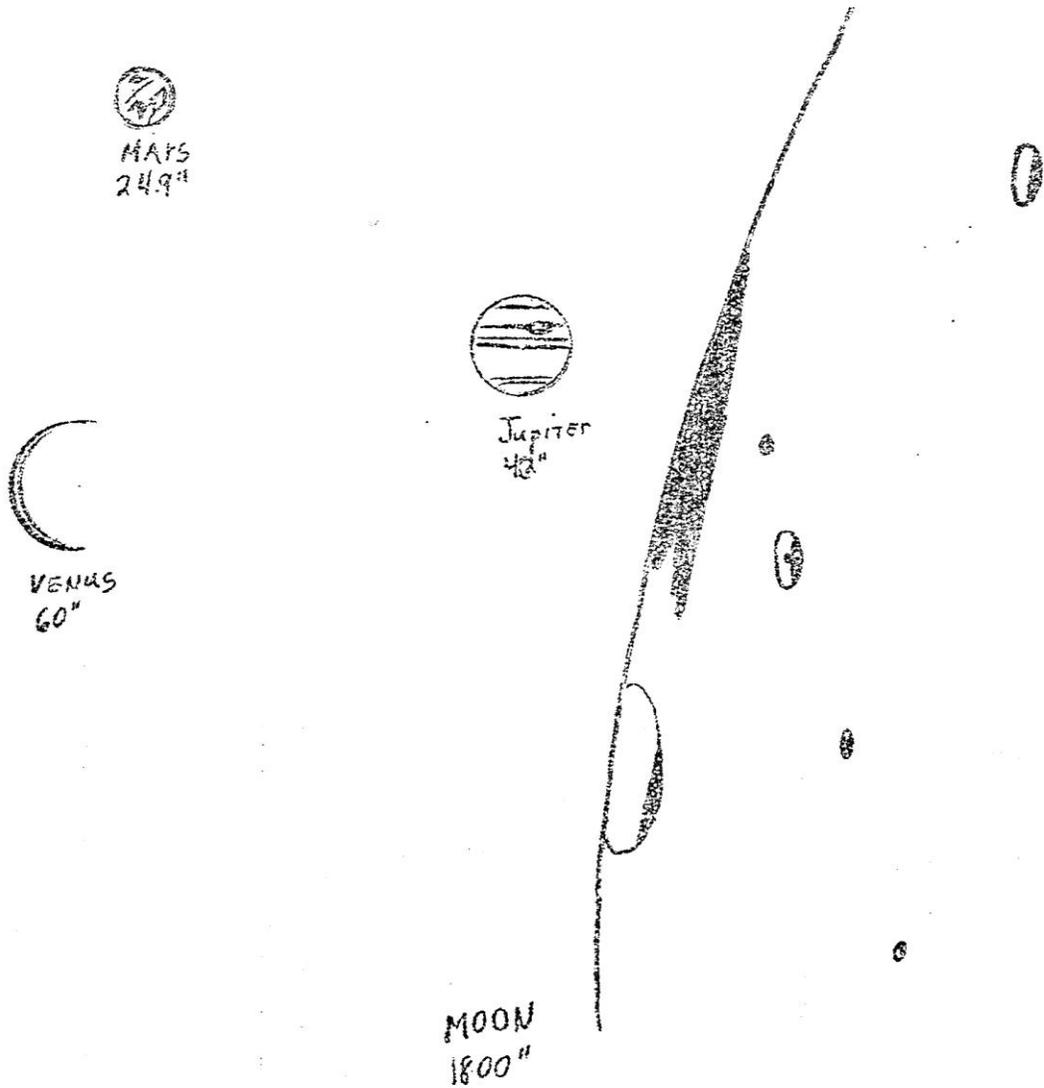
Large detail, such as Syrtis Major and the Southern Polar Cap of Mars can be seen in small telescopes. For more delicate detail a 3 inch, or greater, aperture is needed. For really serious work, a 3 inch, or greater, objective is required. It would be wise to begin observing Mars right now to watch for developments of surface features this summer. Particularly conspicuous will be the melting of the Southern Polar Cap. This will be denoted by the gradual shrinking of the cap during the Martian summer. During this opposition, the Martian summer roughly parallels our own summer. The Martian polar caps are thought to be composed of frozen carbon dioxide ("dry ice"). As the planet gets warmer in the summer, the polar caps melt. Other areas which undergo less regular change are the Solis Lacus area and the Laestrygonian area. Bright spots are often seen in Nix Atlantica (which precedes Syrtis Major) and Nix Tanaica in Tempe (near Acidalium Mare). These features and many more are listed on charts such as those in the May, 1971 "Sky and Telescope" and other astronomical books.

White and yellow clouds are often seen on the Martian surface. The yellow clouds are presumed to be dust storms on the surface. The white clouds are thought to be carbon dioxide. For those experienced in using filters: reddish-orange filters bring out the dark gray-green markings and the yellow clouds; blue filters enhance the white clouds; and a yellow filter will also help bring out the yellow clouds. It should be mentioned that any filter cuts down on the, already too little, light. If possible, they should be avoided. First attempts at finding detail on Mars may be disappointing. But, with continued observing, experience improves one's ability to detect detail. Sketches of the planet should be made each time an observation is made. Draw a 2 inch circle (or 3mm per second of arc of apparent diameter) on good quality paper. Record: date, time, place, instrument, sky conditions, type of eyepiece, magnification, and any other useful information. First, sketch the detail of the area near the central meridian of the planet. Then, sketch the detail of the preceding edge, before it rotates out of sight. Then, draw the following edge, as you have plenty of time for it. In all cases, draw the major detail first, then the minor, less detectable detail. Any "suspected" detail should be noted only as such.

I would be very interested in seeing the results obtained by different observers and scopes.

THE 1971 APPARITION OF MARS
HOW IT WILL LOOK IN YOUR TELESCOPE

This August, Mars will exhibit a super-spectacular show when it comes into opposition presenting itself as a 24.9-seconds-of-arc disk at magnitude -2.6. This will be an excellent opportunity for both visual work and photography. Shown below is a guide to show how large Mars will appear compared to some selected objects at 200x. Use this guide at normal reading distance.



Timothy Skonieczny

SPECTACULAR APRIL AURORA by Frank McCullough

On the evening of April 14th, a spectacular aurora appeared nearly equaling the display of August 16th, also the night of the partial lunar eclipse. A crowd of Warren Astronomical Society members and myself were out at our observatory, twenty-nine miles north of Detroit, Michigan.

We were waiting for darkness to set in when I noticed a pinkish-blue colored arc extending forty degrees above the northeastern horizon at 7:45p.m. (EST). It appeared as a rainbow of mist just hanging motionless in the sky. Within five minutes the aurora had quickly extended itself into the constellation of Bootes, which had risen at sunset. Within a half hour (8:15p.m. E.S.T.) the north was filled with shimmering curtains from the northeast to the northwest. At 8:30, forty-seven degrees from the northern horizon, red and blue rays began to develop. As total darkness set in, colors seemed to disappear as it took on a white-green appearance (mostly white).

At 9:05 nearly the whole sky had been covered with auroras. What was strange was the sky had one particular auroral shape in certain parts of the sky. From the times of 9:05 to 10:30 for example in Gemini, small rays waved back and forth with little spikes dangling as if they were small pieces of glass rippling in a chandelier. Just above the head of Orion a bright white bar appeared; twenty minutes later it broke into dazzling rays, as if it were a flag flapping in the breeze. Another wave appeared in Auriga. Above my head a circlet formed in Leo's sickle. This circlet formed, disappeared, formed, and by 10:15 it was gone for good.

At 9:45, the north was building up for its final burst of light. A large band appeared arching from the northeast to the northwest. As it got twenty-five degrees above the horizon, it broke into a curtain formation, some parts glowing a brilliant bright green. This lasted approximately twenty minutes. At 10:40 clouds moved in and engulfed the sky.

(copy of original which was sent to SKY and TELESCOPE)

AURORA BOREALIS

by KENNETH WILSON

Aurora Borealis, or northern lights, are among the most intriguing celestial phenomenon to observe. They require no optical aid and are quite colorful. They are thought to be caused by solar radiation striking the earth's upper atmosphere. This radiation excites certain gases to glow like a neon sign.

The appearance of this glowing upper atmosphere may take many forms. They usually appear in the northern sky, but may be seen to cover the entire sky. An aurora display may begin looking very much like a fog or cloud formation near the horizon. To distinguish auroras from clouds, look for changes in color and form, and whether or not stars are visible through it. Stars are not visible through clouds, but they are visible through auroras. Most auroras are yellowish-white with shades of green; some are pink and red; and occasionally some are blue. An aurora may appear as just a glowing patch; a rayed arc of light radiating from some point in all directions; individual flaming rays; arcs of flame which rise; or, in the most spectacular, a shimmering curtain of light.

Auroras make beautiful photographs. To take pictures of auroras load your camera with a fast film, such as Tri-X or high speed Ektachrome for color. The camera should be mounted with a tripod or other rigid support. The lens aperture should be opened as wide as possible without fogging the film. Exposures can vary from 1 sec. to 2 mins.

Auroras can be seen at any time of the year. The table below is from The Farmers' Almanac by Robert B. Thomas. It gives suggested dates when chances are good for seeing auroras.

March 9-10, 1971

April 15-25, 1971

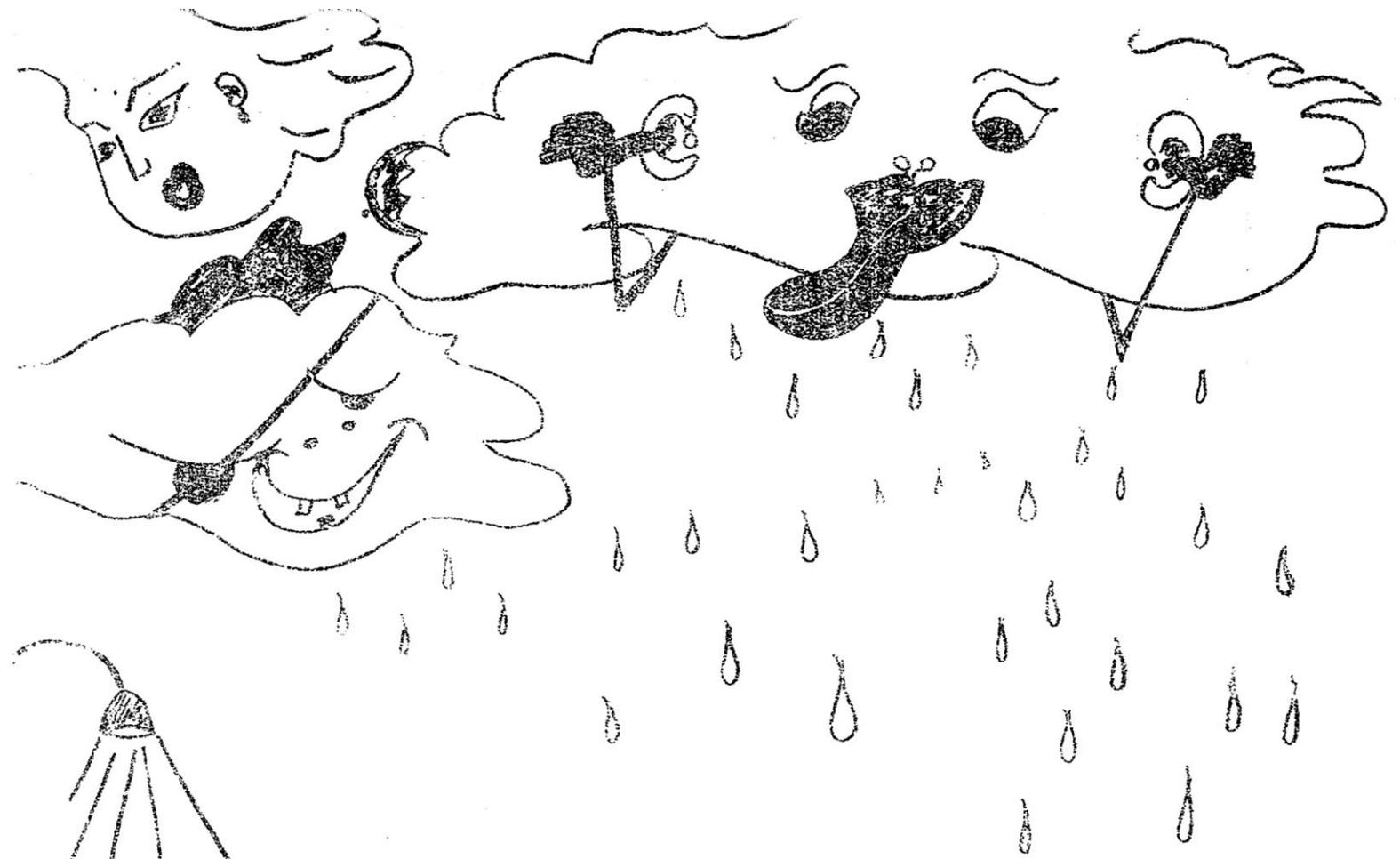
July 15-20, 1971

September 7-15, 1971

September 27-October 2, 1971

December 9-18, 1971

*should be visible from much lower latitudes, such as Middle and Southern states



CONJUNCTION of MARS
We
Were
There

ROTARY NEWS



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MORE OF DENNING'S COMMENTS ON AMATEUR ASTRONOMY

selections from

"Telescopic Work for Starlight Evenings"

Records. — With regard to records, every observer should make a note of what he sees, and at the earliest possible instant after the observation has been effected. If the duty is relegated to a subsequent occasion it is either not done at all or done very imperfectly. The most salient features of whatever is observed should be jotted down in systematic form, so as to permit of ready reference afterwards. It is useful to preserve these records in a paged book, with an index, so that the matter can be regularly posted up. The negligence of certain observers in this respect has resulted in the total loss of valuable observations. Even if the details appear to possess no significance, they should be faithfully registered in a convenient, legible form, because many facts deemed of no moment at the time may become of considerable importance. The observer should never refrain from such descriptions because he attributes little value to them. Some men keep voluminous diaries in which there is scarcely anything worth record; but this is going to the other extreme. All that is wanted is a concise and brief statement of facts. Some persons have omitted references to features or objects observed because they could not understand them, and rather distrusted the evidence of their eyes; but these are the very experiences which require careful record and reinvestigation.

Drawing. — Few observers are good draughtsmen; but it is astonishing how seldom we meet with real endeavours to excel in this respect. Every amateur should practice drawing, however indifferent his efforts may be. Delineations, even if roughly executed, are often more effective than whole pages of description. Pictorial representations form the leading attraction of astronomical literature, and are capable of rendering it more interesting to the popular mind than any other influence. They induce a more apt conception of what celestial objects are really like than any amount of verbal matter can possibly do. For this reason it becomes the obvious duty of every observer to cultivate sketching and drawing, at least in a rudimentary way. He will frequently find it essential to illustrate his descriptions, so as to ensure their ready comprehension. In fact, a thoroughly efficient observer must of necessity become a draughtsman. It should, however, be his invariable aim to depict just what he sees and in precisely the form in which it impresses his eye. Mere pictorial embellishments must be disregarded, and he should be careful not to include doubtful features, possibly existing in the imagination alone, unless he intends them simply for his own guidance in future investigations. If he sees but little, and it is faithfully delineated, it will be of more real value than a most elaborate drawing in which the eye and imagination have each played a part. It is an undoubted fact that some of the most striking illustrations in astronomical handbooks are disfigured by features either wrongly depicted or having no existence whatever. There is very great need for caution in representing such markings only as are distinctly and unmistakably visible.

In all cases where the object is new or doubtful the observer should await duplicate observations before announcing it. It is better that new features should evade discovery than that delusive representations should be handed down to posterity. As regards selenographical drawings I would refer the reader to what Mr. Elger advises on p. 21 and 22 of volume v. of the 'Journal of the Liverpool Astronomical Society.' My own plan in sketching at the telescope is to first roughly delineate the features bit by bit as I successively glimpse them, assuring myself, as I proceed, as to general correctness in outline and position; then, on completion, I go indoors to a better light and make copies while the details are still freshly impressed on the mind. To soften details a small piece of blotting-paper must be wrapped round the pointed end of the pencil, and the parts requiring to be smoothed gently touched or rubbed until the desired effect is attained. This simple method, properly applied, will enable delicate markings to be faithfully reproduced, and it certainly adds in no small degree to the merit of a drawing.

Friendly Indulgences. — Every man whose astronomical predilections are known, and who has a telescope of any size, is pestered with applications from friends and others who wish to view some of the wonders of the heavens. Of course it is the duty of all of us to encourage a laudable interest in the science, especially when evinced by neighbours or acquaintances; but the utility of an observer constituting himself a showman, and sacrificing many valuable hours which might be spent in useful observations, may be seriously questioned. The weather is so bad in this country that we can ill spare an hour from our scanty store. Is it therefore desirable to satisfy the idle curiosity of people who have no deep-seated regard for astronomy, and will certainly never exhibit their professed interest in a substantial manner? Assuredly not. The time of our observers is altogether too valuable to be employed in this fashion. Yet it is an undisputed fact that some self-denying amateurs are unwearied in their efforts to accommodate their friends in the respect alluded to. My own impression is that, except in special cases, the observer will best consult the interests of astronomy, as well as his own convenience and pleasure, by declining the character of showman; for depend upon it a person who appreciates the science in the right fashion will find ways and means, to procure a telescope and gratify his tastes to the fullest capacity. Some years ago I took considerable trouble on several evenings in showing a variety of objects to a clerical friend, who expressed an intention to buy a telescope and devote his leisure to the science. I spent many hours in explanations &c.; but some weeks later my pupil informed me his expenses were so heavy that he really could not afford to purchase instruments. Yet I found soon after that he afforded £30 in a useless embellishment of the front of his residence, and it so disgusted me that I resolved to waste no more precious time in a similar way.