


THE ILLUSTRATED LONDON NEWS



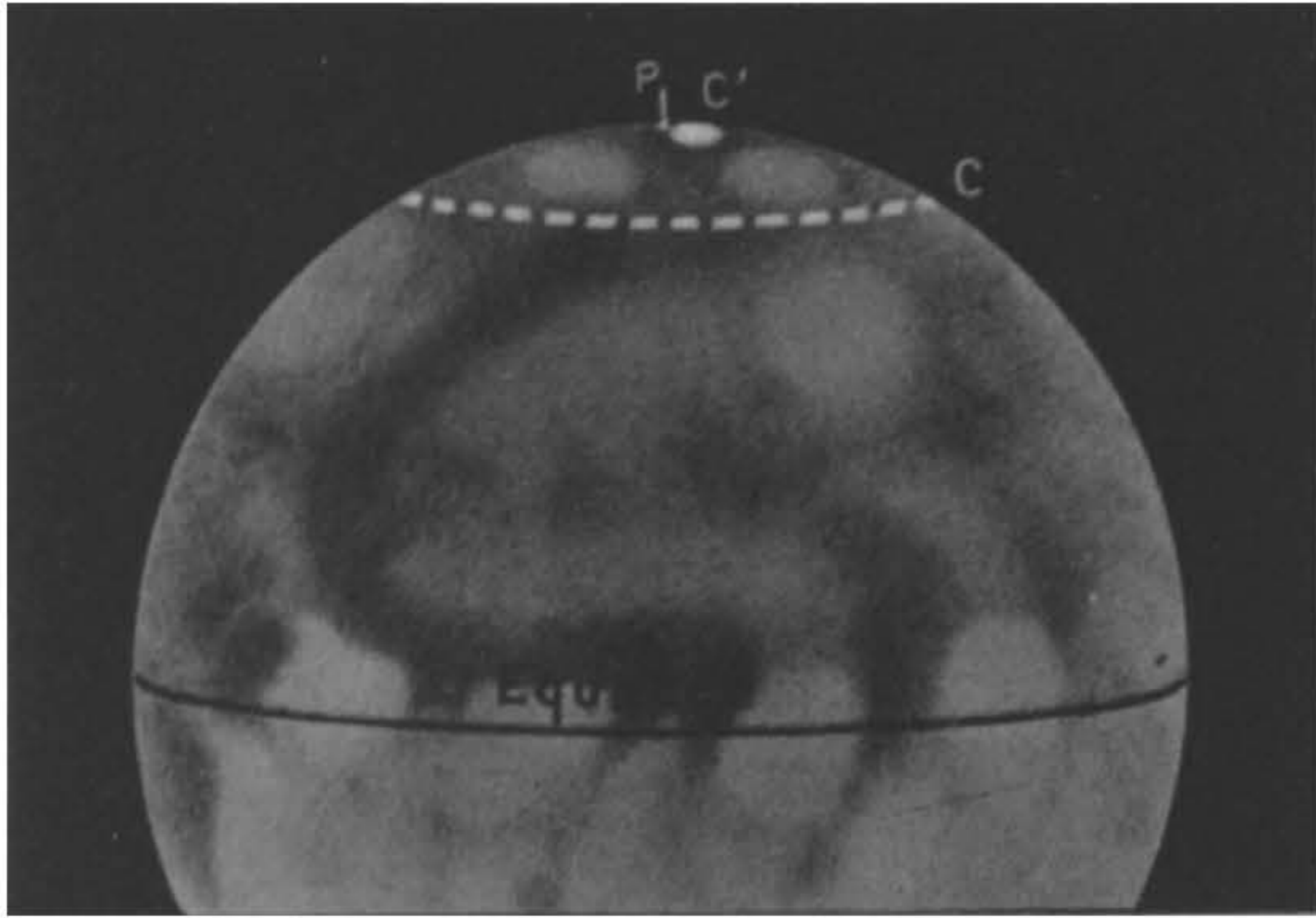
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SATURDAY, APRIL 18, 1931.

AN EXPLORER OF MARS: HIS IMPRESSIONS.

THE PLANET THAT IS MOST LIKE THE EARTH—AND MAY ENJOY "A VERY TOLERABLE TEMPERATURE"—AND VEGETATION.

Translated from an Article by M. LUCIEN RUDAUX.



MARTIAN POLAR SNOWFIELDS WHICH ALMOST DISAPPEAR IN SUMMER: A DIAGRAM SHOWING THE VARIATIONS IN SIZE OF THE SOUTHERN POLAR CAP. In the winter solstice the southern Martian Polar Cap extends as far down as the 60th parallel of longitude (dotted line C). In summer it is reduced to a white speck (C') which does not exactly cover the South Pole (P). M. Lucien Rudaux observes in his article that Martian explorers, if they exist and attempt, as ours have done, the conquest of the Poles, would have an easy task before them.

M. Rudaux is well known to our readers as an astronomer-artist: doubtless they will recall, for example, the extremely interesting diagrams by him which we reproduced recently on the occasion of the eclipse of the moon. We here print the conclusions reached by him after examinations of the planet Mars—always a subject of popular curiosity, from its proximity and similarity to our own planet, and increasingly worthy of the attention of astronomers as telescopes attain nearer to perfection and enable us to determine with greater certainty the nature of its surface. He embodies his deductions made here about the Martian landscape and the appearance of the planet in a series of remarkable paintings which will be found reproduced on the opposite page and on page 644.

MARS is incontestably the planet which, without being exactly similar to our own, differs less from it than any other of the worlds known to us. Could we be transported thither we should find before our eyes many a landscape reminiscent of localities on the earth; and, in spite of some odd-seeming details, we might be excused for thinking that we had never left the earth at all. Let us attempt to form an idea of how they would appear to us.

The first thing that would strike us on our arrival in Mars would be the effects of its small size. It is actually a great deal smaller than the earth; for, while our own planet has a diameter of 7927 miles, Mars measures only 4200 miles through, and is, therefore, seven times smaller in volume. These conditions, aggravated by the relatively low density of the constituent elements of the Martian globe, would have the curious effect of reducing our weight on the surface of Mars to a third of that which we here support. Thus a human explorer who weighed a moderate eleven stone on the earth would have, on "disembarking" on Mars, the curious sensation of weighing only some four stone. But, as the explorer's muscular force would remain intact, he would find himself capable of carrying an enormous quantity of baggage, and of moving about by bounds that would seem to him nothing short of prodigious.

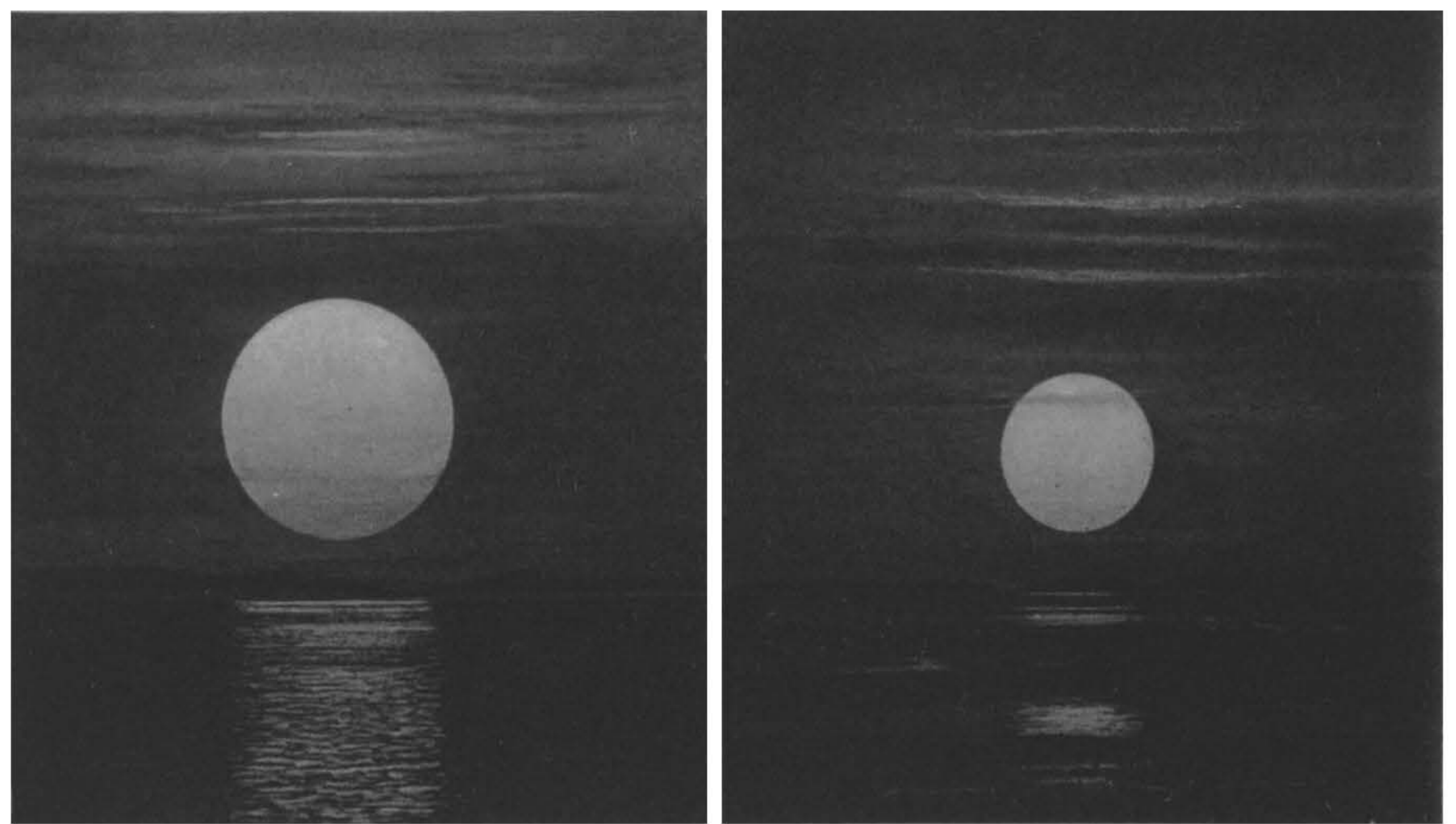
Let us now consider the character of the landscapes that would there meet our eyes. Taking them as a whole, they would probably be devoid of striking features, for we are not aware that there are any high mountains on the surface of Mars. Ranges of hills, undulating valleys, and, above all, wide plains that might be either arid or marshy, are the types of scenery which predominate. The liquid element, although it exists in the Martian world, forms no watery expanse which would be comparable to our oceans. The most that we could expect is certain great depressions which would be the sites of lakes; for circulation of water of a sort exists there, to judge from the meteorological changes that have been observed. A watch kept on these regions, which make great dark patches on the surface of the planet, reveals remarkable variations; certain among them which show a lovely green in summer turn grey or dark-brown as autumn comes on. Here the hypothesis which best fits all conditions is that we are looking, albeit confusedly, at areas in which sufficient moisture is present to sustain vegetation of a sort;

and that the yearly alterations of this vegetation are observable, obviously without our being able to get an exact idea of the species that grow there. None the less, to be able to establish its existence is a matter of sufficient importance.

Bordering regions such as those already described are immense areas which seem, unlike them, to be entirely sterile; to have the desert characteristics typical, say, of the Sahara. That at least is the best explanation which can be given of the parts coloured yellow, orange, or dark-red which, predominating on its surface, give the planet its striking hue. It is a remarkable fact that the details of the areas on their edges, as well as the formations that lie next to them, have a way of fading, even of disappearing at times, as though they were obscured by vast yellow veils. This supports the theory of their being great desert tracts whence dust-clouds capable of hiding the details of the ground from us may be raised by movements of the atmosphere. There is, therefore, nothing rash in giving to a reconstruction of one of these desert regions the character it has in the colour reproduction which will be found on page 644, or deciding, on the other hand, upon the nature of the landscape in one of the marsh zones that are divided into areas of indeterminate vegetation that is necessary to explain the variations which these regions show in colour and in other particulars.

If these landscapes present, as no doubt they do from the conformation of the land, a somewhat monotonous appearance, they also outline themselves in a light slightly different from that to which we are accustomed on earth. In the first place,

the light on them would seem to us perceptibly fainter, for the reason that the greater distance they are from the sun lowers the total amount of radiation they receive by half. Are we to conclude that our Martian traveller would derive therefrom a prejudicial impression? It is difficult to make any categorical statement on this head. Certain qualities of the Martian atmosphere cannot be estimated by us; but, as its density is low and it is extremely dry, we may be excused for supposing that the absorption of solar radiation is lower there than it is in our own—so frequently disturbed! Whence the sun's diminished disc may well shine out brightly, in a highly transparent atmosphere, where the least diffusion of the light would give the sky a dark and sombre aspect, though little obscured by visible clouds. Again, there is reason for giving the mean temperature there as very tolerable



THE SUN SEEN FROM THE EARTH (LEFT); AND AS A MARTIAN WOULD SEE IT (RIGHT).

Although the sunlight on Mars would seem somewhat faint to a person used to terrestrial conditions—the greater distance of the sun diminishing the radiation of its disc by about half—the sun itself would probably be seen to shine out very clearly in the thin atmosphere of the planet, which has a greater transparency than ours and is less obscured by clouds.

in broad daylight; for, although it is not possible to estimate it exactly, the various facts observed must be correlated with influences connected with solar heat. We know that the polar snows actually melt almost in their entirety in summer; a fact which, in passing, must facilitate the task of Martian explorers, should they exist, and attempt, as ours have done, the conquest of the Poles. For all that, the temperature must always drop heavily at night, because of the general dryness of the atmosphere. We may recall the conditions at high altitudes, where one is roasted in the sunlight and frozen in the shadow.

An allusion to the alternation of day and night (the same as on earth, though some minutes slower) leads us to envisage the Martian's celestial spectacles. The transparency of the sky favours their contemplation. We should find our attention drawn principally by two little moons, the closer of which exhibits a movement so rapid that it passes through all its phases in 7 hours 39 minutes. So, as it goes with a speed that is greater than the rotation of the planet, it is seen to rise in the west and set in the east, contrary to other stars, only remaining above the horizon for four-and-a-half hours at the Equator. These two satellites are so close—the first having a mean distance of 3750 miles from Mars, the other that of 12,500 miles—that the curve of the planet's globe renders them invisible, and they remain hidden below the horizon for the inhabitants of all latitudes above 69° 30' and 82° 30' in the northern and southern hemispheres respectively.

But, if these moons look minute in the Martian heavens, quite the contrary is true of the planet itself, as seen from the first of them, for example. It shows as a disc of colossal proportions, nearly a hundred times as large as the moon looks to those on the earth. Like every globe lit by the sun, Mars presents phases, which in this case would succeed one another with great rapidity, from the speed at which the satellite in question revolves round him. Such a spectacle as this would be calculated to excite our admiration to the very highest degree. When next our gaze falls on Mars—a shining point of light lost in space—we may allow ourselves to think of this point as another earth, not much different from our own.



THE COMPARATIVE DIMENSIONS OF THE EARTH (ABOVE) AND OF MARS: THE TWO GLOBES; THE LESSER WITH THE MARTIAN GREEN AND BROWN AREAS AND A POLAR CAP.

The small size of Mars would bring it about that an eleven-stone terrestrial "explorer" who landed upon it would find that he only weighed some four-stone, and that he could easily move about in prodigious leaps.



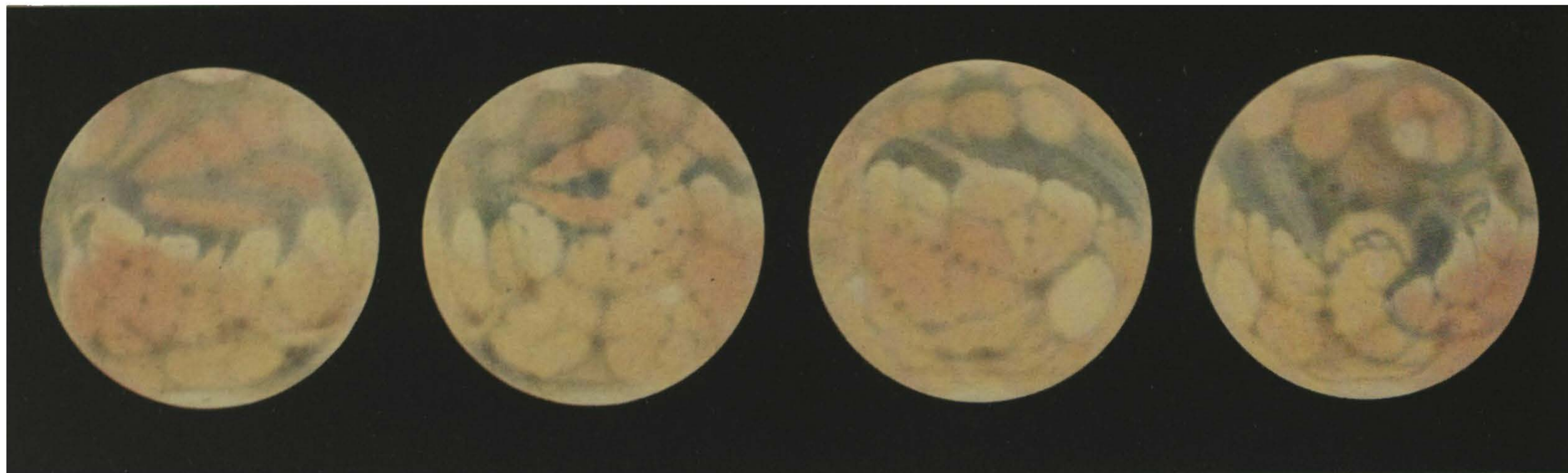
'THIS GLOBE WE GROAN IN, FAIREST OF THEIR EVENING STARS': AN ASTRONOMER'S CONCEPTION OF THE TWILIGHT SKY AS IT WOULD APPEAR TO AN OBSERVER ON MARS SHOWING THAT PLANET'S TWO TINY AND RAPIDLY-MOVING MOONS, AND (TO RIGHT OF THE NEARER ONE) THE EARTH GLITTERING LIKE A BRILLIANT "STAR IN THE EAST."



AN ASTRONOMER'S VISION OF MARS AS IT WOULD APPEAR FROM THE SURFACE (SHOWN IN THE FOREGROUND BELOW) OF THE PLANET'S FIRST AND NEARER SATELLITE (LESS THAN 3750 MILES AWAY): MARS VISIBLE AS A COLOSSAL GLOBE 100 TIMES LARGER IN DIAMETER THAN OUR MOON AS SEEN FROM THE EARTH.

"If we could transport ourselves to Mars," writes M. Lucien Rudaux, "our gaze would be attracted to two tiny Moons, the nearer of which moves so rapidly that it passes through all its phases in 7 hours 39 minutes. These two satellites are very close to the planet, the first being within 3750 miles from the surface of Mars and the second within 12,500 miles. Seen from its nearer Moon, Mars would appear as a disc of colossal proportions, nearly a hundred times greater in diameter than our terrestrial Moon as seen from the Earth."

FROM THE DRAWINGS BY LUCIEN RUDAUX.



"EXAMINATION OF THE DARK MARKINGS ON MARS REVEALS REMARKABLE COLOUR CHANGES," FROM GREEN IN SUMMER TO GREY OR REDDISH-BROWN IN AUTUMN : AN ASTRONOMER'S DRAWINGS REPRESENTING A COMPLETE REVOLUTION OF THE PLANET, SHOWING THE CONFIGURATION OF ITS SURFACE.



PART OF THE SURFACE OF MARS RECALLING THE SAHARA : AN ASTRONOMER'S "RECONSTRUCTION" DRAWING DESIGNED TO SHOW THE PROBABLE CHARACTERISTICS OF VAST DESERT REGIONS WHOSE REDDISH-YELLOW HUE GIVES THE PLANET ITS DISTINCTIVE COLOUR.



VAST SWAMPS ON THE SURFACE OF MARS : A "RECONSTRUCTION" DRAWING TO INDICATE THE PROBABLE CONDITIONS OF A REGION WHERE WATER SEEMS SCARCELY TO EXIST EXCEPT IN THE FORM OF A MARSHY EXPANSE INTERSECTED WITH PATCHES OF VEGETATION.

"Careful examination of the dark markings on Mars," writes M. Lucien Rudaux, "reveals remarkable colour changes. Some parts, adorned with a beautiful green in summer, turn grey or reddish-brown as autumn advances. Vast territories seem entirely sterile, recalling the aspect of the Sahara. It is not rash, then, to reconstruct a landscape of these desert regions with the characteristics assigned to them in the drawing, and, by contrast, another landscape showing the nature of the swampy expanses intersected by patches of soil covered with vegetation, to explain the colour changes on the planet's surface."

FROM THE DRAWINGS BY LUCIEN RUDAUX.