star tests were made, and these I hope to carry out soon. In the space of a brief paper like this, it is of course impossible to do more than touch on the subject of speculum grinding.

But those who wish to learn more should refer to the *English Mechanic*, which has much useful information on this fascinating and exasperating pursuit.

In fact it was from articles in that Journal by our President, Mr. Tomkins, that the writer made his first speculum some 10 or 12 years ago.

Crater Gassendi as viewed by an observer on the Moon.

BY U. L. BANERJEE, M.A.

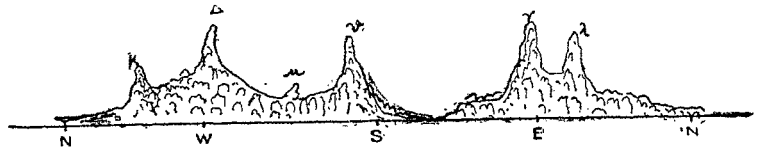
This evening we shall see what view our imaginary observer on the Moon will have of the Crater Gassendi, its surrounding walls and mountain peaks, standing at different places on its surface.

This crater is situated between +14°-15′ and +18°-13′ Lat. and —38° and —41°-10′ Long. It is a fine walled plane nearly circular in shape, having a diameter of 553 miles and an area of about 2,000 square miles. It is surrounded by a mountainous wall varying in height from about 9,600 to 500 feet over its interior. Beyond these walls is Mare Humorum, enclosing the plane on its south, the bed of which is 2,000 feet below the interior of the walled plane.

On its east wall is a long elliptical depression, on the south and north ends of which are situated two lofty mountain peaks γ and λ respectively about 9,600 and 9,000 feet high. Running northward, the wall is crossed by two deep passes on the north-eastern border. It then slopes down to the north to open out into the interior of a large ring plane, which forms a sort of spoon-shaped loop, surrounded by walls reaching to a height varying from 10,000 to 13,000 feet. Beyond this, on the north-west, the walls seem to have fallen outwards on to the surface to form a great mass of débris. At κ on the north-western corner the walls assume a height of 6,300 feet, and then terminate into a lofty peak Δ 9,270 feet high on the east. It then again slopes down southward to a height of 3,700 feet at μ attaining again a height of 9,000 feet at υ on the south. Here the walls suddenly part to form a deep pass scarcely 500 feet high,

running into Mare Humorum. Beyond this pass the walls again gradually reach a height of 2,000 feet, ultimately culminating in the loftiest peak γ on the east.

The view of the mountain heights may be graphically shown as below by spreading out the walls in a straight line.

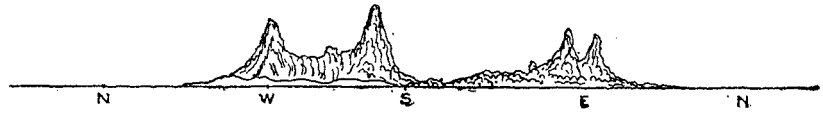


In the centre of the crater there is a mountainous group consisting of 3 considerable masses divided by deep valleys, the western mass being the loftiest. On the south end is the peak α 3,800 feet high, while on the north is situated another peak β 4,000 feet high. Two more peaks on the north-west of α reach a height of 3,500 feet. There is a central mountainous mass on the east, consisting of three more peaks, of which the northernmost one δ is the loftiest.

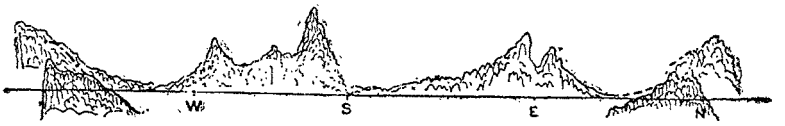
There are certain small craters scattered in different parts of the plane, of which the prominent ones are one on the south-west, another a little on the north of it, and the third one on the east of the central mountainous mass.

The bed of the crater is not at all level. Besides the mountainous elevation in the centre, and several craterpits, there are a number of detached ridges running particularly north to south, and a very delicate system of rills which are nothing but long cracks or narrow chasms several feet deep. These are extremely delicate formations, some uniting together to form a collective system, while others appear entirely independent; they sometimes run in straight lines, passing through craterpits, and their average width varies from one to two miles.

As the bed of the crater is not uniformly level, the observer cannot always have a full view of the mountainous walls enclosing its plane. When he takes his position at the extreme edges, the walls opposite will always be obstructed by the central mountainous mass. Thus when he stands on the edge of the pass interrupting the walls on the south, instead of seeing the mountainous range as shown below,

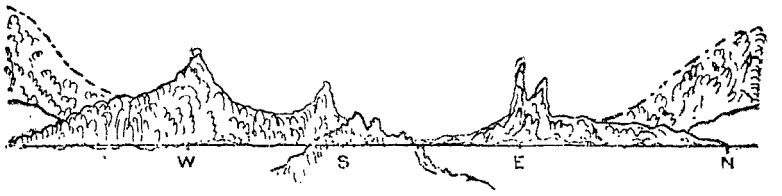


he will see it as



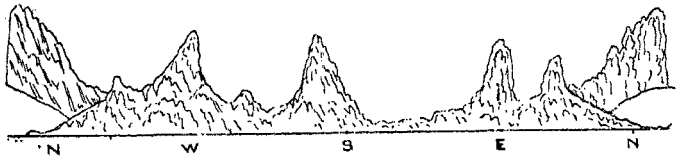
the portion marked a little below being the central mountainous mass, the peaks of which are 3,500 to 3,800 feet high, of which about half only will be seen, which, at its back, will come out as a relief to the mountain ring wall of the ring plane on the north, which is 10,000 to 13,000 feet high, of which 2,000 to 5,000 feet will be seen.

Moving to the north edge he will see the mountainous range as shown below :—



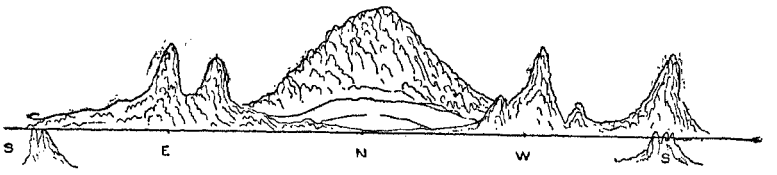
The portion marked separately below will be the view of the mountain mass at the centre, and that marked a little above is the mountain wall of the ring plane on his back.

A most picturesque view he will get of all the walls, crater-pits, ridges and the rills, if he can stand on the top of the peak α in the central mountains. From the base of the peak, he cannot see 2,000 feet of the walls from their bottom, but as he climbs the peaks higher and higher, he gradually gets the entire view of the walls, and when standing on its top he sees the different peaks, as well as the mountains around the ring plane on the north. The view will be as shown below :—



If he now shifts his position to the top of the northernmost mountain wall of the ring plane, which is 13,000 feet above its interior, and looks on the bed of Gassendi and its walls, he will not miss a single peak, and the whole mountainous chain will stand as bold relief against the dark sky.

Putting north in the centre of our diagram, we may depict the view as shown below :—



From here he will catch a most picturesque view of the effects of the sunshine on the mountain tops and the inner bed below during the lunation period. As the sun rises from the west, he catches the beam of light first, while the bed of Gassendi and its surrounding walls remain immersed in total darkness. Gradually the sunlight falls on the mountain peaks, and afterwards on the walls on the west, which cast their shadows on the interior. As the sun rises higher and higher, the mountain peaks on the eastern walls, as well as on the central mountainous pass, come out prominently, and the shadows of the western wall becoming shorter and shorter, display the interior of the plane, with its numerous ridges, rills and craterpits. The western side of the walls and ridges still remain in darkness, which stand in strange contrast with the bed of Mare Humorum, which has by this time got the full sunlight. As the sun becomes vertical, the craters and ridges stand out very prominently, showing the effect of the subterraneous forces on the face of the moon during its formation. As the sun goes down on the east, the western walls gradually lose its light, and the shadows of the eastern wall cover the inside of the crater. Unlike our 24 hours, full 30 hours are taken by the sun in completely disappearing from the view of our observer, and he will have work for the whole period (if he can wait at all) to have the full view of the sunshine. As the sun goes down the horizon the whole scenery becomes immersed in pitch darkness, there being no atmosphere, or any appreciable one, to give him an hour's twilight to find his way down the mountain side.

Simple Method of Star Photography.

By Mrs. Tomkins.

To any one with only a camera in their possession, star photography hardly seems to suggest itself, but being desirous of getting some observations, this seemed to offer a possible method, though no doubt to those with better apparatus it may appear rather the contrivance of an