POSITION OF THE PLANETS IN FEBRUARY.

JUPITER.

is evening star. He is still the brightest star in the heavens, though closely approaching the sun, and soon to be eclipsed in his rays. He makes his transit, on the 1st, at 4 h. 21 m. P. M., is well down in the west when it is dark enough for the stars to come out, and disappears from view about an hour before midnight. His course during the month is uneventful. He is moving eastward or in direct motion, his path lies in a portion of the heavens singularly destitute of bright stars, and he therefore has the field to himself. He is more impressive for this reason, as there are no rivals with whom he must share the honors of the portion of the celestial abode he now occupies.

The moon, when four days old, is in conjunction with Jupiter, on the 20th, at 9 h. 48 m. A. M., being 29′ north. The conjunction is a close one, but as it occurs in the daytime is invisible. The moon occults Jupiter at the same time for observers who see her under the right conditions. The limiting parallels are 73° north and 17° south.

The right ascension of Jupiter on the 1st is 1 h. 14 m., his declination is 6° 37′ north, his diameter is 36″, and he is in the constellation Pisces.

Jupiter sets on the 1st at 10 h. 44 m. P. M. On the 28th he sets at 9 h. 23 m. P. M.

MARS

is evening star. He is moving eastward, or in direct motion, and his distance from Jupiter is increasing. On the 1st they are 3° apart, and on the 28th they are 15° apart. The diameter of Mars, when in opposition on August 4 of last year, was 39″. It will be 5″.8 at the end of the month, showing how greatly Mars has decreased in dimensions as he recedes from the earth.

The moon is in conjunction with Mars, when five days old, on the 21st, at 8 h. 52 m. A. M., being 5′ south. There will be an appulse, the ruddy planet touching the northern horn of the crescent, but the conjunction cannot be seen, for moon and planet are below the horizon.

The moon will be near and approaching Mars on the evening of the 20th, when the finest celestial picture of the month will be on exhibition. The four days' old crescent is then in line with, and midway between, Mars and Jupiter, with Mars on her left and Jupiter on her right, each planet being about 7° distant. The trio, consisting of the moon with a bright planet on each side, remains visible in the west for about five hours, and then disappears below the horizon. Jupiter breaks up the party, setting at 9 h. 44 m. P. M., the moon follows at 10 h. 17 m. P. M., and last of the trio, Mars is seen no more, setting at 10 h. 49 m. P. M.

The right ascension of Mars, on the 1st, is 1 h. 27 m., his declination is 9° 33′ north, his diameter is 6″.7, and he is in the constellation Pisces.

Mars sets on the 1st at 11 h. 8 m. P. M. On the 28th he sets at 10 h. 54 m. P. M.

SATURN

is morning star. This means that he is on the western side of the sun, though he is above the horizon early enough to be considered an evening star. Saturn continues to retrograde or move westward. He is the only one of the large planets that is approaching the earth, as Jupiter, Venus and Mars are all approaching the sun. He rises at 9 o'clock on the middle of the month, and may then be looked for in the southeast, about ten o'clock, between Regulus and Spica and a little distance east of Gamma Virginis. He presents an interesting appearance in the telescope, for the ansae or handles of his rings are clearly defined, and the rings are separating from the body of the planet. He is not specially brilliant in the heavens at this time to the unaided eye of the observer, on account of the proximity of his rings, his increasing southern declination, and his slow advance toward aphelion, which he will not reach until 1900.

The moon five days after the full is in conjunction with Saturn, on the 5th, at 0 h. 16 m. P. M., being 1° 2′ south. Moon and planet are below the horizon when the conjunction takes place, but will not be far apart when they rise about 10 o'clock in the evening. The moon will occult Saturn for observers who see her in her geocentric position and are between the limiting parallels of 18° and 90° south.

The right ascension of Saturn on the 1st is 12 h. 51 m., his declination is 2° 40′ south, his diameter is 17″.3, and he is in the constellation Virgo.

Saturn rises on the 1st at 10 h. 4 m. P. M. On the 28th he rises at 8 h. 12 m. P. M.

MERCURY

is morning star until the 16th, and then evening star. He is in superior conjunction with the sun on the 16th at 2 h. 55 m. P. M., changing his position from the sun's western to his eastern side, and ranking with the evening stars.

The moon on the day of her change is in conjunction with Mercury on the 16th at 9 h. 3 m. A. M., being 2° 14′ south. The conjunction of the moon and Mercury, the new moon, and the superior conjunction of Mercury and the sun occur within a few hours of each other.

NEPTUNE

is evening star. He is in quadrature on the 26th at 3 h. 42 m. P. M., when he is 90° east of the sun, and is on the meridian at midnight.

The moon is in conjunction with Neptune on the 23d at 4 h. 5 m. P. M., being 4° 50′ north.

The right ascension of Neptune on the 1st is 4 h. 28 m., his declination is 20° 12′ north, his diameter is 2″.6, and he is in the constellation Taurus.

Neptune sets on the 1st at 2 h. 53 m. A. M. On the 28th he sets at 1 h. 6 m. A. M.

VENUS

is morning star. There is little to say of her, excepting that she is near the sun, rising an hour before him on the first part of the month and half an hour before him on the last part of the month.

The moon, two days before her change, is in conjunction with Venus on the 14th at 7 h. 42 m. P. M., being 4° 31′ south.

The right ascension of Venus on the 1st is 19 h. 30 m., her declination is 21° 58′ south, her diameter is 11″.2, and she is in the constellation Sagittarius.

Venus rises on the 1st at 5 h. 58 m. A. M. On the 28th she rises at 6 h. 1 m. A. M.

URANUS

is morning star. He will soon be near enough to the earth to be visible to the unaided eye.

The moon is in conjunction with Uranus one day after her last quarter, on the 9th, at 8 h. 29 m. P. M., being 1° 22′ south.

The right ascension of Uranus on the 1st is 14 h. 34 m., his declination is 14° 36′ south, his diameter is 3″.6, and he is in the constellation Libra.

Uranus rises on the 1st at 0 h. 34 m. A. M. On the 28th he rises at 10 h. 44 m. P. M.

Mercury, Jupiter, Mars, and Neptune are evening stars at the close of the month. Saturn, Venus, and Uranus are morning stars.

Honor to M. Pasteur.

On Dec. 27, 1892, all that is famous in French science, diplomacy, and politics assembled at the new Sorbonne, Paris, to celebrate the seventieth birthday of the great chemist and scientist, M. Louis Pasteur. The audience was a particularly distinguished and cosmopolitan one. It included the President of the Republic, his Excellency the Marquis of Dufferin and Ava, and other leading ambassadors accredited to France. English science was represented by Sir Joseph Lister, Sir Henry Roscoe, and Professor Ray Lankester. In opening the proceedings, M. Charles Dupuy, the Minister of Public Instruction, referred to the gathering as a scientific solemnity and a red letter day alike for France and humanity. Addressing M. Pasteur, he referred to him as follows:

"Victorious to-day over hydrophobia; to-morrow, perhaps, over cholera! Henceforth the formula is definite and complete, your disciples give it in two words: Fermentation and virus are living beings, vaccine is an attenuated virus, medicine has for its basis the artificial attenuation of virus. Thus obtaining the remedy from the evil itself, the microbian medicine has been founded!" The Secretary of the Academy of Sciences, M. Bertrand, who is also a member of the Pasteur Institute Council, referred to Pasteur's numerous successful researches, and M. Daubbie, also of the Institute, reminded the audience that it was as a mineralogist that M. Pasteur first attracted public attention. Sir Joseph Lister spoke on behalf of the English deputation, and many other addresses were delivered. On rising to reply, M. Pasteur was much affected by the emotion he evidently felt. He merely uttered a few words of thanks and then handed his son a written reply to read. In it reference was made to the advantages now enjoyed by those wishing to pursue scientific studies, as compared to when he was a young man. He spoke very appreciatively of the arrangements made for the ceremony, which tended to remind him of his past life. The deepest joy a man can feel, he said, was brought to him by the cosmopolitan nature of the audience. It taught him to believe that science and peace can triumph over ignorance and war. M. Pasteur was loudly cheered when his reply had been read, and as he left the Sorbonne he was the object of a popular manifestation. He afterward held a reception at his own house.

Photo Plates of Wonderful Sensitiveness.

At a meeting of the Mathematical and Natural Science Section of the Imperial Academy of Sciences of Vienna, on November 10, Professor V. von Lange presented the following communication from the engineer Victor Schumann, of Leipzig:

The photographic energy of the ultra-violet rays on collodion and gelatin plates decreases strikingly at the wave length 200 $\mu\mu$, and falls off to a similar extent toward the more refrangible side. The cause of this decline in energy lies in the fact which I have established spectrographically: 1. In the impermeability to light of the collodion and gelatin, in which the sensitive ingredient of the coating of the plate, *i. e.*, the silver haloid, is embedded; and (2) in the impermeability of the air which the rays have to traverse on their way to the plate. If we remove these two absorbents the silver haloid shows itself many times more sensitive for the rays beyond 200 $\mu\mu$ than it was in presence of the collodion and gelatin, and the photographic efficacy extends far beyond the previous limit of the ultra-violet light (wave length 185·2 $\mu\mu$). The production of a film of pure silver haloid on the plate offers great difficulties. A method for this purpose was hitherto not known. After numerous experiments I found a process by which I have now for two years prepared all the plates which I have required for observing the rays beyond the wave length 185·2 $\mu\mu$. The air could only be removed from the rays by exhausting the spectrograph. In this manner I have hitherto been able to follow about twenty different spectra far beyond 185·2 $\mu\mu$. All of them develop here an unexpected wealth of rays, but none to so high a degree as the hydrogen light of the Geissler tube. I estimate the number of the hydrogen lines which I have isolated at 600, and the shortest of their wave lengths at 100 $\mu\mu$. I have not as yet effected the measurements, for which, however, I have already made preparations. For illustration the speaker exhibited a tableau composed of H. V. Schumann's original plates, showing the portion of the ultra-violet hydrogen spectrum first photographed by the latter.—*Chem. News.*

ARMADILLOS AND AARD-VARKS.

BY R. LYDEKKER, B.A. CANTAB.

Of the three animals represented in the figures accompanying the present article, two are sufficiently alike to suggest to the ordinary observer their relationship to one another, but the third is so utterly different that it is difficult to point out any important character it has in common with the two others; nevertheless, naturalists generally regard all these three strange creatures as belonging to a single order of mammals, for which the name of Edentata is adopted. The signification of the term Edentata being toothless, the unsophisticated student would naturally be led to suppose that all the animals so named were utterly devoid of those useful but troublesome appendages. This, however, is far from being the case, the majority of the members of the group (among which are those figured here) having a considerable number of teeth. Still there is one feature in connection with the dentition exhibited by the whole of these so-called edentates, and this is that teeth in the front of the jaws, corresponding to the incisors of other mammals, are totally absent.

The mammals thus associated by these negative characteristics are now chiefly confined to the southern hemisphere, and include the sloths, anteaters, and armadillos of South America, the pangolins or scaly anteaters of Southeastern Asia and Africa, and the aard-varks of Africa, the true anteaters and pangolins being those in which teeth are wanting. In past times they were also represented by the gigantic megathere, and a number of other allied extinct forms ranging throughout America, which in some respects serve to connect the sloths with the anteaters. This marked restriction of the existing edentates to the southern hemisphere, and their special abundance in South America, at once stamps them as a very lowly group of animals, there being a well marked tendency for the preservation of the humbler forms of life in the southern continents and islands of the globe.

Of the three groups of termite-eating edentates, two —namely, the pangolins and the anteaters—are those which have entirely lost their teeth, while in the aard-varks those organs are retained. As teeth are obviously of no sort of use to animals subsisting on such a diet, we may regard the two former groups as those most specially modified for their particular mode of existence, and it may thus be suggested that they have taken to termite eating for a longer period than the aard-varks.

The armadillos, as their name (a Spanish one) implies, are distinguished by the solid armor with which their heads and backs are protected, and it is doubtless the peculiar appearance presented by these animals to which we owe the expression "hog-in-armor." In all the armadillo family the armor takes the form of a series of thicker or thinner bony plates embedded in the skin covering the head and back, and overlain by horny scales, while the under parts of the body and limbs are hairy, and in many species a larger or smaller number of stiff hairs protrude from between the joints of the armor. This bony armor is a perfectly unique feature among existing mammals, and since each plate is ornamented with a more or less elaborate sculptured pattern, such armor when cleaned by maceration forms a most beautiful object. In the true armadillos, as the one represented in Fig. 1, the shield of armor covering the head is quite distinct from that of the body, while the latter is divided into three distinct portions, namely, a large solid shield covering the forequarters, and separated by a larger or smaller number of free movable bands occupying the middle of the body from a nearly similar shield protecting the binder portion of the animal. In our figured example the number of the movable bands is only three, but they may vary from six to