SCIENCE.

FRIDAY, APRIL 3, 1885.

COMMENT AND CRITICISM.

THE TWO LATEST issues of volumes of observations, astronomical and meteorological, made at the U. S. naval observatory, to which we refer in another column, were received at our office presumably as soon as they were ready for general distribution; and we regret the necessity of calling attention to the delay with which the work of this institution is given to the scientific public. We are informed that this is due in no wise to neglect on the part of any officer of the observatory, but to the repeated exhaustion of the printing-funds annually allotted to the navy department to meet its current needs. However this may be, it is noticeable that the last four volumes — those issued since the delay at the government printing-office is said to have been the greatest hinderance — have only about half the number of pages of many former issues, owing largely to the abbreviated form of presenting the details of observation which the observatory wisely adopted in the volume for 1877.

There would seem to be no good reason why the printing of these volumes, requiring a specific sum each year, should not be provided for independently of the naval allotment of the printing appropriation, just as is now the case with many of the scientific publications of the government which are issued at stated intervals. It is to be hoped that the measure already on foot to secure this result may not end in defeat, as the gain will be great at no increase of expense whatever. The observatory is so far in arrears in this regard, that its foremost work should now be to bring the publication of its work up to date at any cost. The chief reason for making certain classes of observations lies in the expectation of their immediate availability for scientific use; and the publication, in part, of mere results in astronomical journals, does not relieve the inconvenience and uncertainty attending one's inability to refer, when desirable, to the extended details of the work as presented in the complete volumes.

'FLATLAND,' to which we referred a short time ago, besides giving the general reader an easy view of the road by which the mathematician enters the world of n dimensions, contains also a clever picture of the ludicrousness of various social theories now under discussion, when pushed to their legitimate consequences. The inhabitants of that country have the shape of various plane figures, — triangles, squares, pentagons, and polygons, — and the degree of their intelligence is in direct ratio to the number of their sides; so that 'intellectuality' becomes synonymous with 'angularity,' and the circle is a member of the priestly order, — the highest class of all. Beyond the soldiers and the lowest class of workmen, who are triangles with only two sides equal, — a figure so irregular that it can hardly be considered human, — it is a law of nature that each male child shall have one more side than his father.

Evolution is thus a perfectly regular and definite process; and a man's remoteness from the flat apes, his ancestors, can be known by simply counting the number of his sides. Any slight irregularity in a figure is equivalent to a moral imperfection; and to train up a child in the path of virtue is to keep him straight in a literal sense. If he is born with any marked unevenness, he must be taken to one of the regular hospitals for the cure of that disease, or he is in danger of ending his days in the state prison. There is no way of knowing whether a particular delinquency calls for punishment or reward as a means of reform.

The author, a square, confesses that he is at a loss what course to pursue when one of his own hexagonal grandsons pleads as an excuse for his disobedience that a sudden change in the temperature has caused an unequal shrinking in his perimeter, and that the blame ought to be laid, not on him, but on his configuration, which can only be strengthened by abundance of the choicest sweet-meats.

The women in Flatland are straight lines. As they have no angles, they have no intellect; and as they have nothing to say, and no constraint of wit, sense, or reason to prevent their saying it, their conversation is a great bore. To such an extent has the system of female non-education or quietism been pushed, that they are no longer taught to read, nor to master arithmetic enough to count the angles of their husbands or children. The author fears that this policy has been carried so far as to react injuriously on the men, who are obliged to lead a bi-lingual or even a bi-mental existence. They must be able to speak not only the female language of emotion, but also the male language of science, in which 'love' becomes 'the anticipation of benefits,' 'duty' becomes 'necessity' or 'fitness,' and other words are correspondingly transmuted. In the presence of women, moreover, the language used implies the utmost deference for their sex; but behind their backs they are both regarded and spoken of as being little better than 'mindless organisms.' The strain of this dual existence, it is believed, has some tendency to enfeeble the male intellect, and on that ground alone the author appeals to the authorities to reconsider the regulations of female education.

LETTERS TO THE EDITOR.

The sun-thermometer during the recent eclipse.

At mid-day, just before the commencement of the eclipse, Draper's self-recording sun-thermometer of this observatory indicated a sun-temperature of 92° F., while the self-recording thermometer in the shade at the same time indicated 33° F.

When the obscuration was at its maximum, 1.30 P.M., the sun-temperature had fallen to 69°, while that in the shade was still 33°.

At the end of the eclipse, 2.50 P.M., the sun-temperature had risen to 82°, and that in the shade to 34°.

It is interesting to note from the above facts, that one-half of the difference between the sun-temperature and that in the shade, at the beginning of the eclipse, is 29½°; while the actual fall of temperature during the eclipse, as shown by the sun-instrument, was 23°. This is as it should be, for only about one-third of the sun was obscured. It is probable, that, if the eclipse had been total, the readings of the two instruments would have been the same.

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An attempt to photograph the corona.

It occurred to the writer that the late partial solar eclipse would be an excellent chance to repeat Huggins's experiments on photographing the corona. A three-inch refractor of about forty inches focal length was employed. A drop-shutter was attached to the lens, giving an exposure which was estimated at about a fifth of a second. A piece of deep-violet glass was procured, which could be inserted just in front of the plate, or removed, at pleasure. By its use a negative image of the sun's disk was obtained, but without it the plate gave a reversed image; the sun being a positive and transparent, while the surroundings remained negative and were dark, the appearance being strikingly similar to that of a photograph of a total solar eclipse. Both bromide and chloride plates were provided; but, as with Mr. Huggins, the latter proved to give much the better coronal effects. A ferrous-oxalate developer was employed, which contained a large proportion of potassium bromide. The weather throughout the eclipse was wholly favorable; and we began photographing at ten o'clock, two hours and twenty minutes before the eclipse began, and continued at work until five minutes past four, or an hour and ten minutes after it had terminated. Photographs were taken every half-hour, with extra ones interpolated at the more interesting phases, making twenty-nine pictures in all.

Very corona-like effects were certainly produced, faint rays here and there shooting out perpendicularly to the sun's surface. But unfortunately no two of the pictures were alike, and the corona in front of the moon was quite as well marked as that on the other side of the sun. Indeed, the most corona-like ray produced, appeared in one photograph stretching directly towards, and terminating at, the centre of the moon. Nine photographs taken in succession showed one side of the halo stretching to a greater distance than the other; but in one of these the darkening was carried so far out, that it became nearly separated from the rest of the corona, and appeared as a distinct dark circle of the same size as, and by the side of, the image of the sun. This, of course, showed it to be merely an internal reflection of that image, and nothing more. During the course of the experiments, the object-glass was revolved about its optical axis, photographs being taken in four positions. No effect, however, was discernible upon the plates.

The conclusions I should draw from my experiment are, 1°, that, though it is very easy to obtain a corona-like image, one may readily be deceived in such matters, and the same effect be obtained by our atmosphere, without the aid of the solar corona, combined with little defects in the gelatine film (this, I think, is conclusively shown by the extension of the pseudo-corona in front of the moon); 2°, that chloride