SCIENCE.

FRIDAY, JUNE 12, 1885.

COMMENT AND CRITICISM.

LIEUT. CORNWELL, who is to carry on the series of latitude observations at the U.S. naval observatory, referred to in a previous number of *Science* (vol. v. p. 60), has recently returned from an interview with Professor Oom, the director of the observatory at Lisbon. A list of eleven stars has been selected, and the details of the work have been agreed upon. But two stars will be observed in a night, each star being observed east and west of the meridian before the succeeding star is taken up. Some fifteen or twenty observations of each star will be made during the year. With the exception of α Lyrae, the stars range from the fourth to the sixth magnitude, and the greatest zenith distance at which any star will be observed at Washington is not greater than twelve or thirteen degrees. It is proposed to erect an azimuth mark for testing the stability of the instrument; and a careful determination of the level will, of course, be made with every observation.

This question of the variability of latitudes is one of considerable interest. Theoretically, periodical changes of latitude may occur, and an examination of observations made at a number of northern observatories during the past seventy-five years — Königsberg, Milan, Naples, Paris, Pulkowa, and Washington — appears to confirm the existence of such changes. At Pulkowa, which furnishes the most careful series of observations, a diminution of the latitude of $0.23''$, equivalent to about twenty-three feet, is indicated between the years 1843 and 1872; but in all these cases the variations are small, and we must be extremely cautious in ascribing them to actual changes of latitude. A series of observations made at Willet's Point by young engineer officers, under the direction of Gen. Abbot, also appears to have some interest and possible bearing on the question. By these observations a diminution of ninety-five feet is shown in the latitude since 1880; but here, again, it is quite possible that this apparent change may be due to errors of observation. Fergola's plan of making a careful series of observations at pairs of observatories, in about the same latitude, but differing considerably in longitude, will, if thoroughly carried out now, go far towards enabling us to give a definite answer to the question fifty years or more hence.

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THE *American engineer* of May 8 contains an article on the levee system of river improvement which demands notice from all who wish the line between fact and fiction to be sharply drawn. The case presented is briefly this: the Mississippi-River commission, in 1883, asserted that they had restored the levees along the Yazoo front so as to exclude overflow from the head of that basin, and that as a consequence the height of flood at Vicksburg was about five feet lower in 1883 than it had been in 1882; and upon this assertion of facts the commission based an argument for the general construction of levees along the Mississippi as a means of channel improvement. The flood of 1884 came, and rose three inches higher at Vicksburg than it did in 1882, thereby completely overthrowing all the argument of the commission.

In the article referred to, 'J. B. J.' quotes from later reports of the commission proof that the commission had not restored the levees along the front in question in 1883, nor had it been done in 1884. Unless the clearly implied charge that this misstatement was wilful is successfully met by the members of the commission who signed the report of 1883 (General Comstock did not), it would seem that the

president of the United States ought to make inquiry, and relieve the country of the discredit which must come from the challenged veracity of an official body whose acts and sayings are being closely followed abroad and at home.

LETTERS TO THE EDITOR.

**** *Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Professor Hastings's theory of the corona.

I SHOULD be glad, with your permission, to make a few remarks with reference to a passage in Professor Hastings's letter in your issue of April 24. Professor Hastings states that he shows, in his report of the eclipse expedition to Caroline Island, that all the characteristics of the corona may be explained naturally and easily by his diffraction theory, *with the exception of the occasional filamentous structure.* The words which I have italicized convince me that Professor Hastings cannot have paid sufficient attention to the abundant and irrefragable evidence as to the solar corona which is afforded by photographs taken during total solar eclipses. These photographs prove that what Professor Hastings summarily characterizes as 'occasional filamentous structure,' constitutes the greater portion of the corona. In the photographs of the eclipse of 1871, there were more than a hundred distinct details of this kind, which I measured and drew, when assisting Mr. Ranyard in describing and cataloguing the details of the structure of the corona (*Mem. roy. astron. soc.*, xli. 657-686). These details were, of course, not all visible on a cursory inspection of the negatives; many of them were not perceived till after long study: but, once seen, there was no mistake as to their existence, and none were described that were not visible on at least three of the plates.

Moreover, since the coronal rays are very various in direction, and are seen in the negatives one behind the other, and at all angles of projection, it is evident that the corona must in reality be far more 'filamentous' than it appears in the photographs. To a greater or less extent, the same character is shown in negatives of other eclipses, though somewhat less of it is visible in some of the more recent photographs, probably on account of the greater density of the film in the case of those taken on the extremely sensitive dry plates.

I cannot enter into the optical points connected with Professor Hastings's theory, but simply wish to point out, that, if it will account for every thing except the 'filamentous structure,' it accounts, after all, for very little. W. H. WESLEY.

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The natural gas-wells of north-western Ohio.

The gas-wells that have been drilled within the last year in Hancock and Wood counties, O., have furnished some interesting, and to some degree unexpected, information as to the geological foundations of the state. They show the presence of several formations that nowhere appear in outcrop within the limits of Ohio. The section furnished by them agrees quite closely, as to its elements and its general lithology, with the New-York scale.

I have lately examined the carefully kept records and drillings of six of these wells. They agree entirely in their main features. All begin in upper Silurian limestone, and all find their main supply of gas in the Trenton limestone. The section furnished by them is as follows:—

	Feet.
Niagara limestone, gray and blue, dolomitic	200
Niagara clay, a characteristic bed in central Ohio	2-4
Clinton limestone and shale, high colored	75
Medina shale, red and blue	50-100
Hudson River shale, gray and blue	400-500
Utica shale, dark, almost black, in places	275
Trenton limestone	300
Bird's-eye limestone	?

The Trenton limestone was drilled through in but a single well.

The Niagara clay contains characteristic fossils, as does also the Hudson-River shale and the Utica shale. The former shows chaetetoid corals, and fragments of Zygospira and Orthis. The Utica shale contains Leptololus insignis Hall, and fragments of the spines of Echinognathus of Walcott apparently. The Trenton limestone is crystalline and hard, but it shows the presence of fossils in abundance.

The gas obtained from the wells is delivered with moderate pressure. It contains a notable quantity of sulphuretted hydrogen. It is used so far mainly for heating and for steam-production. Judicious estimates put the amount yielded each day by three wells in Findlay, the county-seat of Hancock county, at five hundred thousand feet. EDWARD ORTON.

Columbus, O., June 1.

A tropical American turtle on Anticosti.

Professor John Macoun, botanist to the Canadian geological and natural-history survey, has shown me a turtle which was given him by the light-keeper at West Point, Anticosti, in August, 1883. It was found living near the lighthouse, and was the only one seen by the keeper during his twenty years' residence on the island. Mr. F. W. True, to whom I sent the specimen for identification, pronounces it to be a half-grown Chelanoides tabulata (Walbaum) Agassiz. The habitat of the species is tropical South America and the West Indies, whence it was probably brought to Anticosti on some vessel. C. HART MERRIAM.

Abert's squirrel.

On the 10th of April last, on my return from a five-days' visit to the pueblo of the Zuñis in New Mexico, I drove through an extensive pine-forest, which the road enters a few miles from Fort Wingate, my destination.

There were in the ambulance with me, besides the driver, Prof. J. W. P. Jenks of Brown university, curator of its museum, and a fellow-traveller, a friend from Philadelphia. Professor Jenks was eagerly on the lookout for rare things in south-western birds and mammals for his college museum, while his friend was enjoying himself in examining two specimens we had taken along the road, and joining in the conversation as best a layman may, when two enthusiastic naturalists formed the odds against him.

Suddenly the driver stopped the conveyance, and directed my attention to a large gray squirrel that had just scampered up the trunk of one of the lofty pines, and was now sitting, partly hiding, on the lower limb, close to the body of the tree.

In a moment this magnificent creature was mine, dead at my feet.