history of the United States' were drawn from nature on stone by Sonrel.

WASHINGTON LETTER.

THE Chemical society, although one of the youngest, is by no means the least active of the scientific societies of Washington; in fact it will take a relatively high rank in that respect. It is presided over by Professor F. W. Clarke and its members number about forty. The first meeting for the season was held on the evening of the 8th of October. It happened that both the president and secretary were absent, but there was a good attendance of members and an interesting meeting was held. Mr. Chatard gave an informal account of his recent examination of the leading salt works of the country, together with a general discussion of the manufacture of salt in America. Mr. Chatard has been engaged for some time under the U. S. geological survey in the study of this question, especially with a view of determining whether any practical use can be made of the great alkali deposits which are so abundant in the United States, and it is likely that the subject will occupy his attention for some time to come.

It has sometimes been found difficult to provide interesting material for the 'first meetings' of societies here, for the reason that many of the active contributors to their proceedings have just returned from their summer campaigns and have had no leisure for working up the material which they have accumulated. The Chemical society was this year an exception to the rule and so, also, was the Philosophical society, which held its first meeting on the evening of Saturday, the 10th of October. Dr. Billings had provided an interesting programme in the exhibition and discussion of a large and valuable collection of anthropometric apparatus recently received at the Army and navy medical museum. A large part of it was a duplicate of what had been used by Galton in his laboratory, and a very interesting part had been manufactured in Germany by Mr. Cattell. It was understood that the latter involved some improvements on forms devised by Mr. Stanley Hall for the investigation of the time occupied in certain simple mental processes. By means of a sort of drop shutter, somewhat resembling a guillotine, the subject upon whom the experiment was being made was permitted to see for only an instant the object, the nature of which he was to determine as quickly as possible. The thing to be seen may be a card of a particular color, the subject being required to decide what color it is, or but two colors may be used and he may be required to decide which of the two appears. Diagrams of different forms may be used, and the time occupied in judgment of form determined. Cards with various numbers of well defined dots on them may also be displayed, and the subject required to announce the number as determined from his instantaneous view of the card. In this way something may be known in regard to the maximum number of individual objects which one recognizes, or can correctly announce, without the operation of counting. It was stated that experiments conducted in this manner gave three as this maximum, which is certainly less than the result obtained by a different mode of experimentation. The apparatus was arranged to register the time intervals by means of a Hipp's chronoscope. Considerable discussion resulted from the exhibition of the instruments, and the use of a Hipp's chronoscope was criticised by several members. It is unquestionably complicated in its form and requires a good deal of skill and experience in its use. There are several modern methods of time measurement for small intervals which appear to excel it in simplicity of construction, ease of operation, and accuracy of performance. So much interest was manifested in this discussion that it was found necessary to postpone a paper on psychrometry by Mr. H. A. Hazen, which was on the programme for the evening, and it will be taken up at the next meeting.

Lieut. Cornwall of the Bureau of navigation, in charge of the 'division of compasses,' has gone to Mr. Roach's ship-yard at Chester, Penn., to make experiments on the magnetic constants of the new steel cruisers, Boston, Atlanta, and Chicago. The last is still unfinished and as its azimuth has been constant for some months, the investigation of its magnetism now, and again after launching, will doubtless be of much interest.

Within the past week the capital has been visited by Mr. Clements R. Markham, secretary of the Royal geographical society of London. His stay in the city was necessarily short, and he was unable to visit all of the centres of scientific activity in the city; but his brief visit was much enjoyed by those who had the pleasure of making his acquaintance.

Not everybody is aware of the interest which Professor A. Graham Bell has long taken in the instruction of deaf-mutes, or that he has for some time maintained an 'experimental' school for deaf children in this city. Mr. Bell has recently taken a very important step in the organization of a normal or training school for teachers in connection with this school for children. He is desirous of training young ladies who are thoroughly interested in this work, in the methods which he has devised, tested, and approved for instructing deaf-mutes, and especially in the methods of teaching

articulation, upon which subject Mr. Bell has bestowed a vast deal of time and study. But a limited number of teachers in training can be accommodated, and the opportunity is doubtless one which will be eagerly sought.

The national museum, Mr. Barnum, and the big elephant Jumbo, have all received a good deal of public notice arising from the singular death of the gigantic and lamented beast. The public was at first assured that the bones of this creature, fated to disturb two continents, were to rest in the national depository, although it was stated that the stuffed skin was to adorn the collection of a New England college. Recent information, however, seems to indicate that Mr. Barnum has awakened to the fact that he now has two Jumbos, instead of one, and that both may continue to be sources of profit for some time to come as parts of one or two travelling 'aggregations.' There is little doubt but that a year or two of this sort of an existence would greatly diminish the value of the skeleton of the elephant, and it is stated that the director of the national museum is in correspondence with Mr. Barnum with a view to prevent such a calamity, in which effort everybody wishes him success. Reference was made in the letter of two weeks ago to the large acquisitions of the museum through the New Orleans exposition. The curators of the various departments are getting some of these collections into shape, and although they are in some instances embarrassed by lack of space, some effective displays will be made. A very valuable, and, in some respects, typical collection was presented by the Japanese government, and has just been unpacked. It is intended to present an epitome of the arts and industries of the country, and as such it will doubtless be kept together for some time, and conspicuously displayed. It includes illustrations of the handicraft of the ingenious natives of Japan in pottery, porcelain, lacquer, bronze, silver, and copper, and also models and water-color sketches illustrating Japanese fisheries, domestic occupations and the like. Z.

Washington, D. C., Oct. 19.

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.*

An attempt to photograph the corona.

Mr. W. H. Pickering having courteously sent me a copy of *Science* (August 14), containing an article entitled 'An attempt to photograph the solar corona without an eclipse,' may I ask you to insert the few lines which follow in the next number of your journal?

Passing by all those points which are covered, directly or indirectly, by my reply to Mr Pickering's first letter (*Science*, April 3), I find only two matters which I consider it necessary to notice.

1. Mr. Pickering says: "The inferiority of the best gelatine plates to the human eye in this respect [small differences of light] is very readily shown by an attempt to photograph distant mountains." He then goes on to say: "Another illustration of the same thing is the impossibility of photographing the moon in the daytime, when the sun is high above the horizon. Although the moon may be perfectly distinct to the eye, the negative shows no trace of it."

To your scientific readers, the reasons will readily suggest themselves, why, in the case of the moon in the daytime at some angular distance from the sun, the eye has an advantage over the plate, while, in the case of the corona, the plate has a great advantage over the eye. Apart from any such considerations, as a matter of fact, *there is no difficulty in photographing the moon at noonday.* Yesterday I took, with the apparatus used on the corona, four negatives on bromide plates (Edward's), between 11.30 A.M. and noon, in full sunshine. On all the plates, the moon is very distinct and well-defined. The moon at noonday, unless too near the sun, is an easier object to photograph than the corona. It is obvious, therefore, that photographic methods, which are not delicate enough for the moon, must utterly fail if applied to an object still more difficult, as the corona undoubtedly is at ordinary elevations.

If Mr. Pickering's statement of the 'impossibility' of photographing the moon under the conditions already named, rests upon his own experiments, some light may come upon a point which has occasioned me surprise, namely, that Mr. Pickering does not appear to get upon his plates the defects of his own apparatus; for example, those of the position of his shutter and those of his spectacle lens. In some experiments I made with a shutter similarly placed, very strong diffraction effects appeared on the plates, effects stronger than any photographic action which could be supposed to be due to the corona.

2. With regard to Mr. Pickering's experiments, I would point out that the conclusion to which they lead him, namely, "It therefore seems that even in the clearest weather the reflected light of the atmosphere is 300 times too strong to obtain the faintest visible image of the true coronal rays," appears to me to be irreconcilable with the direct observations of Professor Langley and others of the planets Mercury and Venus, as black disks before they reach the sun. Professor Young says: "Of course this implies behind the planet a background (of corona) of *sensible* brightness in comparison with the illumination of our atmosphere." (The sun, p. 229.)

The Bakerian lecture read recently before the Royal society, in which I have discussed some of these points more fully, will be in print in a few weeks. The photographic method is now being tried at the Cape of Good Hope, under the scientific conditions I have pointed out as essential, by Mr. Ray Woods, under the able superintendence of Dr. Gill, F.R.S. WILLIAM HUGGINS.

From the above interesting communication by Dr. Huggins I regret to find that he has failed to see my reply published in *Science*, for April 29, to his letter of April 13. My experiments on the position of the drop-shutter were there taken up with some detail. Also other points presumably referred to in the beginning of his article are discussed.

As to the observations of the planets Mercury and Venus, as black disks before they reach the sun; the