OUR ASTRONOMICAL COLUMN

PHOTOGRAPHIC DETERMINATIONS OF STELLAR POSITIONS.—Dr. B. A. Gould, in a paper presented at the Buffalo meeting of the American Association for the Advancement of Science on August 20, 1886, gives some interesting particulars with regard to his photographic work at Cordova. He states that no northern stars were photographed there except the Pleiades and the Præsepe. On the Pleiades plates all but one of Bessel's stars are found, which fall within the limits of the field; the missing one being of the magnitude 9½, whilst there are depicted on the plates other stars of the magnitudes 10, 10½, and 11. About seventy southern clusters have been repeatedly photographed at Cordova, also more than a hundred double stars, whilst the total number of photographs which Dr. Gould has on hand for measurement is about 1300, only a few having been preserved in which the images are not circular. In addition to these classes of objects, special attention was given for many years to taking frequent impressions, at the proper seasons, of four stars selected, on account of their large proper motions, as likely to manifest appreciable annual parallax. All but one of these four stars—β Hydri—have been included in the lists observed and discussed by Drs. Gill and Elkin at the Cape. Still, it will be a matter of much interest to apply the photographic method of investigation to the same problem, even if for no other purpose than a comparison of the results of the two methods. With regard to the progress made in the measurement of the Cordova photographs, Dr. Gould states that the measurements thus far completed are those of the double stars, the four stars with large proper motion, the Pleiades, the Præsepe, and the clusters Lacaille 4375 and κ Crucis. The corresponding computations have been made as yet only for a portion of the Pleiades plates, but it is expected that all these will be completed at a comparatively early date. The results deduced from the Pleiades photographs will be looked for with much interest, especially as Dr. Elkin has recently executed at Yale College a heliometric triangulation of the principal stars of the group, and the comparison of the results will be a severe test of the photographic method for the determination of stellar positions. But astronomers expect good work from Dr. Gould, and they are not likely to be disappointed. Dr. Gould's paper is published in the *Scientific American Supplement*, No. 556.

GORE'S NOVA ORIONIS.—Rev. T. E. Espin announces in *Circular* No. 9 of the Liverpool Astronomical Society that, observing on the night of September 14, he found the *Nova* to have a magnitude of 9·2. The star, he says, appeared very red. The small comes *f* was estimated as of 9·7 magnitude.

HELIOMETRIC OBSERVATIONS OF THE PLEIADES.—We learn from *Science*, vol. viii. No. 187, that at the recent meeting of the American Association Dr. Elkin communicated a paper upon a comparison of the places of the Pleiades as determined by the Königsberg and Yale College heliometers. The results given were provisional, but they show unquestioned change of position with reference to η Tauri since 1860. Most of the brighter stars of the group, as shown by Newcomb in his "Catalogue of Standard Stars," go with η Tauri, but among the smaller stars there are unquestioned departures from this community of proper motion.

GOULD'S "ASTRONOMICAL JOURNAL."—Our readers will be glad to learn that there is a prospect of the publication of this valuable periodical being resumed. The American Association at the recent meeting passed a unanimous resolution congratulating Dr. Gould on the proposed revival of the *Journal*, and expressing its best wishes for his success.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 SEPTEMBER 26—OCTOBER 2

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on September 26

Sun rises, 5h. 54m.; souths, 11h. 51m. 17·4s.; sets, 17h. 48m.; decl. on meridian, 1° 19′ S.: Sidereal Time at Sunset, 18h. 10m.

Moon (New on September 27) rises, 3h. 42m.; souths, 10h. 37m.; sets, 17h. 19m.; decl. on meridian, 7° 12′ N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian ° ′
Mercury ...	5 42 ...	11 49 ...	17 56 ...	0 34 N.
Venus	4 12 ...	10 50 ...	17 28 ...	6 44 N.
Mars	10 45 ...	15 3 ...	19 21 ...	19 32 S.
Jupiter... ...	6 49 ...	12 30 ...	18 12 ...	4 18 S.
Saturn... ...	23 8* ...	7 11 ...	15 14 ...	21 28 N.

* Indicates that the rising is that of the preceding evening.

Sept. h.
26 ... 17 ... Venus in conjunction with and 0° 34′ north of the Moon.
28 ... 3 ... Mercury in superior conjunction with the Sun.

Variable Stars

Star	R.A. h. m.	Decl. ° ′		h. m.	
Algol	3 0·8	40 31 N.	Sept. 29,	3 43	*m*
			Oct. 2,	0 31	*m*
λ Tauri	3 54·4	12 10 N.	,, 2,	5 16	*m*
ζ Geminorum ...	6 57·4	20 44 N.	Sept. 29,	2 48	*m*
T Geminorum ...	7 42·5	24 1 N.	Oct. 1,		*M*
δ Libræ	14 54·9	8 4 S.	Sept. 28,	1 45	*m*
U Coronæ	15 13·6	32 4 N.	,, 28,	23 27	*m*
U Ophiuchi	17 10·8	1 20 N.	,, 28,	1 20	*m*
				21 28	*m*
W Sagittarii ...	17 57·8	29 35 S.	,, 28,	0 0	*M*
U Sagittarii... ...	18 25·2	19 12 S.	,, 28,	6 0	*m*
			Oct. 1,	6 0	*M*
R Lyræ	18 51·9	43 48 N.	Sept. 28,		*m*
S Vulpeculæ ...	19 43·7	27 0 N.	,, 29,		*m*
δ Cephei	22 24·9	57 50 N.	Oct. 2,		*m*

M signifies maximum; *m* minimum.

Meteor Showers

The *Aurigids*, R.A. 85°, Decl. 50° N., the *Aquarids*, R.A. 33°, Decl. 2° S., and meteors from the following radiants have been observed at this time:—From Musca, R.A. 46°, Decl. 26° N.; near ι Aurigæ, R.A. 70°, Decl. 32° N.; and near α Cephei, R.A. 315°, Decl. 62° N.

Stars with Remarkable Spectra

Name of Star	R.A. 1886·0 h. m. s.	Decl. 1886·0 ° ′	Type of spectrum
T Arietis	2 41 57 ...	17 1·9 N. ...	III
D.M. + 8° 443 ...	2 47 38 ...	8 52·1 N. ...	III.
ρ Arietis	2 49 23 ...	17 52·1 N. ...	III.
α Ceti	2 56 18 ...	3 38·5 N. ...	III.
ρ Persei	2 57 50 ...	38 23·9 N. ...	III.
D.M. + 57° 702 ...	3 2 40 ...	57 28·2 N. ...	IV.

THE BRITISH ASSOCIATION

SECTION G

MECHANICAL SCIENCE

OPENING ADDRESS BY SIR JAMES N. DOUGLASS, M.INST.C.E., PRESIDENT OF THE SECTION

. . . I propose to address you on a subject with which I have been practically connected for nearly half a century, that is, the development of lighthouses, light-vessels, buoys, and beacons, together with their mechanical and optical apparatus. . . .

During the last century a very considerable increase has occurred in the number of lighthouses and light-vessels on the various coasts of the world, which have been required to meet the rapid growth of commerce. Only during the last twenty-five years can accurate statistical information be obtained, and it is found that in the year 1860 the total number of coast lights throughout the world did not exceed 1800, whereas the present number is not much less than 4000. . . .

Concurrently with the enormous increase in the number of coast lights during the last fifty years, very great improvements have been effected from time to time in their efficiency. In 1759 Smeaton's lighthouse on the Eddystone was illuminated by 24 tallow candles, weighing ⅔ lb. each. The intensity of the light of each candle, I find, from experiments made with similar candles prepared for the purpose, to have been about 2·8 candle units each; thus the aggregate intensity of radiant light from the 24 candles was only about 67 candle units. No optical apparatus, moreover, was used for condensing the radiant light of the candles, and directing it to the surface of the sea. The con-