Our Astronomical Column.

RECENT SUNSPOTS AND MAGNETIC STORM.—Although no unusually large spot has appeared as yet this month, the sun's disc has presented a striking feature, consisting of a procession of four large groups of spots in the northern hemisphere. Some of the spots were occasionally naked-eye objects to keen vision, but as they kept just on the limit of visibility they have not been included in the list of the largest spots given from time to time in these columns. Their approximate positions will be of interest to observers, however, and are tabulated as follows:

Group.	Central Meridian Passage.	Longitude.	Latitude.	Area.
a	Oct. 9·2	232°	15° N	700
b	11·2	205	18 N	900
c	13·7	173	16 N	600
d	16·7	133	24 N	650

(The areas, corrected for foreshortening and expressed in millionths of sun's visible hemisphere, were measured on Oct. 13.)

Group *d*, comprising a roughly circular spot with small companions, represents the return of the large September spot No. 10.

On Oct. 14, at 20^h, the commencement of a magnetic disturbance was recorded at Greenwich, which continued for about 12 hours, the greatest deflexion of the declination needle being about 0·5°. At 19^h on Oct. 15 a recrudescence of the disturbance took place which rapidly developed into one of great magnitude, the declination traces showing extreme deflexions of more than 1°. Serious difficulties in telegraphic transmission were experienced at the same time, and a display of the aurora was reported from America. At the time of the commencement of the preliminary disturbance, the longitude of the sun's central meridian was 157°, and at the commencement of the great disturbance it was 145°. As will be seen from the above table, the present instance is an example of the considerable uncertainty in ascribing a relation between a particular sunspot and a magnetic storm, judging merely from the position and appearance of the spot. Spectroscopic observations may, of course, come to hand which will throw some light on the matter.

It may be added that the general activity of the sun is still increasing. Apart from the occurrence of spots and faculæ, this fact is shown by the prominences during the last three months. Mr. Newbegin reports that, for the past three weeks, the average number per day he has observed spectroscopically at the sun's limb is 20.

UNUSUAL DISPLAY OF LARGE METEORS.—Mr. W. F. Denning writes that during the three nights Oct. 9 to 11 four brilliant meteors were observed by himself or friends at Bristol, and that three recorded paths indicated a well-defined radiant in Corona at 230° + 33°.

On the evening of Oct. 9 at 20^h 30^m G.M.T. a bright meteor, equal to twice the apparent magnitude of Jupiter, was seen in Draco moving from 244° + 47° to 261° + 59°; motion rather swift. On the same evening at 22^h 20^m a fireball, three or four times the brightness of Venus, appeared in Auriga, falling approximately from Auriga to low in the N.W. It left a long vaporous trail which remained visible for ten minutes or more. Near the end of its flight it gave a great outburst of light which illuminated the sky and land. This brilliant object had a radiant at about 262° + 55° and was probably a fragment of Giacobini's comet of 1900. The comet has a radiant at 253° + 56° as computed by Rev. M. Davidson, and its orbit is nearest to the earth (distance 5½ millions of miles) on Oct. 9.

On Oct. 10 at 20^h 20^m a slowish meteor equal in brightness to Venus traversed part of Cygnus, crossing the stars ϵ and ξ Cygni, the path being from 318° + 30° to 333° + 32°. It left a bright streak for several seconds and burst with a strong flash when between the two stars mentioned.

On Oct. 11 at 21^h 17^m a meteor as luminous as Jupiter appeared in Perseus, and shot from 53° + 43° to 53° + 23°.

It is an unusual circumstance to get a radiant from brilliant meteors alone. A singular abundance of fireballs has, however, diversified the present season since September 6. They have been directed from a number of different showers, though several have apparently had their origin in radiants near the N.E. and N.N.E. region of the horizon. Corona, as a radiant of meteors in October, is quite unknown, for that constellation is low in the N.W. in the evening hours and sets before 23^h at this time of the year.

COMETS.—The comet Giacobini-Zinner, discovered in 1900, and seen again on its second return in 1913, has been detected by Dr. Schwassmann at Bergedorf on Oct. 16, 17^h 50^m U.T., in R.A. 17^h 24^m 52^s, N. Decl. 2° 32′, magnitude 14·0. The indicated value of T, the perihelion passage, is Dec. 11·77, 1926, about four days later than Mr. Cripps's predicted date. His other elements are: ω 171° 44′ 8″, Ω 195° 56′ 35″, i 30° 43′ 14″, ϕ 45° 47′ 29″, log q 9·99726, equinox 1926·0.

EPHEMERIS FOR 0^h U.T., CORRECTED BY ABOVE OBSERVATION.

	R.A.	Decl.	log r.	log Δ.
Oct. 24	17^h 45·1^m	0° 35·1′ N	0·0836	0·1358
Nov. 1	18 9·9	1 38·5 S	0·0618	0·1212
,, 9	18 37·9	3 55·9	0·0415	0·1061
,, 17	19 8·6	6 15·3 S	0·0239	0·0908

This makes the sixth comet to pass perihelion in 1926, four being periodic and two parabolic.

Neujmin's Comet is expected to pass perihelion on January 2 next; however, if a doubtful object observed by Mr. Neujmin in 1920 was really his comet, the date will be 22 days later. The following ephemeris for 0^h is by Mr. B. F. Bawtree, on the earlier assumption:

	R.A.	N. Decl.
Oct. 23	9^h 59·3^m	18° 34′
,, 31	10 23·3	15 48
Nov. 8	10 47·3	12 45

As two revolutions have taken place since discovery, there is considerable uncertainty in the positions. The comet is likely to be faint.

Mr. J. Polak, of Saratov, had investigated the perturbations of Holmes's comet, discovered in 1892, and seen again in 1899 and 1906, but not since then. Dr. Zwiers calculated its perturbations up to 1906, but after his death no one continued the work. Mr. Polak shows that the Jupiter perturbations in 1908 were very large, increasing the period by 6 months, and diminishing the eccentricity from 0·412 to 0·379. This explains the failure to find the comet in 1913 and 1919. The return in the former year was a very favourable one, and an ephemeris is given in *Astr. Nach.* 5465. The general region is Aug. 4, R.A. 1^h 0^m; N. Decl. 20°; Oct. 3, R.A. 0^h 34^m; N. Decl. 30°. Plates of that region taken in 1913 should be examined for images of the comet.

The perturbations since 1908 have been small and the next perihelion passage will be near March 12, 1928. The comet may be seen (especially by southern observers) in the autumn of 1927. As this is one of the few comets discovered in England it is satisfactory to find that work on it is resumed.

Astr. Nach. 5466 contains an interesting study of the brightness of comet Tempel II in 1925. During the month of July it brightened up four magnitudes, from 10·5 to 6·5; log r changed from 0·14 to 0·12, and log Δ from 9·58 to 9·51. These changes are so small that it is clear that the brightening was mainly due to physical change in the comet. One may conjecture that at greater distances the sun's physical effect on the cometic envelopes is insignificant, but that it becomes important at a certain point (not apparently the same for all comets), and henceforth develops rapidly with approach to the sun. It is, however, difficult to frame laws that will cover all cases.