world, and was a director in the Parisian Gas Company and the Eastern Railway of France. His family relations were singularly happy. He leaves behind him a group of five sons. In addition to the treatise on aluminium already alluded to, Deville was the author, in company with Débray, of an exhaustive work in two volumes on the "Métallurgie du Platine" (1863).

T. H. N.

CONVERSAZIONE AT KING'S COLLEGE

ON Saturday, July 2, a brilliant and successful *conversazione*, given by the Council and the Academical Staff of King's College, brought to a conclusion the celebration of the fiftieth anniversary of the opening of the College. In the afternoon H.R.H. the Prince of Wales, accompanied by H.R.H. the Princess of Wales, distributed the College prizes to successful students, and the College rooms were converted into tastefully decorated drawing-rooms and picture galleries, in which were exhibited many very choice pictures and works of art.

The library was furnished with microscopes which had been lent by members of the Microscopic Society. The large entrance hall and the front of the College were brilliantly lighted by three Crompton electric lights, which burnt with remarkable steadiness throughout the evening. In the scientific department, the museum of King George III. contains an unrivalled collection of mechanical and physical apparatus, and is especially rich in apparatus of historic interest. The nucleus of the collection was presented to the College by Her Majesty the Queen in 1843, when the museum was opened by Prince Albert, who then witnessed some of the experiments of Sir Charles Wheatstone on the electric telegraph. Important additions have been made to the collection of apparatus by the Professors of Natural Philosophy, and at his death Sir Charles Wheatstone's valuable collection was bequeathed to the museum. Among the interesting features in the museum are: calculating machines of Cavendish and others, Appoldie centrifugal pump, Newcomen's model of his steam-engine, original forms of Daniell's battery, Siberian loadstone used for his induction spark by Faraday, original Wheatstone's bridge, early forms of stereoscope, early forms of electrical machines, polar clocks and shadow clocks, De Kempelen's talking machine.

From its foundation in 1868 the Physical Laboratory, now called the Wheatstone Laboratory, has been under the direction of Prof. W. Grylls Adams. Among the interesting apparatus exhibited in this department were the Wheatstone Collection of electrical apparatus for exhibition in Paris, dynamo-electric machines, diffraction spectra, an optical bench, showing interference of light, measuring polariscopes, with universal motions for the exact measurement of crystals, and vacuum tubes in great variety, including a very beautiful coronet. The great event of the evening in the Physical Department was the exhibition for the first time in England of the Faure's secondary battery or reservoir of electricity. Two boxes of this battery, which had been previously charged from a dynamo-electric machine, and had then been brought to the College, were capable of heating and keeping heated to bright redness a platinum wire 2 metres long and 1 millimetre in diameter. Six boxes were found to be sufficient to cause Swan electric lamps to glow brilliantly. Twelve of these boxes supplied a pedestal of Lane-Fox lamps, supplied by the British Electric Light Company, and during the evening the Physical Lecture Theatre was brilliantly illuminated by twenty Swan lamps of the latest type with the current from twelve other boxes of Faure's secondary battery. It was shown that by means of these boxes of electricity the lighting of private houses by electricity was already an accomplished fact.

THE COMET

WE have received the following communications:—

AT about 11h. 0m. G.M.T. on June 29 a transit of the "following" nuclear jet of the great comet over a star of 8m. was observed by Mr. N. F. Green, of 39, Circus Road, St. John's Wood, and by me, with a 12½-inch reflector belonging to Mr. Green. Definition was very good and tranquil. As the star became involved in the jet it gradually increased in size, and when seen through the brightest part of the jet traversed resembled an ill-defined planetary disk about 3″ in diameter. At this moment the comet seemed to have two nuclei similar in aspect and brightness.

The effect of the cometary matter on the star's image resembled that of ground glass, not that of fog; the image of the star, being dilated into a patch of nearly uniform brightness, instead of presenting a sharp central point with a surrounding halo. Cirro-stratus, passing into rain-cloud, produces on the appearance of the sun an effect the counterpart of that produced by the cometary emitted matter on the star. There was not sufficient light for the use of the spectroscope, the star, afterwards identified as B.D. + 65°, 519, being fainter than 8m.

The transit of the jet occupied about 3m., and the star slowly resumed its ordinary appearance and dimensions, the image *contracting* as the centre of the jet left the star behind. A transit of this kind has not frequently been observed, at least under such favourable conditions as to brightness and definition of the objects, and it is to be hoped that others may have been as fortunate as Mr. Green and the undersigned.

If the point which obeys the Newtonian law be a solid body, the observation just recorded seems to show that its true outline would probably be rendered unrecognisable, and its aspect totally altered by the (refractive?) power of the coma and jets.

CHARLES E. BURTON

38, Barclay Road, S.W., July 1

THE following is an extended list of places obtained with the transit-circle when the comet passed *sub Polo*:—

	Date.	Greenwich Mean Time of observation.	Observed R.A.	Observed North Polar distance (uncorrected for parallax)
		h. m. s.	h m. s	° ′ ″
(*a*)[1]	June 23 ...	11 30 54·4 ...	5 34 55·2 ...	44 53 20·6
(*b*)	,, 24 ...	11 30 42·6 ...	5 38 39·9 ...	40 35 33·7
(*c*)	,, 25 ...	11 30 58·3 ...	5 42 52·2 ...	36 38 27·4
(*d*)	,, 27 ...	11 33 2·8 ...	5 52 50·2 ...	29 46 5·8
(*e*)	,, 28 ...	— ...	— ...	26 49 45·0
(*f*)	,, 29 ...	11 37 39·3 ...	6 5 20·5 ...	24 11 37·9
(*g*)	,, 30 ...	11 41 3·9 ...	6 12 42·2 ...	21 50 26·3
(*h*)	July 1 ...	11 45 19·9 ...	6 20 55·5 ...	19 44 41·3
(*i*)	,, 2 ...	11 50 31·9 ..	6 30 4·9 ...	17 52 59·6

Remarks.—(*a*) The nucleus distinct but nebulous. Tail bright, and estimated 15° in length. Observation good.

(*b*) Observation difficult, owing to cloud.

(*c*) Nucleus better defined than on June 23, but not so bright. Length of tail estimated at 15°. Observation good.

(*d*) Observation fair, very cloudy. Tail 12°-15° long.

(*e*) Observed through short break in clouds. Tail 10° in length.

(*f*) Observation very good. Tail 10°.

(*g*) Observation very good. Nucleus smaller and fainter than on preceding nights. Tail 10°.

(*h*) Observation very good. Tail 9°.

(*i*) Very faint, observed through haze. Tail 8°.

Radcliffe Observatory, Oxford E. J. STONE

MY chief object in writing to-day is to explain a word in my letter of June 28 (p. 200) that is quite open to misinterpretation. In examining the head of Comet *b* 1881 with a small direct-vision spectroscope and a narrow slit, I saw, on June 27, three bright lines or bands on a faint continuous spectrum. Two of the lines were strong and

[1] The observed R.A. and G.M.T. for June 23, reported in last week's NATURE (p. 200), should be *decreased* one minute, as above.

near together, and of a bluish-green ; the third was much fainter and with very little apparent colour, but easily seen as a bright line. I called these "three green lines," as that was the general appearance in the field of view, and I had no intention of fixing the positions of the lines. The words however require explanation, as they would naturally be understood as restricting the bands to a definite part of the spectrum. On July 1, shortly before midnight, I examined the position of these lines more carefully, keeping the slit sufficiently open to secure a fairly strong continuous spectrum from the nucleus in the centre of the field, whilst the bright lines extended along the whole length of the slit. I could then see clearly that the two strong bands were in the green and blue, and that the fainter line was almost at the extremity of the more refrangible end of the spectrum visible in the small spectroscope used, and would therefore be situated in the violet or purple.

The comet on the night of July 1 was very much diminished in brilliancy, but at midnight it could still be traced by aid of a binocular through at least 7°. The nucleus shone as a 2·3 magnitude star, and under a considerable magnifying power it was found to have lost most of the interesting features of June 27. The double envelope, so well defined in outline a few days previous, had disappeared, and there now remained only the bright nucleus bounded towards the tail by two arcs, one on either side of the centre, from which those rays seemed to spring which moved slightly in the direction of the sun, and then bent round to help in forming the tail. A mass of light surrounded the head, but this faded away gradually into a nebulous outline. The light from the tail diminished very rapidly as the distance from the head increased. A *sub Polo* transit of the centre of the nucleus gave, for July 1, 11h. 5om. 7s. G.M.T., the following position uncorrected for parallax and aberration :—

R.A. 6h. 20m. 53s.·51 ; N. Decl. 70° 14′ 53″·7.

S. J. PERRY

Stonyhurst Observatory, Whalley, July 4

I INCLOSE three drawings of the comet made on

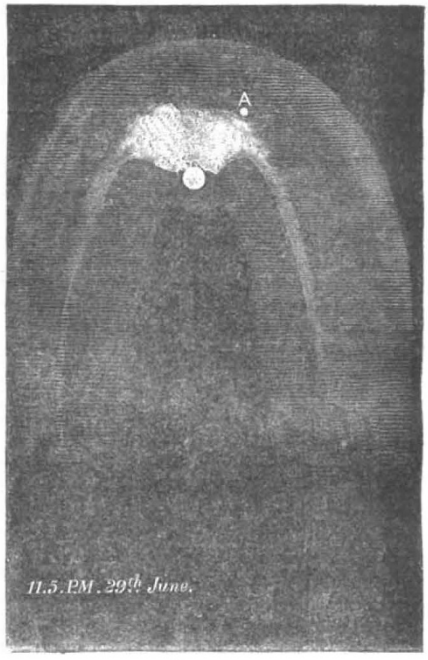

FIG. 1.

the 27th, 29th, and 30th ult. On the 27th the bright jet extending from the nucleus was very plain, and gave the hydrocarbon spectrum very distinctly. No bands were seen in the tail, but only in the immediate proximity of the nucleus. On the 29th the comet was much fainter;

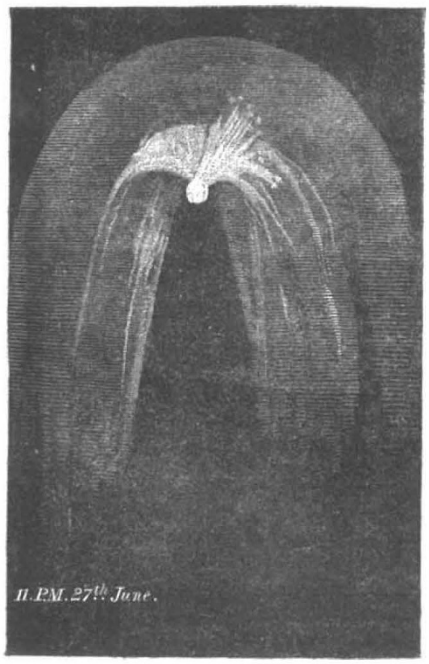

FIG. 2.—A = small star,

the bright jet had disappeared, giving place to a fan, of which the left-hand side was the brighter. A small star was seen through the coma, *a*, which the comet rapidly passed.

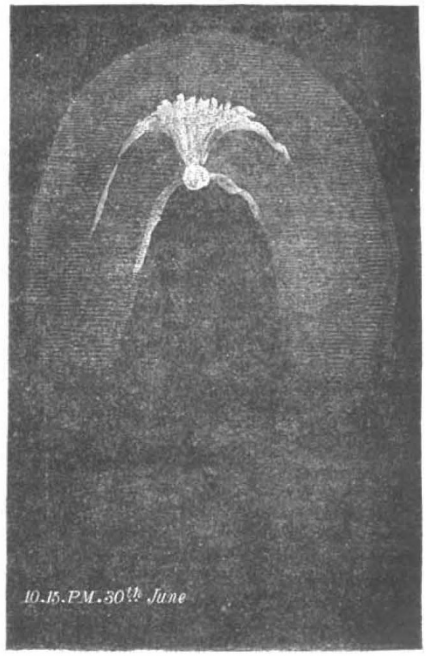

FIG. 3.

Last night (30th) the fan-shaped projection had narrowed considerably and apparently extended farther from the nucleus.

A. PERCY SMITH

Temple Observatory, Rugby, July 1

I HAVE made some sketches of this comet, and have taken some photographs with the 3-foot reflector. Particulars of the latter may be useful.

On the night of June 24 the comet, which was very brilliant, presented the appearance of Fig. 1 ; the nucleus very bright and some 6″ in diameter, and not in the centre of head. Photographs with two minutes' exposure gave a decided impression on the gelatine dry-plate; with twenty-one minutes' exposure the image was very dense,

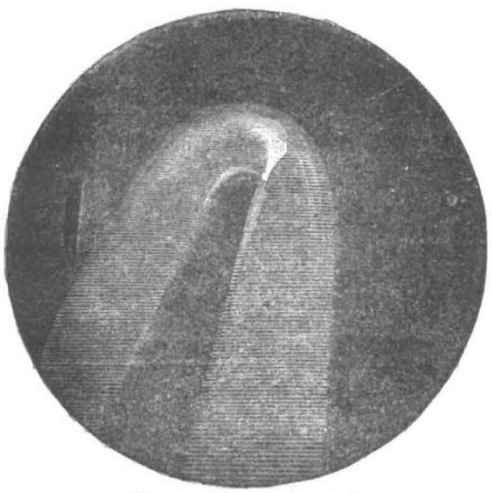

FIG. 1.—June 24, 12h. to 13h.

and the small bright tail that proceeded from the nucleus comes out well, but owing to the rapid motion in declination the image of the nucleus appears as a trail some quarter of an inch long.

On June 25 the appearance of the comet was altered, the club-footed mass of light had disappeared, and the nucleus presented a rayed appearance.

Photographs were taken with similar results to those obtained on the 24th, but a dense image of the nucleus

FIG. 2.—June 25, 13h. 1m.

was got with one minute's exposure. The intensity of light must quite equal that of a seventh magnitude star. The small bright tail was still very apparent, but between it and the edge of the large tail proper there was a decided dark space on the p side. At 13h. 35m. the f side was noted to be much the brightest; this change must have taken place very suddenly, as it had been specially noted just before as being the faintest side of the tail. Fig. 2 was taken before this was noticed. Cloudy nights intervened till the 29th. I had in the meantime fitted a fine screw to the plate-holder, and found that by giving this screw a certain calculated part of a turn every half minute for twenty minutes, I got a fair negative (I beg to forward this for your inspection) without any of the distortion caused by the motion in declination.

FIG. 3.—June 29, 13h. 2m.

The comet was observed to have changed to a much more symmetrical form (see Fig. 3). The conditions under which the photographs were taken were not very favourable: the mirror and flat were not at the best as regards polish, and the plates were about two years old.

A. AINSLIE COMMON

THE comet engaged the attention of the Paris Academy of Sciences at their sitting last Monday week, and we give the following extracts from the papers communicated.

Admiral Mouchez writes as follows :—"This comet, which was observed for the first time seventy-four years ago by an Italian monk on September 9, 1807, was observed by Pons eleven days afterwards at Marseilles on the 20th, and remained visible till March 27, 1808; during this long period it was possible to make a large number of observations, so that Bessel could for the first time calculate its elements; and he found that the period of its revolution must be comprised between 1404 and 2157 years, and was probably 1714 years. The calculations being revised and account taken of new perturbations, a period of 174 years was arrived at. The observations made during its second appearance will doubtless render it possible to determine the causes of perturbations or the errors of calculation and observation which have rendered its present return so unexpected.

"M. Tisserand has called my attention to a comet, not catalogued, but cited in Struyck's work, 'Vervolg van de Beschryving der Staatsterren' (Amsterdam, 1753), which appears to have been seen at the Cape of Good Hope in 1733, just seventy-four years previous to 1807; the want of precise observations, doubtless, did not allow of calculating the elements; but the identity of the period and the comet's appearance in the southern hemisphere lead us to suppose that it is the same comet as we observe now, and which, from some cause difficult to conceive, seems not to have been observed in Europe after its passage through perihelion. Perhaps the Dutch, to whom the Cape of Good Hope then belonged, will find in their archives some documents which will enable us to utilise this old observation, to which I have invited the attention of M. Oudemans, the learned and able astronomer of Utrecht."

M. Bigourdan says he first perceived the comet on June 22 at 13h. 30m. The following elements are deduced from the observation at Kiel (where the comet was seen two hours earlier than at Paris) on June 22, and the two following at Paris :—

1881.	Paris Mean Time.	Apparent Right Ascension.	Apparent Declination.
	h. m. s.	h. m. s.	° ′ ″
June 24 ...	9 51 26·0 ...	5 38 21·84 ...	+49 5 31·6
26 ...	10 46 5·8 ...	5 47 22·66 ...	+56 50 2·4

Perihelion passage, 1881, June 16·52806

$\varpi = 265° 22' 59''$
$\Omega = 270\ 57\ 51$ } Mean equin. 1881·0.
$i = 63\ 26\ 57$
log. q = 1·866099

Representation of mean observation

In longitude ... ... $(o - C)\cos\beta = -7''·7$
In latitude ... ... $o - C = -4''·3$

The last elements obtained by Bessel for the great comet of 1807 are as follows :—

Perihelion passage, 1807, September 18·74537 mean Paris time.

$\varpi = 270° 54' 42''$
$\Omega = 266\ 47\ 11$ } Mean equin. 1807.
$i = 63\ 10\ 28$
log. q = 1·810,3158
e = 0·995,4878

With regard to the physical constitution of the comet, M. Wolf points out that while Coggia's comet (1874)—the only large comet visible on the horizon of Paris since spectrum analysis came into use—was at first telescopic, developed rapidly, and disappeared at the most interesting stage, the present comet comes to us already very much developed after its passage through perihelion. The transformations of the nucleus and its envelopes are extremely rapid (as the drawings show). In the large telescope the segmentation of the head, which Bond found in Donati's comet, was distinctly visible on June 24; the smallest instruments did not show it.

"The new comet represents, then, the second period of development of one of these curious stars, of which we have the first only in Coggia's comet. Its study enables us to follow the transformations of the envelopes, and to complete what information the comet of 1874 supplied.

"From the standpoint of spectrum analysis we may now correct a premature conclusion which might be deduced from our observations of Coggia's comet in 1874. That comet, from May 19, presented the continuous and nearly linear spectrum of the nucleus, traversed by the three bright bands characteristic of the light of comets (which I have found in more than a dozen of these stars). But on July 13, the evening of the last observation possible, the three bands had nearly disappeared, while the spectrum of the nucleus was become much brighter.

"Must we therefore conclude that the incandescent gas, carburetted hydrogen or other, to which these bands are due, disappear as the comet is developed, giving place to the light, proper or borrowed, of the nucleus? The observation of the new comet elucidates this. It rises rapidly from the horizon, in the same region of the sky where Coggia's comet descended to disappear, too quickly, below the horizon. Now on June 24 its spectrum, observed with the same instrument as was used in 1874, was reduced nearly to a continuous ribbon given by the nucleus; the nebulosity only gave a broad and very pale band, well terminated on the more refrangible side, diffuse on the other; the other bands of comets did not exist, or at least one could only suspect their existence in the neighbourhood of the nucleus. But yesterday (June 26) the comet was already far from the horizon, and when the sky was pure the three bright bands appeared with great distinctness. The green band especially was bright, longer than the two others, and distinctly limited on the less refrangible side (wave-length 516). On this side it seeemed bordered by a dark space, as in the spectrum of Coggia's camet. As in the latter the red is the only colour pretty visible in the spectrum of the nucleus, and it is slightly dilated. The ulterior observations will show whether these bands will continue to develop. We are put on our guard, in any case, against the effect resulting from difference of altitude of the comet.

"The total quantity of light given by the head of the comet is considerable, and many persons have tried to compare it to a star of the first magnitude. In reality its intrinsic brightness is very slight. I had occasion last night, by slightly displacing the telescope, to look at the spectrum of a star of fifth or sixth magnitude; the line of light produced was at least as bright as the spectrum of the nucleus."

Admiral Mouchez having put at M. Thollon's disposal the 14-in. equatorial of the Observatory, the latter made some spectroscopic observations of the comet on the nights of June 24, 25, and 26, with the following results :—

"The nucleus of the comet gives a pretty bright continuous spectrum, on which one can distinguish neither bands nor lines. The nebulosity surrounding the nucleus gives three bands which are detached on a continuous spectrum. One of them is very visible; the others are faint. Their position has been measured with great care. The measurements, repeated a large number of times, are more concordant than I could have hoped.

"The spectrum of bands furnished by the comet so resembles that given by the blue spirit flame that I consider them identical. This identity does not result merely from the aspect of the bands and their ratios of intensity, but also from their absolute position. The spectrum of the comet is, then, the spectrum of carbon or of one of its compounds. The sole difference I have met with is that the violet band given by alcohol is not seen in the spectrum of the comet; the absorption of the atmosphere suffices to account for this difference." M. Thollon is making further observations.

NOTES

THE "Chelini-Memorial" volume takes the form of "Collectanea Mathematica," and is issued under the joint editorship of Professors Cremona and Beltrami (U. Hoepli, Milan). It contains thirty papers by twenty-eight sufficiently representative mathematicians, of whom sixteen are well-known Italian writers; of the remaining twelve, five (MM. Geiser, Kronecker, Reye, Schläfli, and Wolf) write in German, four (MM. Borchardt, Darboux, Hermite, and Mannheim) write in French. Of the three English contributors, Messrs. Cayley (on a differential equation), Hirst (on the complexes generated by two correlative planes) write in English, and Prof. H. J. S. Smith discourses in Latin "de fractionibus quibusdam continuis." There is a likeness of Chelini.

THE Government have appointed the Earl of Crawford and Balcarres Chief Commissioner, and Sir Charles T. Bright, Prof. D. E. Hughes, F.R.S., and Lieut.-Col. C. E. Webber, R.E., as Commissioners at the forthcoming Electrical Exhibition and Congress at Paris.

STUDENTS of Cretaceous geology will regret to hear that Griffiths, the well-known "fossil man" of Folkestone, has been disabled for many months by rheumatism, brought on by constant exposure during the past twenty-five years, in which he has daily extracted from the wet and slippery tract of Gault clay in Eastweir Bay the remarkable series of mollusca with their pearly nacre preserved, plants, corals, crustacea, and reptilian remains that ornament not only the private collection of those who make