sented by Mr. A. H. Jamrach; a Horsfield's Tortoise (*Testudo horsfieldi*) from Afghanistan, presented by Capt. Cotton; two Smooth Snakes (*Coronella lævis*), British, presented respectively by Mr. W. Penny and Mr. Thos. J. Mann; two Yellow-headed Troupials (*Xanthocephalus icterocephalus*) from Mexico, presented by Mr. W. A. Conklin; a Jaguar (*Felis onça*) from Bolivia, two Common Boas (*Boa constrictor*) from Savanilla, deposited; a Ring-tailed Lemur (*Lemur catta*) from Madagascar, a Ludio Monkey (*Cercopithecus ludio*), a Mona Monkey (*Cercopithecus mona*), two Rus's Weaver Birds (*Quelea russi*), two Cinereous Waxbills (*Estrelda cærulescens*), two Crimson-eared Waxbills (*Estrelda phœnicotis*) from West Africa, a Black-footed Penguin (*Spheniscus demersus*), a Levaillant's Parrot (*Pœocephalus robustus*), from South Africa, a Brahminy Kite (*Haliastur indus*) from South Asia, a Brown Crane (*Grus canadensis*) from North America, a Double-crested Pigeon (*Lopholœmus antarcticus*) from North Australia, two Swift Parrikeets (*Lathamus discolor*) from Tasmania, two Victoria Crowned Pigeons (*Goura victoriæ*) from the Island of Jobie, four Bengal Weaver Birds (*Ploceus bengalensis*) from India, a Red Lory (*Eos rubra*), an Ornamental Lorikeet (*Trichoglossus ornatus*) from Moluccas, a White-billed Parrakeet (*Tanygnathus albirostris*) from Celebes, a Noble Macaw (*Ara nobilis*) from Brazil, two Yellow-fronted Amazons (*Chrysotis ochrocephala*) from Panama, a White headed Parrot (*Pionus senilis*) from Mexico, two Black-headed Conures (*Conurus nanday*) from Paraguay, two Silky Marmosets (*Midas rosalia*) from South-East Brazil, a Leucoryx Antelope (*Oryx leucoryx*) from North Africa, a Common Otter (*Lutra vulgaris*), British, three Chinchillas (*Chinchilla lanigera*) from Chili, an Upland Goose (*Bernicla magellanica*) from the Falkland Islands, three Ashy-headed Geese (*Bernicla poliocephala*) from South America, purchased; an Anoa (*Anoa depressicornis*) from Celebes, received in exchange; an Axis Deer (*Cervus axis*), a Japanese Deer (*Cervus sika*), a Geoffroy's Dove (*Peristera geoffroii*), a Wonga-wonga Pigeon (*Leucosarcia picata*), a Turquoisine Parrakeet (*Euphema pulchella*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN

FAYE'S COMET.—Dr. Axel-Möller commences his ephemeris of Faye's comet for the present year on July 1, when its distance from the earth will be 2·005, and that from the sun 2·53; the perihelion passage will not take place till January 22, 1881. The intensity of light corresponding to the comet's distances on July 1 is 0·039; in 1844 it was observed with sensibly the same intensity, the value for the last observation with the 15-inch refractor at Pulkowa being 0·035. The comet attains its greatest brightness in the middle of October, when the value corresponds to that at the last observation in 1858, with the 9·6-inch refractor at Berlin on October 16. At discovery by M. Faye in 1843 the theoretical intensity of light was 0·54, which has not been approached at any of the subsequent returns. The following positions are taken from Dr. Axel-Möller's ephemeris, which is calculated for Berlin midnight, or about 11h. G.M.T. :—

	Right Ascension. h. m. s.	Declination. ° ′
July 1	23 5 25	+7 53·5
3	23 6 38	8 7·7
5	23 7 47	8 21·4
7	23 8 52	8 34·8
9	23 9 54	8 47·7
11	23 10 51	9 0·1
13	23 11 44	9 12·1
15	23 12 33	+9 23·6
17	23 13 17	+9 34·5
19	23 13 57	9 44·8
21	23 14 32	9 54·6
23	23 15 2	10 3·6
25	23 15 27	10 12·0
27	23 15 47	10 19·7
29	23 16 2	10 26·6
31	23 16 12	+10 32·8

The comet will arrive at its least distance from the earth (1·09) on October 3. So far as can be foreseen without calculation of the perturbations the comet is not likely to exhibit a degree of brightness approaching that in the year of its discovery by M. Faye, until 1903.

While Faye's comet is followed up by Dr. Axel-Möller in the same admirable manner as for many years past, calculations relating to other comets of short period are in the hands of the following astronomers according to the last Report of the *Astronomisches Gesellschaft*:—Dr. Backlund of the Imperial Observatory, Pulkowa, proceeds with the perturbations of Encke's comet, taking up the work where it was left by the late Dr. v. Asten; Brorsen's comet is undertaken by Prof. R. Schulze of Döbeln; D'Arrest's by M. Leveau of Paris; Winnecke's by Prof. Oppolzer of Vienna; Tempel's comet of 1867 by M. Gautier of Geneva; Tempel's second comet (1871), by M. Schulhof of Paris; and Tuttle's comet, due in the year 1885, by Mr. Ormond Stone of Cincinnati. The exceptional case of Biela's comet is not provided for.

THE GREAT SOUTHERN COMET OF 1880.—Dr. M. W. Meyer, of Geneva, assuming for the period of revolution of this comet the interval between the perihelion passage of the great comet of 1843 and that of the comet in 1880, corresponding to a semi-axis major of 11·0869, has adapted the other elements of the orbit thereto by means of Dr. B. A. Gould's observations at Cordoba on February 6, 12, and 19, covering an interval which, so far as we know at present, is only one day less than the whole extent of accurate observation: the Cordoba observations of February 5 await the meridional observation of the comparison star, which is not found in our catalogues: it may be well determined at one of the observatories of Southern Europe. Dr. Meyer's results are as follows:—

Perihelion passage, 1880, January 27·44242 G.M.T.

Longitude of perihelion ...	...278° 22′ 47″	Mean equinox,
,, ascending node	...356 16 43	1880·0
Inclination of the orbit ...	... 36 52 13	
Log. excentricity (=log. sine ϕ)	9·9997682	or $\phi = 88° 7' 41''·55$
Log. perihelion distance ...	...7·7720095	

Motion retrograde.

The aphelion distance in this orbit is 22·1679 (the earth's mean distance being taken as *unity*), and at aphelion the comet is distant from the orbit of Uranus 13·15. The nearest approach to the orbit of Jupiter, about 3·1, takes place when the true anomaly is about 176° 35′. The comet's orbital velocity at perihelion is 338 miles in a second, and that at aphelion 477 feet in the same interval.

MINIMA OF ALGOL.—The following times of geocentric minima of Algol, observable in this country during the ensuing quarter, are deduced from the elements given by Prof. Schönfeld in his catalogue of 1875. Considerable perturbations of epoch appear to have taken place during the last five years, as we have previously noted in this column, and from the course of the errors of calculation it seems quite possible that the computed times may be nearly a half-hour too late. Systematic observations of this variable are now much to be desired, and it may be hoped that one or more of the many zealous amateur-astronomers here will devote attention to it. The perturbations to which we have alluded were particularly evident in 1876, and the error of the calculated times attained a maximum in the following year, a mean of seven observations by Prof. Julius Schmidt at Athens showing that the computed epoch was too late by forty-eight minutes. The following epochs are directly comparable with observation:—

	h.	m.			h.	m.	
July 16 ...	12	39·0	G.M.T.	Aug. 25 ...	12	47·9	G.M.T.
19 ...	9	27·5	,,	28 ...	9	36·4	,,
Aug. 2 ...	14	19·6	,,	Sept. 14 ...	14	27·7	,,
5 ...	11	8·2	,,	17 ...	11	16·2	,,
22 ...	15	59·4	,,	20 ...	8	4·8	,,

PHYSICAL NOTES

ACCORDING to our contemporary *l'Électricité*, M. Exner of Vienna has discovered that a bismuth-antimony pair immersed in a gas incapable of acting chemically on either of these metals yields no current when one junction is heated. Also that if two bars of copper are soldered together to form a "pair" no current is produced when either junction is heated in air (as would be expected in a circuit of one metal), not even when both strips are exposed to the action of chlorine; but that if one strip only is exposed to chlorine gas and then one junction be warmed a thermo-electric current is set up. According to Exner therefore, all so-called thermo-electric currents are due to chemical action. It would be easy for some of our ardent young physicists to put to the test this very remarkable announcement, and see whether