

appeared in this column last week, gives the right ascension greater by $1^{\circ} 29'$ and the declination further south by $21'$; though the Cordoba observation is called a rough one, under the circumstances it will hardly be liable to such errors, and may be at least comparable in accuracy with the approximate positions received from the Royal Observatory at the Cape. If we combine it with the Cape places on February 10 and 15 for the determination of the orbit, the following remarkable elements result—we say remarkable from their being almost identical with the elements of the grand comet of 1843, as will be seen from the orbit annexed:—

	Comet of 1880.	Great comet of 1843 (Hubbard's parabola).
Perihelion passage	Jan. 27 ^h 6027	
Longitude of perihelion	279 6'8	278 35'1
" ascending node	4 1'9	1 20'6
Inclination	35 39'8	35 38'2
Log. perihelion distance	7.77371	7.74123
Motion	Retrograde	Retrograde

If this close resemblance is the result of accident, and the true orbit of the comet more like that published last week, the coincidence is a very unusual one in such computations, and in fact not far from an unique case.

Prof. Hubbard, from his rigorous investigation of the orbit of the great comet of 1843, concluded that the period extended to several centuries, though before the comet was beyond reach of the telescope it was conjectured that the revolution might be comparatively short, and from a similarity in the appearance of the comets of 1668, 1702, and 1843, a period of about thirty-five years was considered probable by many astronomers. Pending the arrival of accurate observations from the southern hemisphere, which may decide the true form of orbit, it may be worth while to examine with large telescopes the vicinity of positions calculated from the orbit which so closely resembles that of the comet of 1843, as, in the event of identity, observations of position made now would have great value. For 8h. Greenwich mean time the above orbit gives the following places:—

	R.A.		N.P.D.	Log. distance from Earth.
	h.	m.		
April 2 ...	4	59'6	98 22	0.2978
4 ...	5	3'2	97 58	0.3104
6 ...	5	6'7	97 36	0.3224
8 ...	5	10'0	97 15	0.3338

PHYSICAL NOTES

M. DUCRETET has made the important observation that "toughened" glass is less easily penetrated by the electric spark than ordinary glass. He proposes to apply this discovery in the manufacture of superior Leyden jars. It is almost needless to point out that a means of making powerful condensers of more compact form is afforded by the employment of the toughened article. The very important bearing of the matter upon the whole question of dielectric strain and the elastic recovery of bodies is a point which will probably receive due attention at the hands of physicists.

THE residual charge of the Leyden jar has been recently investigated afresh by Herr Giese (*Wied. Ann.*, No. 2). It seemed desirable to follow the course of formation of this charge under conditions more amenable to analytical treatment than has hitherto been the case, and to make the phenomenon independent of external influences. This he sought to attain by determining the quantity of electricity which flowed to the coatings when the difference of potential was kept constant. His method is fully detailed in the paper referred to, and the result he is led to is that the formulæ of Riemann (who offered the hypothesis of an antielectric state of matter, at a meeting of scientists in Göttingen in 1854) are not in harmony with experiment.

A PAPER by Prof. Rammelsberg, "On the chemical monography of the mica group," has lately appeared in *Wiedemann's Annalen* (Nos. 1 and 2). As to the kind of relations that exist between the chemical nature of micas and their other properties, he remarks that there are differences in corresponding angles, though the amount can be ascertained only in few cases. Optical differences can be determined with more certainty; in this respect all alkali-micas, whether containing sodium, potassium, or potassium and lithium, are alike. The plane of the optic axes is at right angles to the plane of symmetry.

Pure magnesia-micas are the opposite in this respect. Among the iron-magnesia-micas there are some which are optically like the alkali-micas, but more which are like the pure magnesia-micas. In the lithium-iron micas of Zinnwald the axes are as in the last-mentioned micas. The baryta-mica of Sterzing is optically like the alkali-micas. From all this it results that any classification of micas can only be a chemical one. But so long as we do not know whether the (qualitative) chemical nature coincides with the subdivision hitherto adopted (muscovite, phlogopite, biotite, &c.), which however rests only on physical differences, we cannot exchange the certain chemical names with those which are derived from some special physical character, e.g., the position of the plane of the optic axes.

To the scientific applications of centrifugal force which have been made since the time of Musschenbroek, who, in his treatise on Physics, calls attention to the utility of it, Prof. Thury of Geneva (*Arch. de Sci.*, January) thinks the following might be added:—Measurement of the adhesion of liquids and solids; separation, total or partial, of a dissolved body from its solvent; separation of the constituents of alloys (kept in fusion by means of Bunsen burners); separation of liquids of different densities; production of high vacua; modification of crystalline forms (possibly); depolarisation of electrodes in some circumstances of electrolysis; modification of the organisation of embryos in the egg; observation of a body in very rapid circular motion, as if it were motionless.

SIGNOR AGOSTINI finds (*Natura*, 3) that if through a drop of mercury, lying on a surface not wet by it, a current be sent in vertical direction, it rotates under the influence of the earth's magnetism, as may be seen if a few particles of lycopodium powder be strewn on it. Similarly a mercury drop rotates when placed on the surface of a steel magnet, and e.g. the magnet connected with the positive pole of a very weak element, while an electrode penetrating the drop from above is connected with the negative. From the strength and direction of rotation of a number of such drops one may in general make visible the distribution of the magnetism, the neutral points, &c., both in the magnetic bars themselves, as when an iron bar is brought coaxially near to one end, or into contact; also in the latter. The results of previous experimental measurements are thus confirmed.

GEOGRAPHICAL NOTES

PROF. NORDENSKJÖLD reached London on Friday last, several days after he was expected, thus upsetting all the arrangements which were made for his reception. He is, we understand, to leave for Paris to-day to receive the Great Gold Medal of the Geographical Society and the distinction of Commander of the Legion of Honour. While here he has been entertained in a quiet way by various distinguished people; among others by the Swedish Minister, the Earl of Northbrook as president of the Geographical Society, Mr. Spottiswoode, president of the Royal Society, Sir Allen Young, and others. Doubtless he will return to London at a time more convenient to give him the public reception which he merits.

It is stated that Lieut. Bove, who accompanied Nordenskjöld in the *Vega*, has gone to Rome to submit to the King of Italy and the cabinet a plan for an Italian expedition to the South Pole.

A LETTER recently received from Capt. Howgate mentions that, whether aided or not by the (U. S.) Government, he is determined to start an expedition to the Arctic regions this year. The s.s. *Gulnari* is now on the "ways," being fitted up for ice navigation under the superintendence of Capt. Chester, who was with Hall in the *Polaris*. A house of wood—double boarded—21 × 68 feet, modelled after those used by the Hudson's Bay Company, is being constructed for the men to winter in on the shores of Discovery Harbour, and will be ready by April 1. A steam launch will probably form part of the expedition.

THE Japan papers state that the Russian Government have determined to de-patch a man-of-war to make a hydrographical survey of the Japanese seas and the Sea of Okhotsk. The Geographical Society of St. Petersburg have been invited to send a representative with the expedition, and it is believed that Prof. Amantevitch will be selected on account of his knowledge of the Japanese language and the dialects spoken on the east coast of Siberia.

MR. G. F. EASTON, the agent of the China Inland Mission at Tsin-chow in the Kansu province, has sent home an account of