Of course, if the sun sets behind a sloping hillside, the duration may be considerably altered by this cause.

THE March number of *Terrestrial Magnetism and Atmospheric Electricity* contains a table by Mr. J. P. Ault of the values of the deviation of the compass from true north in the Bering Sea and the Pacific Ocean, determined by the magnetic survey ship *Carnegie* during her voyage from Alaska to New Zealand in the latter half of 1915. Throughout the whole of her course, which from the western side of the Bering Sea was almost directly south, the compass pointed to the east of true north by amounts varying from half a degree in latitude 45° N. to 16° or 17° at Alaska and New Zealand. The British Admiralty charts give the compass deviation too high by amounts which, in the Bering Sea, exceed a degree, and in latitudes 37°, 21°, 14°, 12°, 0° N., 15° and 45° S. are nearly a degree.

BULLETIN 609 of the United States Geological Survey deals with the fractional precipitation of some ore-forming compounds at temperatures only slightly removed from atmospheric, and in all cases below 100° C., by Mr. R. C. Wells. The experiments have been made with the object of elucidating the chemistry of ore deposition, and they have shown the order of solubility of the compounds of each of the classes investigated—sulphides, hydroxides, carbonates, and silicates. On the whole, the most interesting, and probably the most complicated, series is that of the sulphides. Soluble sulphides may act, and do act, not only as precipitating, but also as reducing agents. It appears from the results given that the concentration of the sulphide ion is so greatly affected by change of acidity that the latter is the principal factor determining the precipitation of sulphides. A mixture of two metallic salts yields, by fractional precipitation, an initial precipitate, containing the sulphides of both metals, but, as a rule, if the mixture is heated or is permitted to stand, one sulphide largely or wholly dissolves. The order of precipitation, beginning with the metal that separates first, is palladium, mercury, silver, copper, bismuth, cadmium, antimony, lead, zinc, nickel, cobalt, ferrous iron, arsenic, thallium, and manganese. Attempts to form chalcopyrite by fractional precipitation of ferrous and cupric sulphate were unsuccessful.

PAPER No. 33 of the Survey Department of Egypt, entitled "The Magnetic Survey of Egypt and the Sudan," by Mr. H. E. Hurst, embodies the results of field observations made by the author and Mr. C. B. Middleton between October, 1908, and January, 1914. Use is also made of observations taken between 1893 and 1901 by Captain (now Major) H. G. Lyons, F.R.S., and of the results obtained in the Red Sea between 1895 and 1898 by Lieut. Rössler, of the Austrian surveying ship *Pola*. The publication includes charts of magnetic declination, inclination, and horizontal force respectively. The epoch to which the observations are reduced is January 1, 1910. Helwan, where magnetographs were installed in 1907, served as base station. The area dealt with extends from Damietta, 31° 25′ N., to Wadelai, 2° 42′ N. lat.; but it is comparatively narrow, especially in the extreme south. A remarkable feature is the closeness with which the lines of equal dip—from 42° N. to 16° S.—conform to parallels of latitude. The magnetic equator crosses the Nile at about 11° N. lat. The lines of equal declination have mostly throughout the greater part of their length the same general direction as the Nile. The lines of equal horizontal force, from 0·295 to 0·350 C.G.S., seem to cross the Red Sea nearly orthogonally. The local disturbances encountered were extremely small, especially in comparison with those described by Prof. J. C. Beattie in his "Magnetic Survey of South Africa."

A COPY of the report of the secretary of the Smithsonian Institution for the year ending June 30, 1915, has been received. The report reviews the affairs of the institution, and summarises the activities of its several branches. Among the explorations and researches inaugurated in furtherance of one of the fundamental objects of the institution, which is the "increase of knowledge," we notice the clearing of fog by electrical precipitation. The fact was long ago established that all dust and fog particles in the open atmosphere are electrified and subject to dispersion or precipitation, but how to clear fog from a street, along a railway, or from the neighbourhood of a ship at sea, and to do it in a manner commercially feasible, has been a matter of study for many years. The question recently aroused fresh attention in the neighbourhood of San Francisco, through researches planned by the University of California in co-operation with the United States Lighthouse Service, and it was decided by the Smithsonian Institution to make a grant to further this investigation, which is under the general direction of Dr. F. G. Cottrell. The American Institute of Electrical Engineers has also appointed a committee to co-operate in this work. The essential element to success in scattering fog seems to be some form of electrical apparatus of very high direct voltage, with facilities for its control and ready application.

THE H. W. Wilson Company, White Plains, New York, has published a supplement to the "Readers' Guide to Periodical Literature," which forms an index to general periodicals not included in the guide. The periodicals indexed in the supplement include NATURE, the *Hibbert Journal*, the *Philosophical Review*, and others published in this country.

OUR ASTRONOMICAL COLUMN.

URANUS.—This planet is now an early morning object in the constellation of Capricornus. When its position is known it is easily visible with quite small apertures; thus on April 29 it was seen with a hand telescope of 1⅛ in. opening, at G.M.T. 3h. 34m. The dawn had then, of course, overpowered all stars in the region. On May 12 the position of Uranus will be R.A. 21h. 13·2m., declination −16° 47·6′, diameter 3·8″.

MERCURY.—On September 21 of last year Mercury passed within 1′ of Spica, and a long series of positional measures was secured at the Union Observatory, Johannesburg (Circular No. 30). The observations made by Messrs. Innes and Worssell with a 9-in. refractor possess exceptional interest, as both observers agree regarding the visibility of a small N. polar cap and an indistinct band south of it. This appears on the reproductions as a narrow dusky zone in about latitude 45°. As an index to the conditions under which the observations were made, it may be stated that the conjunction occurred six days prior to elongation, the diameter of the slightly gibbous disc being 6·2″. The data indicate that the approximate G.M.T. of conjunction was 2h. 57m. 42s., when the zenith distance of Spica would be 51° 4′ at the Union Observatory. The truncated cusp recorded by other observers may perhaps find an explanation in this Johannesburg observation.

THE LYRID METEORS OF 1916.—Mr. W. F. Denning, writing from 44 Egerton Road, Bristol, says:—Cloudy weather seriously interfered with the observa-

tions. On April 20 Mrs. Wilson, at Totteridge, recorded several meteors between 9.30 and 10.45, when it became overcast. A bright meteor was seen at 9.46 p.m., with radiant at 202°+8°. Two bright Lyrids were seen at Bristol at a later hour. On April 21 Miss Cook, at Stowmarket, saw about twelve meteors, including eight Lyrids, between 9.39 and 11.49 p.m. On April 23, 25, 26, 29, and 30 Mrs. Wilson obtained further observations, and meteors were also seen at Bristol on the same nights, but they were very scarce, notwithstanding the splendid skies presented on several of the dates mentioned.

The most important observation was that of a bright but very late Lyrid on April 26, at 9.49, by Mrs. Wilson and by the writer at Bristol. The two observations proved that the centre of the shower was at 278°+35° on that night, and that the radiant is really a moving one, the position being at 271°+33° on April 20.

Below are the observed paths of a few brilliant meteors, duplicate observations of which would be very valuable.

Date	h. m.	Mag.	From		To		Observer
			°	°	°	°	
April 20	9 46	1	234	+10¾	243	+10	Mrs. Wilson
	11 1	1	256½	36	226	35	W. F. D.
	11 6	1	276¼	14½	276½	13	W. F. D.
21	11 22	1	215	25	205	20	Miss Cook
	11 49	4× ♀	202	25	190	18	Miss Cook
25	10 1	1	240½	29	237¼	20	Mrs. Wilson
	10 53	♀	323	52	341	38	Mrs. Wilson
26	9 49	1	211	51	184	46	W. F. D.
29	9 32	♂	235	4½	244	2¼	Mrs. Wilson
	11 17	1	187	− 6	184	−13	Mrs. Wilson
30	11 17	1	278½	20	276	18	W. F. D.

SCIENCE IN EDUCATION AND THE CIVIL SERVICES.

THE meeting convened by the committee formed in connection with the memorandum on the "Neglect of Science," published in February last, held on May 4 at Burlington House, was remarkable for its enthusiasm, its size, its unanimity, and its representative character. Leading and lesser lights belonging to science, literature, art, and commerce came from all parts to affirm their faith that our educational system needed rectification in the interest of physical science, in order to minimise the frequency of the occurrence of national "regrettable incidents." The lecture theatre of the Linnean Society was densely packed, and for three hours the audience listened with close attention to the convincing periods of the twenty-five speakers supporting the resolutions submitted.

Lord Rayleigh, Chancellor of the University of Cambridge, presided, and in his opening remarks he referred to the deplorable ignorance of science shown by all classes of society. In indicating the remedy, Lord Rayleigh emphatically denied that men of science had any desire to abolish or to cripple the study of literature—a point that was endorsed by many later speakers. The modern curriculum was already congested, and place must be made by limiting the study of ancient languages. "There is a certain type of mind for which classical education is best, but for the majority of schoolboys I think it is nothing less than an absurdity to talk about impressing them with the language and literature of the ancients. Such a result is not achieved with the average boy. I was myself an average boy. A great friend and brother-in-law of mine, Henry Sidgwick, used to say that the greatest impediment to a literary education was classics."

In proposing the first resolution, "That the natural sciences should be made an integral part of the educational course in all the great schools of the country, and should form part of the entrance examination at all the universities," Sir E. Schafer replied effectively to the contention that men of science need a classical education in order that they may be able to express themselves clearly, and the unprejudiced eye witness of the meeting could not have failed to remark that devotion to science was in no way incompatible with the power of clear expression and a sense of literary perception. Dr. Bridges, the Poet Laureate, seconded the resolution in a forcible speech, in which he advocated a drastic reform of our educational system. A knowledge of the world we live in, and of our own bodies, is a vital necessity to all classes. The question of remunerating the teachers adequately was also of urgent importance.

The Rt. Hon. Huth Jackson, director of the Bank of England, deeply regretted his ignorance of science, the knowledge of which would have prevented him from supporting commercial ventures which in themselves were unsound, and in other cases would have made him abandon the banker's typical attitude of refusing to listen to any new idea. Lord Montagu of Beaulieu dealt principally with the neglect of science in Government circles. Six years ago he had warned the Government that it should take in hand the manufacture of acetone, which is indispensable for the production of propellant powder. The advice was unheeded, and at the beginning of the war this country possessed but a single toy plant in the Forest of Dean. He had also pointed out the importance of low-temperature distillation of coal, from which benzol, toluol, and other by-products are obtained, including T.N.T., essential for our Army; but nothing was done. In the year before the war we spent 500,000*l.* with great reluctance on aviation experiments; Germany spent seven millions. "Where America has more than 250 people at work in a certain research department, in this country we have only four or five. The attitude of the nation towards science is not one of dislike, but of contemptuous neglect. There is an infinite field for the use of science in the Government of the country. In India there is no scientific adviser to the Government. The country is pre-eminent to-day in pure science, but not in applied science, or as regards general scientific education all over the country."

Dr. Macan, master of University College, Oxford, said that by making the study of English and of science two of the corner-stones of our educational edifice, we should be working in the truest spirit of Hellenism. The genuine study of antiquity would not suffer by limiting the amount taught in our schools, and the idea that the curtailment of such instruction would demoralise our youth was a delusion; for ethical and physical training are the chief factors in the formation of character. The science students at Oxford had sacrificed themselves in the war no less than their literary comrades. Mr. H. G. Wells urged the importance of distinguishing between the kind of teaching required for the training of science specialists and that which should be part of the education of all. The latter kind would involve a much smaller expenditure upon apparatus than the former, and would not demand more than 10–15 hours per week. "We want the elementary Greek which is done in schools, and which does not go on to a thorough knowledge of Greek, to be cut out. We want to stop Latin verse-making for most pupils; and we do not believe in the premature teaching of history to a child whose political sense is entirely undeveloped. We do not propose to make the philosopher supreme in this country at present, but we do want to bring our statesmen into a relationship of co-operation with