Evans. The chapter on spectrum analysis might with advantage have been revised by some one familiar with recent work. The statement that "450 of the Fraunhofer lines have been observed to coincide with the lines of the iron spectrum," is, like several others, far behind the times, for more than 2000 coincidences have been photographed. A new edition (the tenth) of Skertchly's "Geology" has been prepared by Dr. James Monckman. A new section on petrology has been added to make the book suitable for the present requirements of the examiners of the Board of Education (South Kensington). A few alterations have been made, but the revision is not entirely satisfactory. For instance, a page is devoted to observations made by Mr. W. J. Henwood in 1871 on the temperatures of mines, although an excellent summary of such observations, containing far more instructive information, was given by Mr. Bennett Brough before the Society of Arts four or five years ago, and might have been used. A table of determinations of the earth's density is given, but it does not contain any of the observations made during the last ten years. Lord Kelvin remains Sir William Thomson; and only his early conclusions, and Helmholtz's, are given concerning the age of the earth. The figures, as well as many of the facts, are old-fashioned, and Dr. Monckman would have done better to have rewritten the book from the point of view of the geologist of to-day instead of attempting to adapt past ideas to present positions. Mr. Frank Rutley's little book on "Mineralogy" has deservedly had a successful career, and the twelfth edition, which Mr. Murby has just published, is a veritable *multum in parvo* as regards information of service to elementary students of mineralogy. Among the changes are the addition of a brief outline of the recently adopted treatment of crystal symmetry, a few figures of crystals, and the revision of the chemical formulæ.

THE additions to the Zoological Society's Gardens during the past week include two Patas Monkeys (*Cercopithecus patas*, ♂ ♀) from West Africa, presented by Mr. E. Jones; a Syrian Bear (*Ursus syriacus*) from Western Asia, presented by Mr. Robert de Rustafjaell; a Peregrine Falcon (*Falco peregrinus*) from Canada, presented by Mr. T. H. Small; an Osprey (*Pandian haliaetus*), captured in the Red Sea, presented by Captain T. Yendell; a Bush Dog (*Icticyon venaticus*, ♀) from Colombia, a Tayra (*Galictis barbara*) from South America, a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, three Wattled Honey-eaters (*Anthochoera carunculata*) from Australia, deposited; a Bosman's Potto (*Perodicticus potto*) from West Africa, a Bouquet's Amazon (*Chrysotis bouqueti*) from Dominica, two Ruddy Sheldrakes (*Tadorna casarca*, ♂ ♀), two Knots (*Tringa canutus*), European, purchased.

OUR ASTRONOMICAL COLUMN.

THE PLANET EROS.—A good opportunity will be offered for detecting this little object on the early evenings of November 10 and 11 before moonrise. The planet will pass near the 5th magnitude star, 4 Persei, the positions of the objects being as follows:—

	R.A.	Decl.
	h. m. s.	° ′
4 Persei	1 55 38 ...	+54 0
Eros, November 10 ...	1 56 53 ...	+54 21
November 11 ...	1 54 51 ...	+54 19

The position for 4 Persei is for 1900. The places of Eros are for Berlin mean midnight, corresponding to G.M.T., 11h. 7m.

On November 10 Eros will be about ½° N.E. of the star, and on November 11 about ½° N.N.W. of the star. The magnitude of the planet will be 9½. If the small stars in the region indicated are carefully watched, Eros may soon be identified by his motion.

EPHEMERIS OF COMET 1900*b*.—The following is an abridgment from a complete ephemeris communicated by Herr A. Wedemeyer to the *Astronomische Nachrichten* (Bd. 153, No. 3670).

Ephemeris for 12h. Berlin Mean Time.

1900.	R.A.	Decl.
	h. m. s.	° ′ ″
Nov. 8 ...	15 26 1·69 ...	+66 7 1·6
10 ...	29 5·06 ...	66 17 18·7
12 ...	32 10·10 ...	66 29 12·3
14 ...	35 16·92 ...	66 42 41·4
16 ...	38 25·58 ...	66 57 45·0
18 ...	41 36·22 ...	67 14 22·2
20 ...	44 48·90 ...	67 32 31·9
22 ...	48 3·70 ...	67 52 12·5
24 ...	51 20·75 ...	68 13 22·8
26 ...	54 40·11 ...	68 36 1·5
28 ...	15 58 1·85 ...	69 0 6·5
30 ...	16 1 26·23 ...	+69 25 35·9

NEW VARIABLE STARS.—In the *Astronomische Nachrichten* (Bd. 153, No. 3669), Herr Jos. Hisgen, of the Valkenburg Observatory, announces that he has detected variability in a star in Cygnus having the following provisional position:—

R.A. = 19h 43m 19s.
Decl. = + 48° 49′·3 } (1900·0)

The star reaches the 9th magnitude, and the light changes comprises at least *four* magnitudes: an approximation to the period is given as about 250 days.

IN the *Astronomische Nachrichten* (Bd. 153, No. 3670), Dr. T. D. Anderson announces the variability of a star in Pegasus, the change of which has hitherto escaped notice. The position is as follows:—

R.A. = 22h. 4·6m.
Decl. = +13° 38′ } (1855·0).

The variation in magnitude is not completely stated, but at its maximum brightness the star is about 9·9 magnitude, while at minimum it was invisible in a 3-inch telescope.

IN the same issue of the above journal, Mr. A. Stanley Williams calls attention to a new variable star in Lyra with the following co-ordinates:—

R.A. = 18h. 32m. 51s.
Decl. = +43° 49′·6 } (1855·0).

The variation of magnitude was determined photographically from plates taken with a portrait lens of 4·4 inches aperture. When at its greatest brightness the star is of about 10·5 magnitude, diminishing to a minimum of below 12 magnitude. A table of successive observations indicates maxima to have occurred about December 31, 1899, and September 3, 1900.

ASTRONOMICAL WORK AT DUNSINK OBSERVATORY.—The ninth volume of astronomical observations and researches at Dunsink, the observatory belonging to Trinity College, Dublin, consists chiefly of a catalogue giving the mean places of 321 stars, furnished by observations made with the meridian circle during 1898-9, under the direction of Prof. C. J. Joly, the Astronomer Royal of Ireland. The instrument has been provided with a new reticle having three sets of five vertical wires instead of five sets as formerly. The actual observations and preparation of the catalogue were done by Mr. C. Martin.

THE LEONID METEORIC SHOWER.

WITH the return of the Leonid epoch we are naturally led to inquire as to the prospect immediately before us. The expectation of preceding years having been grievously disappointed, observers cannot help feeling very dubious as to the return of the meteors. This is accentuated by the fact that computations made under Dr. Downing's directions show that since their return in 1866 the denser part of the stream has been subject to considerable perturbation. At the middle of November 1899 the meteors probably passed about 1¼ millions of miles inside the earth's orbit, and therefore escaped a rencontre with the earth. At the ensuing approach the conditions appear even less favourable, for the calculations indicate that the swarm will pass us by at a point about 1¾ millions of miles nearer to

the sun than the earth. There would seem therefore to be little chance of a rich display this year.

No one can question that the calculations so far as they go are perfectly trustworthy. But is it possible, in dealing with an enormous assemblage of meteors in respect of which our knowledge is admittedly very inadequate, to define either its position, extent or density with great exactness? There is still much of mystery involved in comets and meteors. It is just possible that some development or variation in the system of Leonids will bring it prominently into view again this year. At any rate, this must be regarded as a quite possible contingency, for it is certain that every feature connected with and influencing the visibility of the meteors cannot have been allowed for. Our historical knowledge of the various attributes of the stream is very rough and incomplete, for the swarm has only made one visible return since meteoric astronomy has been recognised as an interesting and important branch of astronomy.

But, whether or not the mathematical conclusions are justified or falsified by the experiences of next week, every one of us encourages the hope that a plentiful, if not a brilliant, display of meteors will be seen. And astronomers in every part of the world will look for it as a duty. Charts will be got ready for properly recording the paths; cameras will be put into position and every preparation made to suitably record the display should it put in an appearance. The event is not only magnificent as a spectacle, but it is capable of teaching us some valuable lessons.

The moon will offer some interference this year, as she rises on November 13 at 11h. 1m., on November 14 at 12h. 8m., and on November 15 at 13h. 13m., but she will be in her last quarter, so that her light will only obliterate the faintest class of meteors. She will, unfortunately, be situated near the Sickle of Leo. The planet Mars will be placed a few degrees north-west of Regulus. On November 14, at 5h., the moon and Mars will be in conjunction, the latter being 7½ degrees north.

If the shower proves strong or feeble it should be attentively watched on the three nights of November 13, 14 and 15, if the weather is sufficiently clear for the purpose. Regular meteoric observers will also endeavour to trace some of its meteors on dates preceding and following those mentioned. It is not certain that the radiant moves like the Perseids, and we require more data with reference to the duration of the shower. Meteors certainly fall from the Sickle—and they are, presumably, true Leonids—between November 7 and 21. It will be important, therefore, to determine the exact place of the radiant on every night possible during the fortnight mentioned. This will be difficult this year on dates before the maximum owing to the strong moonlight, but it ought to be easy of attainment for a few dates after the 15th, for the moon rapidly wanes and the long nights permit of watches during the eight hours or so from the rising of the radiant at about 10h. 15m. to between 6 and 7 a.m.

The feature to which ordinary observers may usefully direct their attention, should the phenomenon recur under pretty bright aspects, is that relating to the time of maximum display and the number of meteors visible. They should be counted and recorded at, say, five-minute intervals, and registered on forms previously prepared for the purpose. Where several observers combine to effect observations they will, of course, look to different quarters of the sky and be careful to avoid numbering the same objects.

The radiant point at about the time of maximum can be well left to the care of those who have adopted the photographic method. We have already accumulated a large number of determinations by the ordinary eye method; we now require more correct values, such as it is hoped the camera will afford us.

There are many showers in the region of Leo which furnish streak-leaving meteors, and no object should be included in counts of Leonids if its direction of flight when carried backwards does not cut through the Sickle. The best of these circinal Leonid showers is at 154° + 40° from a point about 17 degrees north of the Leonid radiant.

While observers are watching for the Leonid display, it often happens that not only are a few bright Leonids seen, but several large meteors appear from minor radiants. It used to be the custom to term the latter "sporadic" meteors, but they belong to well defined systems, the great majority of which have now been ascertained. In all cases where a fine meteor is seen its apparent path on the celestial sphere should be as carefully recorded as the circumstances permit, and the time of apparition noted. If this plan were followed in every case a number of multiple observations of the same meteors would be available for computing their real paths in the atmosphere. It is hoped, therefore, that this important feature of the work will not be neglected during the ensuing observations, for it need occupy little time, and will certainly provide some valuable material for after comparison and discussion. Last year, on the morning of November 15, there was a magnificent meteor many times brighter than Venus, and though it was well seen at five or six of the leading observatories in England, its path position was not particularly recorded at any one of them.

The most probable time for the recurrence of the shower will be on the night following November 14, and a watch should be commenced soon after the radiant has risen. As a rule, not many meteors are discharged from a low radiant; but what is lacking in numbers is often compensated for by appearance. The Leonids seen before midnight are usually very conspicuous, owing to their long paths, dense streaks, and apparently more gradual flights than those which appear at a later hour of the night, when the radiant has attained a fair altitude. For my own part, I certainly entertain the hope that the display will put in appearance on November 14, and that, though its splendour may fall far short of that of some previous returns, it may yet prove gratifying to those who have looked for the shower in vain during the last few years. In any case, it is to be hoped that the atmosphere will be favourable, for much depends upon the state of the sky; and it is important that we should ascertain in what strength the event returns. W. F. DENNING.

THE NOBEL PRIZES FOR SCIENTIFIC DISCOVERY.

A BRIEF note upon the prizes endowed by the late Dr. Nobel has already been given (p. 11). A translation into English of the regulations under which the prizes will be awarded is given in *Science*, and the essential parts are here stated for the convenience of investigators unable to see a copy of the official document just distributed by the Board of Education.

The three corporations awarding the Nobel prizes are:

(1) The Royal Academy of Sciences, at Stockholm. The King is the protector of the Academy, which numbers 100 Swedish and Norwegian members and 75 foreign members. (2) The Swedish Academy, at Stockholm. The King is the protector. The members, exclusively Swedish, are limited to 18. (3) The Carolin Institute of Medicine and Surgery, at Stockholm. The number of professors is 22.

The Nobel endowment is based on the will of Dr. Alfred Bernhard Nobel, engineer, drawn up November 27, 1895. The stipulations are as follows:

"The remainder of the fortune which I shall leave shall be disposed of in the following manner: The capital, converted into safe investments by the executors of my will, shall constitute a fund the interest of which shall be distributed annually as a reward to those who, in the course of the preceding year, shall have rendered the greatest services to humanity. The sum total shall be divided into five equal portions, assigned as follows:

"(1) To the person having made the most important discovery or invention in the department of physical science.

"(2) To the person having made the most important discovery or having produced the greatest improvement in chemistry.

"(3) To the author of the most important discovery in the department of physiology or of medicine.

"(4) To the author having produced the most notable literary work in the sense of idealism.

"(5) To the person having done the most, or the best, in the work of establishing the brotherhood of nations, for the suppression or the reduction of standing armies, as well as for the formation and the propagation of peace conferences.

"The prizes will be awarded as follows: For physical science and chemistry, by the Swedish Academy of Sciences; for works in physiology or medicine, by the Carolin Institute of Stockholm; for literature, by the Academy of Stockholm; finally, for the work of peace, by a committee of five members, elected by the Norwegian Storting. It is my expressed will that nationality shall not be considered, so that the prize may accrue to the most worthy, whether he be a Scandinavian or not."