

RED Book No. 173 of the British Fire Prevention Committee contains an account, with photographs, of tests on reinforced concrete doors. These doors were constructed to the designs of Commandant Welsch, ex-chief officer of the Ghent Fire Brigade. No. 1 door had a T iron rim and expanded metal and flat-iron reinforcement filled in with concrete; this door was hung on runners and made to slide, and was fixed on the outside of an opening. No. 2 door was similar to No. 1 door, but fixed on the inside of an opening. In No. 3 test two doors as described above were used, one on the inside and one on the outside of an opening. In No. 3 test, the doors were subjected to the action of a fire of 150 minutes' duration at temperatures gradually increasing to about 2000° F., followed by the application of water for two minutes on the fire side. In thirty-two minutes the outer face of the outer door was too hot to bear the hand, and in 140 minutes the lower half of the door had bulged outwards. In seventeen minutes cracks appeared all over the fire side of the inner door and continued to increase; in 107 minutes this door came away from the runner at one top corner; in 150 minutes the door fell forwards into the interior of the hut. On water being applied, the inner face of the outer door was eroded where struck by the jet. The tests afford some very useful lessons and give information which should lead to the design of an efficient fireproof reinforced concrete door.

THE report of the council and the proceedings of the Hampstead Scientific Society for the year 1912 show that the work of the society, which was founded in 1899, not only expanded greatly during the year, but increased in value. It is hoped that during the present month the work "Hampstead Heath: its Geology and Natural History," prepared by members of the society, will be published. The Mayor and Borough Council of Hampstead have invited the South-Eastern Union of Scientific Societies to hold its annual congress at Hampstead this summer, and the meetings will be held from June 4 to 7. Thirty-two meetings were held during the year, besides six summer outdoor meetings and a course of four lectures to juveniles during the Christmas holidays. Among the list of lecturers during the year we notice the names of the president of the society, Prof. W. M. Flinders Petrie, and of Profs. A. Fowler and A. W. Porter. The report records a deficit on the general working of the society, due to the heavy expenditure involved in the maintenance of the meteorological station, which has now three years of unbroken meteorological records to its credit.

AMONG the most recent additions to the admirable series of "The People's Books," which Messrs. T. C. and E. C. Jack are publishing at 6d. net each, are three volumes dealing with subjects of science and technology. Dr. P. Phillips writes on the "Science of Light," and intends his book to be a companion to that on "Radiation," already published in the series. In between eighty and ninety small pages he deals with the propagation, reflection, refraction, dispersion, interference, and polarisation of light, and also explains diffraction and the electromagnetic nature

of light waves. The treatment is necessarily slight, but the volume will prove useful even to students of physics, because of the outline history of the science which it contains. In a volume on "British Birds," Mr. F. B. Kirkman gives descriptions of 187 of the commoner species and their nests and eggs. Mr. A. W. Seaby has provided 111 illustrations, which, though small, give a good idea of the birds described. The third book is on "Gardening," and is by Mr. A. C. Bartlett, who has confined his attention to descriptions of the chief gardening operations and the propagation of plants by cuttings, grafting, budding, and other methods.

OUR ASTRONOMICAL COLUMN.

A NEW FAINT COMET (1913a).—A Kiel telegram of date May 7 reports the discovery of a comet of magnitude 9.5 on May 6, at 15h. 5m. mean time, Nice, by M. Schaumasse, of the Nice Observatory. Its position when discovered was given as R.A. 20h. 54m. 44s., and declination +9° 52', and it was moving in a north-easterly direction.

A Kiel circular of May 10 gives the following elements and ephemeris, computed by Kiess and Nicholson :—

$$\begin{aligned} T &= \text{May } 17.91 \text{ G.M.T.} \\ \omega &= 57^{\circ}.28' \\ d &= 317^{\circ} \text{ } 0' \\ l &= 26^{\circ} 26' \\ q &= 1.440 \end{aligned}$$

		h. m. s.			δ	
May 15	...	20	16	12	...	+19 0
" 19	...	19	48	37	...	+24 13
" 23	...	19	11	22	...	+30 7

The comet rises this evening about 9.20, and should be capable of being seen with telescopes of moderate power in the early morning hours.

THE PHYSICAL APPEARANCE OF MARS.—It is well known that observers of the planet Mars are divided into two schools, one believing that the so-called canals are really long, continuous, and narrow streaks, the other looking upon them as the summation of a complexity of detail revealing irregular streaks and presenting frequent interruptions and condensations. In the current number of *Knowledge*, Mr. Antoniadi, a strong advocate of the latter view, communicates an interesting article on the subject of these Martian markings, and puts forward his explanation of the divergency of ideas of observers on their appearance. Large *versus* small aperture is his main reason; thus he writes:—"The student who passes many consecutive hours in the study of Mars with medium-sized instruments is liable to catch rare glimpses of straight lines, single or double, generally lasting about one-quarter of a second. Here we have a vindication of Schiaparelli's discoveries. But their deceitful character will obtrude itself on the observer using a large telescope, when, in the place of lines, he will behold steadily either a winding, knotted, irregular band, or the jagged edge of a half-tone, or some other complex detail." The article is illustrated by a fine set of drawings of the planet made in 1911, the observations being made with the 33-in. refractor of the Meudon Observatory.

THE NATIONAL OBSERVATORY OF ATHENS.—Vol. vi. of the *Annales de l'Observatoire National d'Athènes* contains a series of valuable contributions published under the direction of Prof. Demetrius Eginitis, the director of the observatory. It is only possible here to state the titles of the memoirs and sets of observa-

tions, as the volume covers more than 300 pages, and is illustrated with numerous plates. The memoirs deal with Halley's comet during its last return; observations of the major planets; Nova Lacertæ; the earthquake in the Gulf of Corinth on May 30, 1909; and, finally, with the study of seismic disturbances in Greece during the years 1909-11. The second portion of the volume deals with observations for the same period, and these include equatorial and meridional observations, meteorological observations made at the observatory and at departmental stations, and, lastly, a catalogue of earthquakes observed in Greece during the same year.

FREQUENCY OF PROMINENCES ON EASTERN AND WESTERN LIMBS OF THE SUN.—Mr. Evershed has examined statistically a mass of very complete material of prominence observations, both visual and photographic, to inquire into the question as to whether one limb is more prolific than the other (Kodaikanal Observatory Bulletin No. 28). In his examination he has gone thoroughly into the question of the methods of observation for both kinds of records in order to make certain that the results were in no way affected by any kind of systematic bias in favour of one limb over the other.

The result of the inquiry is that there is a distinct predominance of frequency at the eastern limb. Briefly summarised, the different records led him to the following conclusions. The Kodaikanal observations for 1904-11 displayed as regards numbers for each year a nearly constant excess of east over west, the average percentage of east being 52.70. The Kenley and Catania series for 1894-1905 exhibited also an eastern excess averaging 50.8 per cent of the whole number recorded; for the period 1906-11 the Catania observations displayed an eastern excess of 54.26 per cent. At Kodaikanal during 1905-11 the larger prominences showed a smaller eastern excess than the smaller prominences, the percentages being 51.16 and 53.60 respectively. In the case of profile areas of prominences a small average excess of eastern areas is observed. The eastern excess as regards numbers is about the same for prominences in equatorial regions up to 30.5° lat. as for those in higher latitudes.

Mr. Evershed directs attention to a slight evidence of planetary action similar in effect to that of the earth in the case of Venus only among the major planets, and also to an annual periodicity in the eastern predominance with maxima in January and August and minima in April and November. In a supplementary note he points out that metallic prominences and those showing displacements of the hydrogen lines show a much greater preponderance of east over west, the percentages in these cases being 59.9 and 57 respectively. As all the observations were made visually there is the possibility of bias in favour of the eastern limb.

EVENING EDUCATIONAL WORK IN LONDON.¹

A VERY valuable and interesting survey of the progress of technical, scientific, and commercial education in evening classes in the London polytechnics, technical institutes, and continuation schools has recently been presented to the Education Committee of the London County Council by Mr. R. Blair, the education officer of the council.

The provision now made of instruction in evening classes in London is of remarkable range and extent.

¹ Report on Eight Years of Technical Education and Continuation Schools (mostly evening work). Presented to the Education Committee on December 11, 1912, and ordered to be printed. London County Council Education Committee: P. S. King & Sons. Price 2s. 6d.

It comprises tuition, at almost nominal fees, in all stages of science, technology, arts and crafts, commercial subjects, economics, and literature, in well-equipped institutions from qualified teachers. The London evening student has now far greater educational facilities open to him than are offered in even the most progressive provincial towns, especially in the matter of securing university recognition for his work, if of a sufficiently high standard.

Some idea of the magnitude, the complexity and the importance of the educational work carried on in evening classes in London is given in the following numbers taken from the report:—

The approximate number of evening students enrolled in 1910-11 was as follows (p. 60):—

(1) In the polytechnics	25,000
(2) In technical institutes and schools of art maintained by the L.C.C.	10,000
(3) In commercial centres	30,000
(4) In ordinary evening schools	100,000
(5) In other institutions, settlements, &c. (estimated)	30,000
	195,000

Deducting one-third of this number as "ineffective" students through irregular attendance, &c., it is clear that a large amount of intellectual and educational work is being steadily carried on, which must of necessity play an important part in the economic and social development of the people of London.

A curious fact is the increasing proportion of adult students, *i.e.* above twenty-one years of age, in attendance at evening classes. In 1910-11 the probable number of such students was 80,000, "more than twice the number of pupils of all kinds in all the public secondary schools of London."

The gross annual cost of maintenance of evening teaching in London may be approximately estimated at 400,000*l.*, of which about one-half is expended by the polytechnics and the technical schools.

Illustrations are given on p. 12 of the report of the direct value of the work of London technical institutions to the local industries, especially the Leathersellers' College at Bermondsey in its relation to tanning, the Northampton Institute at Clerkenwell to the optical industries, and the L.C.C. School of Photo-engraving and Lithography with respect to the "three-colour" process. In addition to their industrial and technical work, a considerable amount of purely scientific research emanates from the London polytechnics each year, an excellent account of this branch of their activities being given in pages 42 to 47 of the report.

In a memorandum by Mr. A. E. Briscoe (divisional inspector) upon the "Polytechnics and Technical Institutes," it is stated:—"A good deal of very uninformed criticism is directed against instruction in evening classes; it is often urged that such work cannot be effective; that attendance must be irregular; that students are frequently too tired physically and mentally to make the best use of the time available, and that they are also ill-prepared by their previous education. There is some truth in these contentions, but those who urge them . . . their views would be materially altered if they would but spend a week in a close inspection of the work that is actually done. . . . The first thing that would strike them would be the eagerness to learn. . . . The evening student has less time for study, but he makes more effective use of it. He has practical knowledge that forms an excellent basis. . . . In many institutions evening students are doing work in their subjects quite equal to that required for a university degree."