

and avoiding any tendency to buckle the train in the middle due to excessive pushing forces in the rear.

THE forthcoming books of Messrs. John Wiley and Sons, Inc. (New York), include:—Elementary Chemical Microscopy, E. M. Chamot; The Examination of Hydrocarbon Oils and of Saponifiable Fats, D. Holde, translated by E. Mueller; Text-Book of Geology, L. V. Pirsson and C. Schuchert; A Meteorological Treatise on the Circulation and Radiation in the Atmospheres of the Earth and of the Sun, F. H. Bigelow; Manual for Health Officers, J. S. MacNutt; Constant-Voltage Transmission, H. B. Dwight; Field Book of Railroad Engineering, W. G. Raymond; Materials of Construction: their Manufacture, Properties and Uses, A. P. Mills; Steam Power, C. F. Hirshfeld and T. C. Ulbricht; The Railroad Taper: the Theory and Application of a Compound Transition Curve based upon 30-foot Chords, L. Perkins; Working Data for Irrigation Engineers, E. A. Moritz; A Shop Mathematics for Machinists, R. W. Burnham; Interpolated Six-Place Tables, H. W. Marsh; Masonry, M. A. Howe; Plain and Reinforced Concrete Arches, J. Melan, translated by D. B. Steinman.

OUR ASTRONOMICAL COLUMN.

THE RETURN OF METCALF'S COMET?—IN NATURE of February 25 reference was made to a telegram received by Prof. Strömngren relative to the discovery of an object by Miss Leavitt believed to be Metcalf's comet. The *Morning Post* of February 23 published the following paragraph relative to this discovery: "A telegram from Prof. Pickering has just been received stating that the object reported as Comet Metcalf turns out to be a minor planet. This must be a disappointment to Miss Leavitt, but it accounts for the failure of astronomers to find the comet when better placed. The question of priority of discovery, as evidenced by the Southern comet of last year, which was discovered independently at Johannesburg, Arequipa, and Christchurch, New Zealand, on the very same day, has been already responsible for premature publication. Prof. Pickering is, however, generally prepared to take the risk and is sometimes fully justified."

THE CANADIAN 72-INCH REFLECTING TELESCOPE.—Dr. J. S. Plaskett communicates some very satisfactory information about the large Canadian mirror which is in process of being worked up. (*Journal of the Royal Astronomical Society of Canada*, Nov.—Dec., 1914.) The mirror is actually $73\frac{5}{8}$ inches in diameter and $13\frac{5}{8}$ inches thick, weighing 4962 pounds, or a little more than two tons. An excellent idea of the size of this vast piece of glass will be gathered from the illustration accompanying Dr. Plaskett's note, showing the disc with Dr. John Brashear sitting beside it. Already the edge has been ground, the labour occupying three weeks, and the more delicate and dangerous work of drilling the central hole has been satisfactorily completed. The latter involved first boring a hole of 9 inches diameter, then enlarging it to 10 inches, and finally smoothing and squaring it up and bevelling off the top edge. The next procedure is the figuring of the upper and lower surfaces to make each plane in order to choose which surface is the more suitable for shaping into parabolic form. It is satisfactory to read that "the more the disc is examined the better it seems to be, and hopes are high that it will prove a great success."

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ANOMALOUS DISPERSION IN THE SUN.—No. 93 of the Contributions from the Mount Wilson Observatory contains a communication from Mr. Charles E. St. John, entitled "Anomalous Dispersion in the Sun in the Light of Observations." Mr. St. John first directs attention to recent publications by Prof. Julius, who has considered the displacements of the Fraunhofer lines at the centre and limb edges of eccentrically located sun-spots from the point of view of his theory of anomalous dispersion. In these Prof. Julius has set forth "a new deduction from the theory of anomalous dispersion—the "mutual influence" of the Fraunhofer lines upon each other; in particular, that a weak line on the violet side of, and near to, a stronger line is displaced less, but if on the red side more, than the average amount." The above deduction affords Mr. St. John, as he says, an opportunity of making a quantitative test of the rôle played by anomalous dispersion in the solar atmosphere, and this he does in the present paper. It may be remarked that Prof. Julius used the data published by Mr. St. John in his paper, "Radial Motion in Sun-spots." In the present discussion, which covers more than forty pages, it is impossible to refer even briefly to any of the details here stated. Mr. St. John sums up in eleven paragraphs the results of his investigation, and the reader must refer to the article itself for further information. The general result may, however, be expressed by reproducing the last paragraph of the summary. "The general conclusion from this review of solar observations is that the deductions from the anomalous dispersion theory which are susceptible of definite and quantitative tests are not supported by the observational data, and that observations are outstanding which have not yet been explained by the theory."

GREAT DETONATING FIREBALL IN SOUTH AFRICA.—Some of the South African newspapers just received give particulars of a fireball which appeared nearly over Cradock and Queenstown on January 9 last at 1.20 a.m. It vividly illuminated the heavens for several seconds, and was followed shortly after by a series of loud explosions.

The meteor evidently came from the N.N.W., passing between Cradock and Queenstown, and finally disappearing to the S.E. of the former place at a distance of about 24 miles, but the exact figures are doubtful. The estimated interval between the flash and the detonation was variously given by different persons at Cradock between 30 seconds and 3 minutes. The meteor may have fallen to the earth in the region S.E. of Cradock, and it is to be hoped that a thorough search has been instituted for the object. Its flight appears to have been directed from the position of the radiant of the January meteoric shower from Quadrans, the maximum display from which is usually developed on January 3. But the shower is certainly prolonged until January 9. The meteor, however, more probably owed its origin to a radiant in the constellation Draco.

The recent meteor startled a large number of persons by its loud detonation. Houses are said to have been shaken, and the visitation was ascribed by many people to an earthquake. The real path cannot be satisfactorily computed from the observations, which are not of a suitably exact character. The period from January 9 to 14 is notably rich in fireballs, and it merits further investigation. There are evidently a number of radiant points active at this epoch, and among those best pronounced will be found positions at $120^{\circ}+0^{\circ}$, $148^{\circ}-12^{\circ}$, $230^{\circ}+52^{\circ}$, and $332^{\circ}+36^{\circ}$.