be resisted by a certain chain, we are using a colloquial and inaccurate expression, like calling a door *heavy* when we are not attempting the feat of Samson, but merely opening or shutting it, turning it on its well-oiled hinges.

During the present session we have aided ourselves in Glasgow with four very important helps to the teaching of the kinetic system of force-measurement. One is the improvement in nomenclature just referred to. The second is the use of names for the kinetic units of force. The British Association has sanctioned the use of the name *Dyne* for the kinetic unit of force founded on the centimetre, gramme, and second, as units of length, mass, and time respectively. Prof. James Thomson has given the name *Poundal* for the British kinetic unit of force founded on the foot, pound, and second. The third help is the construction by Prof. Thomson, for the first time, so far as I know, of spring balances for indicating poundals and kilodynes. The fourth aid is Dr. Everett's admirable book on the C. G. S. system of units. J. T. BOTTOMLEY

University of Glasgow, Feb. 7

Seasonal Order of Colour in Flowers

I AM very much obliged to Mr. Buchan for his elaborate paper in NATURE, vol. xiii. p. 249, on the Flowering of Spring Plants (see my query, NATURE, vol. xiii. p. 129). Although agreeing with Mr. Pryor that the blue is anticipated by various other colours, yet I think that the method of inquiry by averages is the only basis we can go upon; and that is the plan I have adopted for some time. I have now a carefully-assorted collection of hyacinths, and I see that the blue and white are coming out nearly together, the red showing as yet no colour whatever. What would be the action of light upon blue or red flowers, if the blue or red ray was carefully excluded, if this could be done? Would the flower thrive, and if so, would its colour be much altered? C. E. HERON ROGERS

Retford, Notts, Feb. 7

OUR ASTRONOMICAL COLUMN

VARIABLE STARS.—Herr Julius Schmidt publishes (in *Astron. Nach.*, No. 2,074) the results of observations of variable stars made at Athens in 1875, amongst which the following may be noted:—

1. 34 Bootis, a star to which he had directed attention some years since, as certainly variable though observed with difficulty on account of proximity to ϵ, was found to be at a maximum on April 26—a good determination. In 1872 he assigned a period of 369 days from six observed maxima, commencing 1867, July 31, and as many minima, the first, 1867, November 18. Between the maxima of 1867 and 1875, we should have eight periods of about 353 days. The mean place of this star for the beginning of the present year is in R.A. 14h. 37m. 32s., N.P.D., 62° 54′·1.

2. Mira Ceti. Three curves drawn from comparisons of this star with α and γ Ceti and α Piscuim gave the date of maximum, February 27·5, March 1 and 3 respectively, of which the latter is preferred. Calculating from the formula of sines in Schönfeld's second catalogue, the maximum of 1875 is fixed to February 24·2. Observed minimum, October 30.

3. η Geminorum.—The variability of this star was detected by Schmidt in 1865, and has since been confirmed by Schönfeld, who found for the brighter phase small and not very regular fluctuations, but for the minima a regular diminution and increase, the first continuing about six weeks, and the last perhaps rather longer. This is in near agreement with Schmidt's previous deductions. He had found by comparison with μ Geminorum that η at times remained constant for several months about the maxima, of which, writing in 1869, he states he had been unable to assign the dates. In 1875, however, two maxima were noted, Feb. 25 and Sept. 23; showing an interval of 210 days. The period assigned in the last Manheim catalogue is 229·1 days. This star is of a deep yellow colour. Variation between extremes of 3·2 and 4·2.

4. ϵ Aurigæ.—Schmidt collects the results of his comparisons of the relative brightness of ϵ and η Aurigæ, between the years 1843-1875. The star is irregularly variable within somewhat narrow limits.

5. u Herculis.—The principal period appears to be about 38·7 days, but according to Schmidt (A. N. 2,075) the curve exhibits waves of about twelve hours' duration, which are of the greatest depth at the principal minimum, and comparatively shallow at the maximum, and he has given a figure explanatory of what he considers to have been the law of variation between 1875, July 4, and Aug. 29. So unique a case appears to require further investigation.

6. g Herculis.—This reddish-yellow variable was discovered by Mr. Baxendell in 1857, and has been carefully observed by Schmidt. The period, according to Schönfeld, has varied between 40 and 125 days, the star thus resembling in the great irregularity of period the well-known R Scuti, which was discovered by Pigott in 1795. Last year Schmidt's comparisons showed three maxima and two minima, indicating periods 77, 73, and 77 days. The variation extends through little over one magnitude.

7. α Cassiopeæ.—Of this star Schmidt remarks that the fluctuations of brightness in 1875 were not greater than in the cases of other stars, which are not yet placed upon the variable list.

8. T Coronæ Borealis (Nova 1866).—Mostly ninth magnitude, or rather fainter; exhibiting sensible variation, but to very small amount.

9. R Scuti.—Observed maxima on October 12 and December 8 give the short period of 57 days. The period entered in Schönfeld's second catalogue is 71·1 days. There are great irregularities in the case of this star, not only in the period but in the degree of brightness at both maximum and minimum; the former has been noted between 4·7 and 5·7, and the latter between 6·0 and 8·5.

MINOR PLANETS.—No. 131, *Vala*, discovered by Prof. Peters at Clinton, U.S., 1873, May 24, has so far been unsuccessfully sought at Pola and Berlin between limits of −30m. and +15m. in respect to the place of the ephemeris apparently founded on Stockwell's elements; the longitude of perihelion in this orbit differs materially from that given by Knorre's earlier calculation, and possibly a misprint or error of transcription may be the cause of the difficulty.—Prof. Tietjen notifies that the ephemeris of No. 141, *Lumen*, in the *Berliner Jahrbuch* for 1878, is vitiated by an error in *Astr. Nach.*, No. 2,030, where ω is substituted for π; the habit of some computers of giving the orbital angle between perihelion and node, instead of the longitude of perihelion itself, is certainly not without its inconvenience, and this is more particularly the case with early orbits of comets.—No. 156, discovered by Palisa, 1875, Nov. 22, has been named *Xanthippe*.—New elements of No. 158 give a period of 1,889 days, or 5·17 years.

THE SATURNIAN SATELLITE, HYPERION.—Observations of this faint object made with the 26-inch refractor of the U.S. Naval Observatory on forty nights between 1875, June 16 and Nov. 25, appear in No. 2,076 of the *Astron. Nach.* It is stated that the observations were generally made with difficulty. Prof. Asaph Hall acknowledges his obligations to Mr. Marth for his ephemerides of the satellites of Saturn, by which he has endeavoured to facilitate identification of these objects, and which could only have been prepared at an expenditure of much time and trouble.

THE DATE OF EASTER

WE revert to this subject with the view to reproduce the arithmetical rule to find Easter Sunday in the Gregorian Calendar, which was first given by the