test of his law; the correct value had been published in England thirty years earlier by Richard Norwood. The fact that international jealousy delayed the universal acceptance of the law of gravitation seems strange to us now; there is, however, a slight echo of it in the antipathy shown to Einstein in some quarters, because of his nationality. The article shows the important part that Voltaire played in persuading the French of the truth of Newton's law. Thus we find that before the return of Halley's comet in 1759, Clairaut and Lalande calculated its perturbations by gravitational methods. Prof. Forsyth makes the practical suggestion that the bicentenary of Newton's death in 1927 should be marked by a new edition of his collected works. There has been none since Horsley's edition in 1785, and many additional manuscripts have been discovered since that date.

THE Almanac for the year 1923 published by the Egyptian Government contains, in addition to the usual statistical information, a good deal of matter of scientific interest. There are chapters on the geographical features, and special attention is given to the Nile. Agriculture and antiquities receive considerable attention, and there is a long section on irrigation. It is noted that the almanac is intended to be explanatory and descriptive rather than statistical, and in this respect is intended to supplement the "Annuaire Statistique." The book is a valuable volume of reference on Egypt.

Our Astronomical Column.

A LARGE FIREBALL.—Mr. W. F. Denning writes: "On September 7, at 7.45 P.M., G.M.T., a large fireball was observed from many places in the south-west of England. As viewed from Par, Cornwall, it appeared as large as the full moon, and passed from the west over north-west, and finally disappeared in north-north-west. It left a brilliant trail of light, and this remained conspicuously obvious to the unaided eye during five minutes. The trail exhibited some singular changes of shape and position while it continued in sight. It first assumed a vertical direction, after which the extremities curved to the left and formed a semi-circle.

"A number of other observers in Cornwall have reported observations of the phenomenon, and among other places it appears to have been well observed at Fowey, Liskeard, and Polruan. The object was also seen from Southampton, from which place the enduring streak was situated due west at an altitude of 16°."

STELLAR MASSES.—Accumulating statistics on binary systems, combined with the great increase in the number of fairly trustworthy parallaxes, have made it possible to deduce mean values of the stellar masses for each spectral type. Messrs. Russell, Adams, and Joy investigate the matter in a joint paper in Pub. Ast. Soc. Pacific for August, using about 400 stars. They assign to type O masses of 6 to 9, to type B mass 6, to giants of types A to G masses 2 to 4, and to the dwarfs of all classes masses $\frac{1}{2}$ to $2\frac{1}{2}$; in each case the unit is the sun's mass.

On plotting mass against absolute magnitude, they obtain a graph that is practically a straight line, though with a slight upward bend for type B. This result seems to lead to a fairly obvious corollary, which is not, however, given by the authors. It is that the duration of the stellar universe in the past is of the same order as that of the luminous period of individual stars. If it were much greater than this, then even the most massive stars would have had time to distribute themselves among all the ranks of absolute magnitude. The same conclusion is obtained by dynamical studies of the stellar motions, which do not indicate any great preponderance of non-luminous stars.

The recently published report of the Cape Observatory states that the stellar masses are also being investigated there. The results suggest that the masses group themselves about certain standard values, $11\frac{1}{2}$, $5\frac{3}{4}$, $2\frac{3}{4}$, $1\frac{1}{4}$ of the sun, each being about double the following. If this law should be established, it would indicate that the large masses were determined by some physical cause, and that they were liable to successive subdivision into equal parts.

HEAT RADIATIONS OF PLANETS.—Allusion has already been made in these notes to the investigation by Messrs. Edison Pettit and Seth Nicholson on the dark heat-waves emitted by the planets. These are isolated by the use of a cover-glass transmitting between 0·3 μ and 5·5 μ (with a weak extension to 7·5 μ), and a water-cell transmitting between 0·3 μ and 1·3 μ. The curve of atmospheric transmission at Mt. Wilson is a very complicated one, with eight minima between 0 and 8 μ, and two maxima between 8 μ and 14 μ. The dark planetary radiations are chiefly in the latter region. The deflexion from the planet Mercury has been compared with that from the moon, the ratio of radiation per unit area being 264/206, a smaller ratio than would be expected in view of Mercury's proximity to the sun. The authors make the suggestion that it may indicate a rapid rotation of Mercury; they note in corroboration of this that they obtain a sensible deflexion even from the dark portion of Mercury's disc.

Their former measures indicated practically no dark heat from Jupiter, but the present series gives 78·1 per cent. of its radiation between 0·3 μ and 1·3 μ, 15·3 per cent. between 1·3 μ and 5·5 μ, and 6·6 per cent. between 8 μ and 14 μ.

A SMALL STELLAR MASS.—*Astr. Nachr.*, No. 5246, contains an investigation of the orbit of the binary O. Struve 400, by P. Meier. The position for 1900 is R.A. $20^h\ 6^m\ 54^s$, N. Decl. 43° 39′, magnitude 7·7, spectral type G 3; trigonometrical parallax 0·043″ (Sproul Observatory), spectroscopic parallax 0·030″ (Mt. Wilson). The elements obtained are: period 84·4 years, periastron 1885·1, e 0·48, ω 19·4°, Ω 143·9°, i 62·5°, a 0·428″. The observations used extend from 1843 to 1922, so that practically a revolution has been completed. Using the Sproul parallax, the sum of the masses is 0·138 of the sun. (By a slip this is printed in *Astr. Nachr.* as 0·014 of the sun.)

The smallest stellar mass hitherto measured is that of the faint component of Krüger 60, which is about one-seventh of the sun; but if the present result is trustworthy, the joint mass of the pair is equal to that of this star.

A comparison of observed and computed positions is given. The agreement is fair, considering the closeness of the pair. The star is one that should be kept under observation. The components are furthest apart, 0·62″, in 1932; the separation is more than 0·50″ till 1948.