road construction are given in an instructive and interesting form. To quote the words of Mr. C. W. Dabney, Assistant Secretary of the Department: "It has been sought to make the volume a concise reference book of useful agricultural information based in great part upon the work of this and other Departments of the Government, without making it an encyclopædia of general information. In brief, the effort has been to make a book, and not a mere Government report—a book worthy to be published in an edition of half a million copies and at an expense to the people, if we count both publication and distribution, of over four hundred thousand dollars." The money thus spent in disseminating accurate knowledge of agricultural investigations may appear excessive, but it will be returned to the country a hundred-fold.

THE additions to the Zoological Society's Gardens during the past week include a Black-faced Kangaroo (*Macropus melanopus*, ♂) from Australia, presented by Mr. G. T. Wills; a Loder's Gazelle (*Gazella loderi*, ♀) from Oued Souf, Algeria, presented by Mr. A. B. Birdwood; a Gazelle (*Gazella* ——), two Hairy-footed Jerboas (*Dipus hirtipes*), a Spot-bellied Snake (*Zamenis ventrimaculatus*), an Ocellated Sand Skink (*Seps ocellatus*) from Arabia, presented by Dixon Bey; a Common Cormorant (*Phalacrocorax carbo*), British, presented by Miss G. Howell; two Passerine Parrots (*Psittacula passerina*) from South America, presented by Miss L. Scott Moncrieff; a Brown Capuchin (*Cebus fatuellus*) from Guiana, a Grey Ichneumon (*Herpestes griseus*) from India, deposited; two Patagonian Cavies (*Dolichotis patachonica*), two Ypecaha Rails (*Aramides ypecaha*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

BROOKS'S COMET.—This comet, which M. Javelle, of Nice, has fortunately re-discovered, remains so faint an object, that other observations for the improvement of the elements, computed by Dr. Bauschinger, are still wanting. The one position secured has been utilised to correct the mean motion, and consequently the time of perihelion passage. This will take place November 4·18375, Berlin mean time, or only 0·2083 days later than the time determined from the last appearance. The excentricity needs probably a small correction, but the data for its determination are not yet existing. The following ephemeris, for Berlin midnight, is derived from the corrected mean motion and time of perihelion passage.

1896.	R.A. h. m. s.	Decl. ° ′ ″	Brightness.
Aug. 13 ...	22 32 43·50 ...	−18 54 24·1 ...	1·8
16 ...	30 58·66 ...	18 59 1·0 ...	1·9
20 ...	28 26·73 ...	19 4 4·9 ...	1·9
24 ...	25 44·87 ...	19 7 30·7 ...	2·0
28 ...	22 58·22 ...	19 8 52·5 ...	2·0
Sept. 1 ...	20 11·78 ...	19 7 49·1 ...	2·1
5 ...	17 31·14 ...	19 4 1·2 ...	2·1
9 ...	15 2·04 ...	18 57 10·7 ...	2·1
13 ...	12 49·63 ...	18 47 8·8 ...	2·0
17 ...	10 58·23 ...	18 33 53·0 ...	2·0
21 ...	9 31·79 ...	18 17 22·7 ...	2·0
25 ...	8 32·66 ...	17 57 45·6 ...	2·0
29 ...	8 2·93 ...	17 35 8·0 ...	1·9

For finding the comet, the bright star Fomalhaut will still be convenient, the region comprised in the ephemeris being about 11° north of the star, and on the meridian (London) about 1·45 a.m.

METEOR TRAILS.—We noted on July 30 (p. 301) that attention has been called by Prof. Johnstone Stoney and others to the desirability of observing the meteors in November next, which are likely to form part of the great November shower, particularly with the view of settling the question of the date at which the shower was introduced into the solar system. Improved methods of observation might have been expected to furnish more accurate information, and lead to a closer approximation to the orbit. It is therefore disappointing to read in the Report issued by Dr. Elkin, the Director of the Yale Observatory, that, notwithstanding repeated efforts, no photographic records of meteor trails have been secured. The apparatus was in use for the August meteors, but none were of sufficient brilliancy to impress themselves upon the film, which had become somewhat fagged by the strong moonlight. Other occasions were equally disappointing; but the Director is not discouraged, and in place of the two lenses now employed he hopes to substitute the complete battery of lenses for which the mounting was originally planned.

PERSONAL EQUATION IN OBSERVING TRANSITS.—The vexed question of the existence and necessary removal of personal equation in determining clock error has been attacked by Mr. R. H. Tucker, of the Lick Observatory. The particular form of the question to which Mr. Tucker has applied himself is that raised some years since by Prof. van der Bakhuyzen, of the effect of the brilliancy of the star on the time of transit determined by chronographic registration. Mr. Tucker placed over the object-glass four thicknesses of wire netting, which reduced the magnitude of the star 4·1 magnitudes, or, in other words, destroyed all but one forty-fifth part of the original light. The clock error was determined from the observations of stars, with and without the screen alternately, with the result that the faint stars were observed 0·037s. later than when seen at their full brilliancy. The correction to observed right ascension is −0·009s. for each magnitude, with a probable error of ±0·001s.

RECENT RESEARCHES ON RÖNTGEN RAYS.

THE subjoined summary brings together in a convenient form for reference a number of researches on Röntgen rays which have recently come under our notice. It will be seen that a large amount of detailed information with reference to the character and capabilities of the rays is being accumulated by investigators in various parts of the world.

Dr. A. Dupré, F.R.S., writes, under date July 29:

"The article by Mr. Benjamin Davies, in your issue of July 23, has recalled to my mind certain experiments of my own, made several months since, which may perhaps throw some light on Mr. Davies' results. I was then working with various vacuum tubes, and among others with an ordinary Geissler tube containing nitrogen, such as is used for obtaining spectra of gases. The capillary part of this tube gave a brilliant light, which had the power of inducing fluorescence of many substances, to a remarkable degree, the light falling direct on to the substance. The tube being in action, the screen covered with platino-cyanide of potassium fluoresced strongly ten feet from the tube, the active surface being towards the tube. This was, of course, to be expected, but, to my astonishment, the fluorescence was almost equally noticeable when the back of the screen was turned towards the tube, and remained so even when I interposed a book, a board, a sheet of tin-plate, or the human body between the tube and the screen. When, however, I placed my hand against the back of the screen, no trace of a shadow was noticeable; the same was the case when pieces of metal, or other objects opaque to the Röntgen rays were so placed. The screen all the while remaining strongly and uniformly fluorescent. This seemed to me to show that, whatever the nature of the rays producing the fluorescence of the screen, they could not be Röntgen rays; and I concluded that the fluorescence was really due to light striking the front, or active, surface of the screen after reflection, either from the walls of the room, or, perhaps, from the air. When accordingly all possibility of any light thus reaching the screen was excluded, all fluorescence was effectually stopped. Might it not be possible that in Mr. Davies' experiment the fluorescence of his screen was in part, at least, induced by rays reaching the active surface of the screen after reflection? Thus accounting for the fact that the hand cast no shadow whatever."

Mr. J. A. M'Clelland read a paper on the "Selective Absorption of Röntgen Rays" before the Royal Society on June 18. The experiments described in the paper were made to determine whether or not the Röntgen rays given off by a vacuum bulb were of a homogeneous nature, by examining the manner in which they are absorbed by different substances. The substance whose absorptive power was to be examined—say, a plate of glass—was placed so that the rays traversed it before falling on a charged disc, which was in connection with a pair of