drainage of Lake Mareotis at Mex, near Alexandria. When completed, there will be eighteen pumps, each capable of delivering 100,000,000 gallons a day through a lift of 20 ft. The present order comprises the first ten pumps, together with the necessary gas producers, Venturi meters, etc. The great size of the pumps may be judged from the fact that their capacity will be between two and three times that of the pumps installed at the Chingford Reservoir. The combustion chambers will have a maximum internal diameter of 8 ft. 8in., and a height of 14 ft. approximately. Each water valve box will be 8 ft. 8 in. in diameter, and 7 ft. high, and will have 100 valves of the hinged type, specially designed to enable any valve to close upon an obstruction without throwing undue stress upon the hinges. On the next stroke, when the obstruction has been removed by the rush of water, the valve will readjust its position automatically and close fairly upon its seat.

THE accidental subsidences which occurred in Paris a few days ago on one of the Paris Metropolitan lines now in course of completion form the subject of an article in *Engineering* for June 19. The driving of the new underground line appears to have been the immediate cause of the catastrophe. The existing masonry sewers seem to have been shored up over the tunnel driven to take the line; they appear to have broken down at parts during the violent storm of June 15, and the water, by flowing into the tunnel, led to undermining and to the caving-in of the tunnel arch by carrying away the earth and stone on which the arch rested temporarily, and also by carrying away at intervals the masonry walls which formed its final support. It is quite evident that the excavation work, which the construction of the new lines involves, is surrounded with most serious difficulties, carried out as it is in the very soft earth which constitutes the subsoil of Paris, amongst a most complicated network of sewers and pipes, and very frequently through bodies of underground water. It is too early to draw conclusions from the disaster, but one point would seem to stand out clearly, and this is to the effect that no precaution and no reasonable amount of timbering should be deemed superfluous when driving a large network of tunnels in a treacherous subsoil like that of Paris.

OUR ASTRONOMICAL COLUMN.

COMET NOTES.—Zlatinsky's comet (1914*b*) is gradually becoming fainter and getting further south, but the following ephemeris, calculated by Prof. Schwassman (*Astronomische Nachrichten*, No. 4739) of Bergedorf, will permit of it being followed with larger instruments :—

	R.A. (true) h. m. s.	Dec. (true) ° ′ ″	Mag.
June 24 ...	9 24 16·2	... −9 3 15	... 8·8
25 ...	25 49·9	... 9 36 3	
26 ...	27 20·2	... 10 7 29	
27 ...	28 47·6	... 10 37 41	... 9·1
28 ...	30 12·2	... 11 6 44	
29 ...	31 34·4	... 11 34 42	
30 ...	32 54·4	... 12 1 41	
July 1 ...	9 34 12·2	... −12 27 46	... 9·4

The comet discovered by Kritzinger (1914*a*) is a circumpolar object due to its large positive declination. An ephemeris is published in *Astronomische Nachrichten*, No. 4739, by M. P. Chofardet, and the following are the positions for the current week :—

	R.A. h. m. s.	Dec. ° ′
June 25 ...	22 0 50	... +44 49·8
27 ...	5 35	... 44 50·3
29 ...	10 2	... 44 48·0
July 1 ...	14 12	... 44 43·7
3 ...	22 18 4	... +44 36·7

Elements and ephemeris for Delavan's comet (1913*f*) are also given in the same number of the *Astronomische Nachrichten*. This comet is now about the 9th magnitude, and is brightening up considerably, but cannot yet be observed owing to its nearness to the sun. It will be picked up, however, somewhere about the latter end of July.

LARGE TELESCOPES.—Mr H. P. Hollis publishes (*Observatory*, June) a very interesting list of large refractors and reflectors, either under construction or already set up in observatories. In the case of refractors, the lower limit of aperture of the object glass is taken as 20 in., and the same limit is also taken in the case of the reflecting telescopes. Of the thirty-eight refractors about which details are given, the largest objective is that of 49·2 in. made for the Paris Exhibition of 1900. As this is out of use, the largest working objective is that of the Yerkes Observatory at Wisconsin, U.S.A. Of the refractors under construction the following may be mentioned :—A 32-in. for the Nicolaieff Observatory, Russia; a 26-in. for the Union Observatory, Johannesburg; three 24-in. for the following observatories: Argentine National Observatory, Cordoba, Chili National Observatory, Santiago, and the Detroit Observatory, Michigan, U.S.A., and a 20-in. for the Chabot Observatory, Oakland, California. The Earl of Ross's 72-in. reflector holds the field for the largest reflector (metallic speculum), while Dr. Common's 60-in. (silver on glass), now at the Harvard Observatory, U.S.A., comes second. Of those under construction, two giants are in hand, namely, one of 100 in. for the Mount Wilson Solar Observatory, and one of 72 in. for the Dominion Observatory, Canada. Others under construction are a 40-in. for the Simeis Observatory, Crimea, and two of 30 in., one for the Helwan Observatory, Egypt, and the other for Mr. D'Esterre's observatory, Surrey, England. It is interesting to note that the number of instruments in each list is about the same, namely, thirty-eight refractors and forty reflectors.

A PLANET BEYOND NEPTUNE.—Mr. H. E. Lau contributes to the June number of *L'Astronomie* a short account of his researches on the perturbations of Neptune and Uranus leading him to suggest a case for a planet beyond Neptune. He produces some interesting and suggestive curves showing the apparent irregularities of the movement of Uranus according to the errors of the tables after Newcomb, Gaillot, and himself. As regards the conclusions he draws at the end of his article he states that they should only be accepted with extreme reserve. The researches made by M. Gaillot and himself, "établissent seulement que l'hypothèse des deux planètes transneptuniennes n'est pas en *conflit* avec les faits observés de sorte qu'il *peut exister deux ou plusieurs grosses planètes au dela des limites actuelles du système solaire.*"

RECENT PROGRESS OF ASTRONOMY.—In the *Annuaire de l'Observatoire Royal de Belgique* for 1914 Prof.

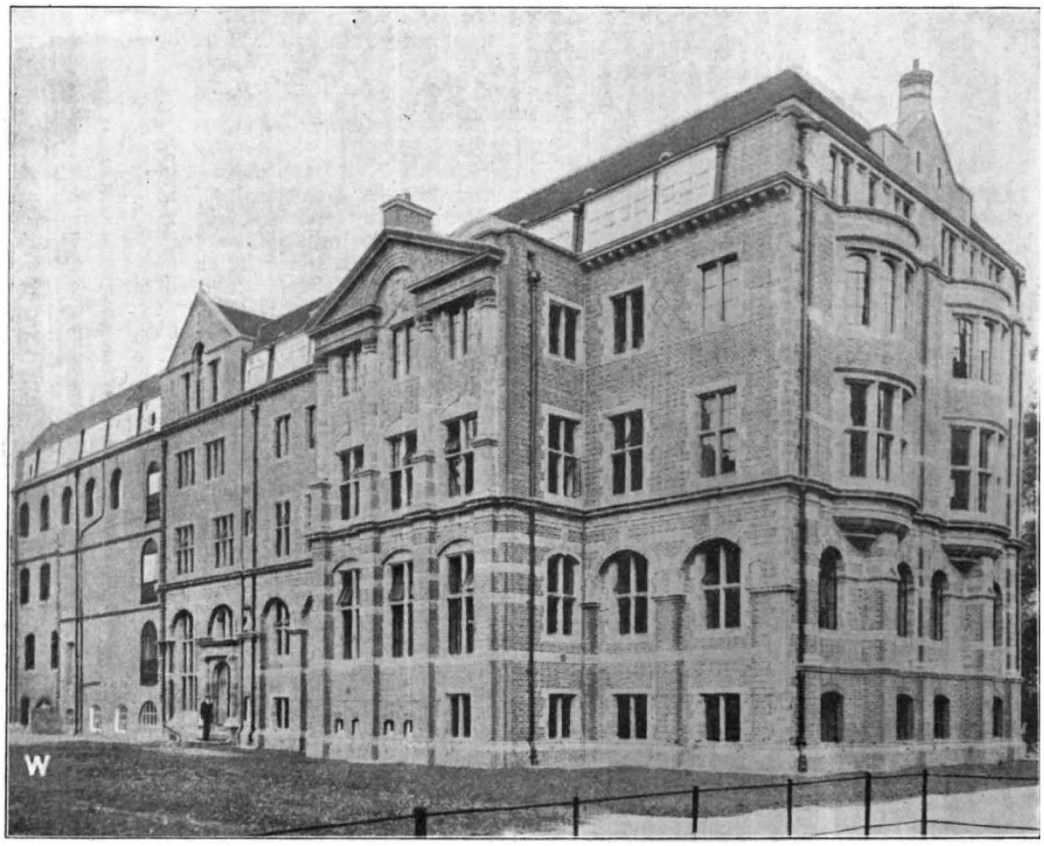
Paul Stroobant contributed a large section dealing with the progress of astronomy during the year 1912. This section has now been issued in a small book form, and will be found very handy and useful for reference.

NEW PHYSIOLOGY SCHOOL AT CAMBRIDGE.

ON June 9, H.R.H. Prince Arthur of Connaught opened the new physiological laboratory erected by the Drapers' Company, and presented by it to the University of Cambridge. A comparison of the old laboratory with the new illustrates the remarkable increase in complexity that has taken place in recent years in physiological investigation. The old laboratory, the last part of which was built in 1891, was for some years amongst the best in the country, yet it had no electrical supply, and the research rooms simply afforded space without any adaptation for special purposes. The following account of the chief features of the new laboratories will show how the conditions have altered. The building is 162 ft. long and 44 ft. broad. The eastern half consists of five storeys, the western half has the fourth and fifth storeys thrown together to form one large room with a gallery. Electric light is throughout. The rooms are supplied with 4-volt and 110-volt current from a storage battery, and in many of the rooms the current can be taken from plugs hanging from the ceiling. The battery has a capacity of 480 ampere-hours; it is charged from an external power station, and the current can be taken direct from this when arc lamps are in use

Compressed air is supplied to the research rooms, at a pressure of 25 lb. to the sq. in.; the compressor has an automatic switch which starts the motor when the pressure drops to 12–15 lb. to the sq. in. The compressed air, besides its other uses, is employed for aerating the water in the tanks of a small room fitted up as an aquarium. Some of the tanks contain sea-water for marine animals, and by the method employed, the sea-water only requires renewal about once in three months.

There is a special boiler for supplying hot water to the sinks, and a destructor for burning animals killed in the laboratories. On the ground floor is a refrigerator plant keeping a small room above it on the first floor at 0°–3° C.



New Physiology School, Cambridge. View from N.W. The large lecture room and the biochemical department will form a wing on the E. side of the entrance door.

Two rooms are fitted up for research in electro-physiology each having a dark room, so that photographic records of the electrometer, and string galvanometer, can be taken. These are on the ground floor, which is 5 ft. below the surface; the stone slabs on which the instruments rest are practically devoid of vibration. Two rooms on the same floor are arranged for thermo-electric research, and a continuous record can be taken of the heat given out by small animals over a period of several days. Two communicating rooms are designed for surgical operations; one of these, and some of the experimental rooms, have a special arrangement of hot-water pipes for heating to 75° C. Adjoining these are experimental rooms with kymographs. There are three dark