thus behaves as a solid. The addition of an artificial head to the top surface of the same clay increases the pressure of fluidity by about 7 per cent. when the addition is 200 per cent. of the actual head. The experiments on discharging clay under pressure through sharp-edged circular orifices are also of interest. The rate of discharge increases more rapidly than the rate of increase of pressure, and ultimately there is a phenomenon analogous to the pressure of fluidity. Reducing the size of the orifice, keeping the pressure constant, reduces the discharge per unit area of orifice. The initial pressure necessary to cause the discharge to begin increases considerably as the diameter of the orifice is decreased. Practically the same result is obtained whether a disc or a sphere is used in determining the pressure of fluidity, and the result is independent of the diameter of the disc or sphere within a considerable range. Mr. Ackermann's work on this subject shows promise of great value to engineers in dealing with foundations and retaining walls, and we trust that his experimental work will be continued.

Our Astronomical Column.

THE RECENT METEORIC DISPLAY.—Mr. W. F. Denning writes that further proof of the unusually abundant display of August meteors is provided by Mr. S. B. Mattey, observing at St. Helier, Jersey, on August 11 during the quarter of an hour between 14h. and 14h. 15m. G.M.T., who saw sixty-two meteors. This indicates a rate of about 250 per hour, and proves that the shower was witnessed in extraordinary activity. About 25 per cent. of the meteors seen by Mr. Mattey were bright ones, exceeding stars of the first magnitude. Their light was frequently strong enough to illumine buildings near his place of observation; in fact, he describes the effect as being somewhat similar to that occasioned by so-called sheet lightning.

DETECTION OF ENCKE'S COMET.—A letter from Mr. J. F. Skjellerup, dated Capetown, July 29, announces that he and Mr. W. Reid detected Encke's comet on July 27 at 5h. 15m. G.M.T., when it preceded 19 Sextantis by 31 seconds, and was 2' to the south of it, which makes its apparent position R.A. 10h. 8m. 11s., N. decl. 4° 58'. The estimates of its magnitude by the two observers were 9.5 and brighter than 8.0.

The following elements were predicted by Mr. Matkiewitch :—

$$T = 1921 \text{ July } 13\cdot28 \text{ G.M.T.}$$
$$\omega = 184° \ 43\cdot5'$$
$$\Omega = 334° \ 35\cdot5'$$
$$i = 12° \ 31\cdot1'$$
$$\log a = 0\cdot34598$$
$$e = 0\cdot84671$$
$$\log q = 9\cdot53149$$

The above observation would indicate a value of T some 0.2 day earlier than the prediction.

The comet will be 1921 d.

The letter states that Pons-Winnecke's comet was observed at midnight on July 27, in R.A. 1h. 24m., S. decl. 38°, magnitude about 8.5.

STUDY OF THE MOON'S SURFACE.—Mr. Walter Goodacre has just brought out the eighth report of the Lunar Section of the British Astronomical Association. He dwells on the immense value in selenography of the splendid photographs taken by Mr. F. G. Pease with the 100-in. Mount Wilson reflector. He states that they show more detail than a 6-in. visual telescope would do, even with the best seeing. The report contains several charts showing on a larger scale much of the detail that has been detected on the photographs. One is of the "Straight Wall near Thebit," showing that it is really by no means straight. Enlargements of the craters Ptolemaus, Clavius, Copernicus, Arzachel, Gassendi, etc., show much new detail, mostly of the nature of tiny craters or narrow clefts. Mr. Goodacre considers that the new evidence is unfavourable to the theory of meteoric formation of the lunar features. Various fine details are noted, in particular an apparent landslip on the wall of Birt A.

Mr. J. W. Durrad contributes a fine drawing of Gassendi, showing numerous clefts on the floor, some of which are new.

THE DISTANCES OF THE GLOBULAR CLUSTERS.—The Bulletin of the National Research Council, Washington, D.C., for May last contains an interesting discussion between Dr. Harlow Shapley and Prof. H. D. Curtis on this subject. Taking the Hercules cluster as an example, they contend respectively for 36,000 and 3600 light-years as its distance. The strongest argument for the former distance is the presence of B stars in the cluster and the demonstration that the average absolute magnitude of such stars is zero or brighter, judging from the stars in proximity to the sun. Prof. Curtis prefers to work from the average absolute magnitude of all stars within measurable distance, but Dr. Shapley replies that the average is itself a function of distance, since the stars that are really very faint are altogether lost to view at moderate distances.

Another point discussed is the correlation between period and absolute magnitude in the Cepheid variables. Prof. Curtis gives a diagram showing that the case for this correlation becomes much less convincing than Dr. Shapley had supposed, when the number of galactic Cepheids employed is increased. Dr. Shapley replies that he used the Cepheid method solely as corroborative of several others, and that the strongest argument for the correlation is in reality deduced from the fact that the methods all fall into line so well.

The discussion also involves the status of the spiral nebulæ. Dr. Shapley's estimate of the size of our Galaxy is so great that if the spirals were similar objects they would be so remote that we could not expect to see novæ in them. From the fact that several novæ have been detected he concludes that they are not stellar, but actually formed of diffused matter. Prof. Curtis's smaller galactic diameter permits the view that the spirals are external galaxies. He estimates the distance of the Andromeda nebula (supposed to be the nearest spiral) as 500,000 light-years, and invokes the presence of a zone of occulting matter near the galactic plane to explain the observed distribution of the spirals.

The discussion is highly instructive, and the method of putting the two views of such difficult questions side by side is most helpful as a check on over-hasty deductions and a test of the weaker links in a chain of evidence.