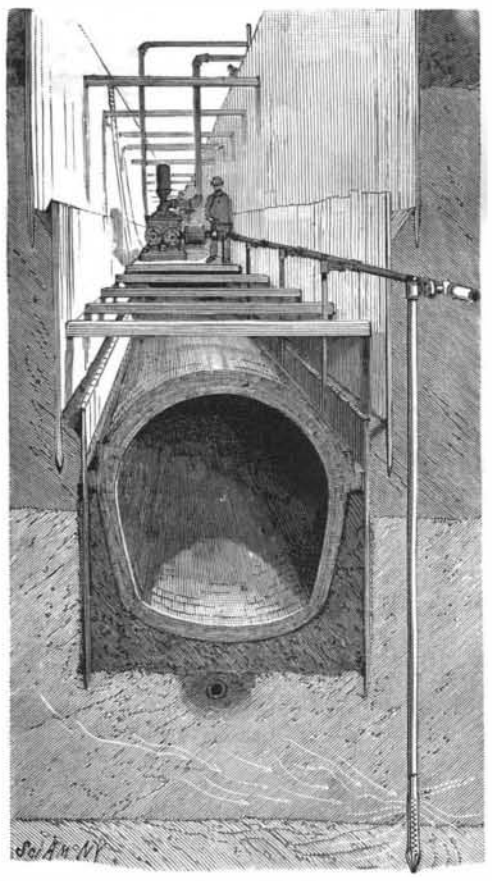
IMPROVED METHOD OF CONTROLLING QUICKSAND.

This improvement relates to the construction of sewers, water pits, foundations below the water level, and other excavations where layers of quicksand or equivalent material are liable to be encountered, permitting mason work to be built on dry bottoms. It may also be used to exhaust ground water from large



HORTON'S METHOD OF CONTROLLING QUICKSAND.

areas, thus obviating the necessity for an under-drain in the construction of sewers, and materially lessening their cost. This improvement has been patented by Mr. Calvin Horton, of No. 26 Everett Avenue, Somerville, Mass. Our illustration shows the employment of this improved method in the building of a sewer, where the trench has been dug through a stratum of clay overlying a stratum of silt or quicksand, beneath which is coarse gravel, from which water may come under sufficient pressure to cause the quicksand to boil upwardly into the trench. To prevent this a series of driven wells is located in the line of the trench, their upper ends connected by pipes and couplings with a pump receiving the water through a sand box. In practice these wells have been placed about eight feet apart, and eight or ten of them connected to one pump, but this necessarily varies with the flow of water and the nature of the ground. When the wells are driven so that their lower ends are in the quicksand, the ends are provided with jacket strainers. This invention was made in remedying the difficulty found in the construction of the new system of sewerage of the city of Boston. It was found that with this method, after pumping a few hours, the boiling springs of quicksand, which had been very troublesome, entirely ceased, and the sand remaining in the trench was solidified so that it could be readily shoveled out. It was also found that, in excavating directly from the quicksand, the removal of water so quieted and solidified the quicksand that it could be freely handled with a shovel.

How to Recognize Horse Flesh.

The method is based on the use of the well known iodine reaction of glycogen, a body which is a constant constituent of horseflesh. The finely divided flesh is boiled with four times its weight of water, and the resulting broth treated with dilute nitric acid, to precipitate albuminoids, and filtered. Saturated hydriodic acid is then added, so that the two liquids remain in distinct layers, and at their plane of contact a red or violet ring forms should glycogen be present. In the event of extraction of the glycogen with water proving inadequate, a solution of caustic potash containing an amount of KOH equal to three per cent of the weight of the flesh must be substituted.

The reaction is said to be characteristic, as it is not yielded by the flesh of other domestic animals.—*W. Brautigam and Edelmann, Pharm. C. H., 1893, xiv. 557, through Chem. Zeit.*

CHICAGO CABLE CARS ON CHICAGO DAY.

A correspondent doing business on Cottage Grove Avenue, Chicago, has favored us with some interesting photographs taken on Chicago day, October 9. One of these views we reproduce for the benefit of our readers. The people who were fortunate enough to get in or on the Wabash and Cottage Grove Avenues cable cars made a slow and painful trip to the Fair grounds. Business was never more thoroughly suspended throughout the city than on that day. The weather was perfect, and when the gates of the Exposition grounds were opened at six in the morning the people stood in lines waiting to enter, and the procession of visitors never ceased until late at night. Every kind of conveyance was put into requisition and the combined effort was inadequate to cope with the enormous crowds. There were 716,000 paid admissions and 37,380 persons entered on passes, so that Chicago holds the record for the largest number of visitors on one day.

The following table shows the attendance at the principal international exhibitions:

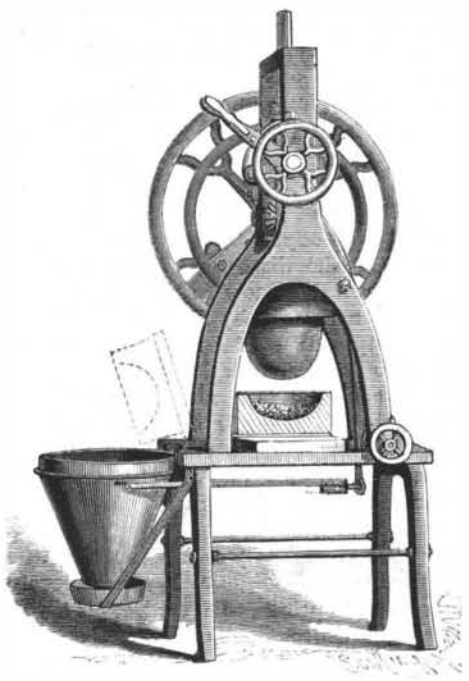
	Number of days open.	Total attendance.	Highest number in one day.	Average daily attendance.
London, 1851	144	6,039,195	. ...	41.939
Paris, 1855	200	5,162,330	.....	25,812
London, 1862	171	6,211,103	.....	36,322
Paris, 1867	217	10.200,000	.....	47,000
Vienna, 1873	186	7,254,687	. ..	39,003
Philadelphia, 1876	159	10,000,000	274,919	62,892
Paris, 1878	194	16,159,719	200.613	83.297
Paris, 1889	164	32,354,111	387,877	192,281
Chicago, 1893	183	27,377,733	716,881	149,605

Pavements for Cities.

Mr. Lewis H. Isaacs recently spoke to the Society of Arts of paving work in London, after 35 years' experience, during which period paving by granite sets has been perfected, and wood and asphalt pavements have been introduced and developed. Speaking of the use of granite sets, Mr. Isaacs declares in favor of 9 inches by 3 inches sets laid close up on at least 9 inches of concrete, barreled 1 in 40, well channeled with smooth blocks, and grouted with cement and sand. He disparages the grouting with pitch, on account of its liability to give under the influence of the sun's heat. The only feature in favor of this method of grouting is its imperviousness to water. With regard to the durability of Aberdeen granite sets laid in such a thoroughfare as High Holborn, and relaid twice in twenty years, it appears that such cubes will last 36 years, with a total vertical wear of 4 inches, and still remain fit for paving second or third class streets. Wood pavement costs, in the long run, half as much again as granite sets, but it is increasing in vogue by reason of its comparative noiselessness and easy traction. On the other hand, it is hygienically the least defensible. Asphalt is the costliest pavement of all, but it is one of the most durable, and is the cleanest.

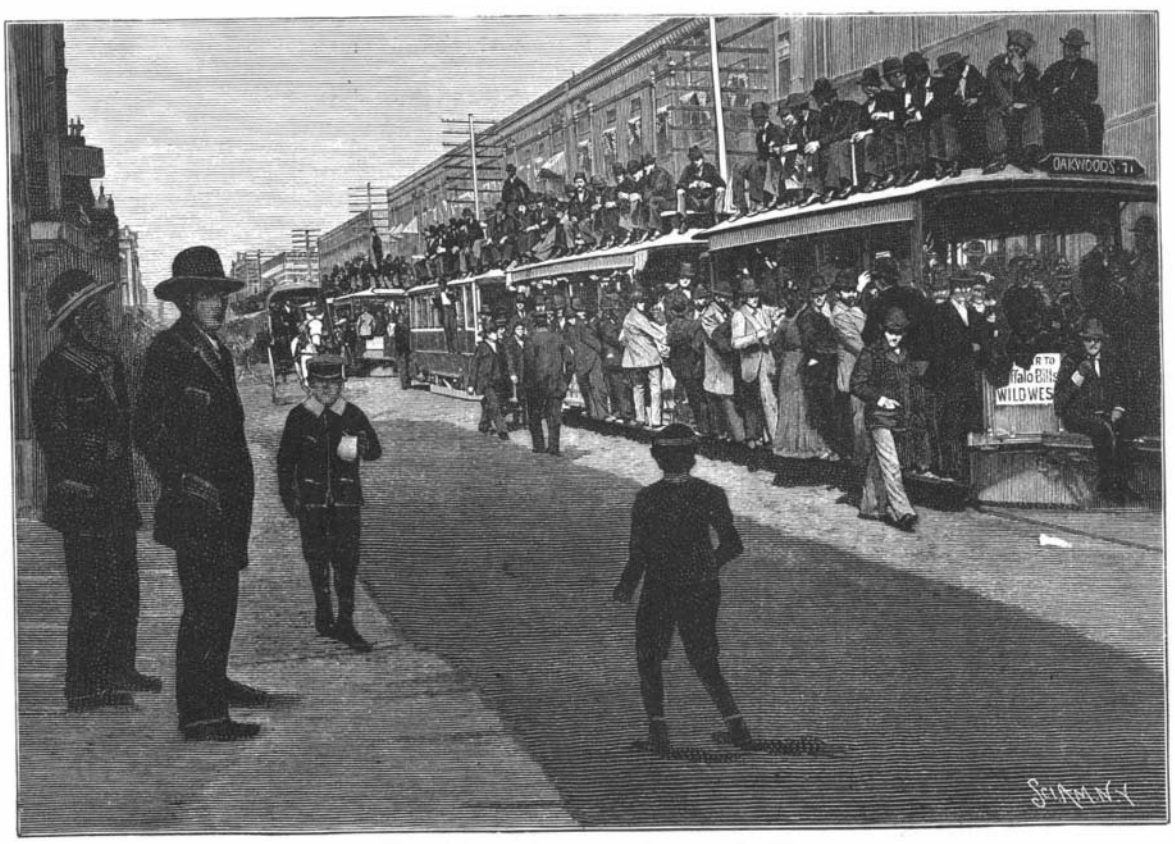
AN EFFICIENT PULVERIZING MACHINE.

This machine is adapted for operation either by hand or power. It has a movable screen and funnel to screen the crushed material, and the mortar is so arranged that it may be readily tipped to deposit its load on the screen. The improvement has been patented by Mr. John H. Traver, of Aspen, Col. The mortar is carried on a sliding base, hinged to a slide, enabling it to be pushed forward to the front portion of the machine and dumped, as shown in dotted lines.



TRAVER'S PULVERIZING MACHINE.

The pestle is carried by a vertical shaft, turned by a bevel gear wheel, the set screw of which is held in a longitudinal keyway in the shaft, so that the shaft may slide through the gear when the pestle is raised. The driving shaft has at its outer end a balance wheel with a crank, to be turned by hand, and a rim wheel to which a belt may be applied. A vertical lever fulcrumed at the back of the machine is held at its upper end by a spring in the path of a boss on the shaft, and the lower end of the lever is connected by a link with a shaker arm connected with the funnel, in the upper end of which is a screen, whereby both the funnel and screen will be shaken by the rotation of the driving shaft. When it is not necessary to use the shaker, the operating lever may be held away from the driving shaft by a cam on a short shaft, having at its outer end a hand wheel. Above the driving shaft is a shaft on which is an arm extending beneath a collar on the pestle shaft, and by means of a hand wheel or lever the arm may be turned upward to lift the pestle from the mortar. The lever may be operated to raise the pestle only slightly, or to raise it completely and hold it locked in elevated position.



CHICAGO CABLE CARS ON CHICAGO DAY.

Coating Aluminum with Other Metals.

Before the Physical Society, Berlin, Prof. Neesen recently demonstrated a method of coating aluminum with other metals. This consists in dipping the aluminum in a solution of caustic potash or soda, or of hydrochloric acid, until bubbles of gas make their appearance on its surface, whereupon it is dipped into a solution of corrosive sublimate to amalgamate its surface. After a second dipping into caustic potash until bubbles of gas are evolved, the metal is placed in a solution of a salt of the desired metal. A film of the latter is rapidly formed, and is so firmly adherent that, in the case of silver, gold, or copper, the plate can be rolled out or polished. When coating with gold or copper, it is well to first apply a layer of silver. When thus treated the aluminum may be soldered with ordinary zinc solder.

THE French are great believers in the utility of swift torpedo boats, of which 101 have been ordered; some of them are already complete, 53 of them have 23 knots speed, and 25 of them increased speed up to 28 knots.