heard. One of those which was received with most enthusiasm was that of Nadault de Buffon, a descendant of our great naturalist, an old man already, and quite blind, but possessed with a strong voice, a fine appearance, and very enthusiastic feelings.

After this avalanche of speeches, which was certainly enough to fatigue one, M. Chevreul answered some words in reply, and the delegations defiled before him. The number of them was very considerable, but he witnessed the whole proceeding nevertheless. All saluted him with utmost respect and demonstrations of great joy. He was presented with a nosegay — I know not by which delegation — that was a masterpiece of art in the choice and distribution of colors. No more delicate allusion could be made to the venerable master's theory of complementary colors; and it was understood by the whole crowd, being exemplified in an unparalleled manner.

The ceremony was over at four o'clock. There were crowds of people around the monument, awaiting the passage of the centenarian, and progress was difficult and trying. However, all went very well, and Chevreul was received by the crowd with deafening applause.

It is likely that our readers would have been tired after all this ordeal: Chevreul was not. The same evening he was present at a great banquet given in the Hotel de Ville, and he even drank some champagne when his health was proposed, — a somewhat superfluous motion, it seems. During the night a torchlight procession paraded the streets; but this popular demonstration had nothing interesting in it, and no *savants* were concerned in this masquerade, which certainly originated in the brains of some alderman desirous of more votes at the next election.

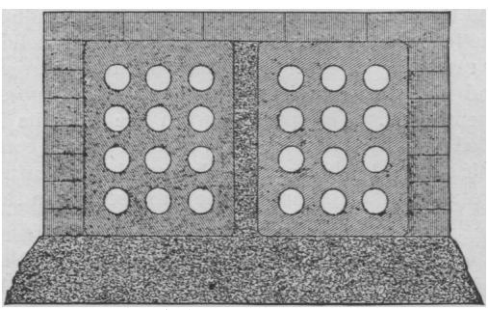
Upon the whole, Chevreul's centennial anniversary was celebrated as it ought to have been, and as becomes, at the same time, a man of high scientific standing, and a city which always appreciates great thoughts and a noble life.

H. DE VARIGNY.

BURYING THE WIRES.

THE actual work of preparing subways or underground conduits to receive the telegraph and telephone wires, in this city, was begun on Aug. 30. Numerous experiments and tests were made, and many projected methods considered, before the commissioners having the matter in charge decided upon a plan which seemed to them satisfactory. The system finally selected appears to fulfil all the requirements of the case, and the work of 'burying the wires,' so long discussed by the daily papers, will now proceed as rapidly as the conduits can be placed in position.

The subway, as now being constructed in Sixth Avenue, consists of a double row of conduit-blocks, laid in a trench five or six feet deep, with man-holes at every cross-street, for the insertion of wires and making connections. Each block is 42 inches long, 17½ inches deep, 13½ inches wide, weighs about 450 pounds, and is pierced by twelve 2¼-inch holes. The material of which the blocks are made is a concrete composed of 80 per cent clean, sharp sand, 19½ per cent coal-tar pitch, and ½ per cent oil and black oxide of manganese. These are thoroughly worked together in a tank at a high temperature. The mixture is then forced into moulds of proper size and shape, subjected to heavy pressure, and deposited to cool in tanks of water. At a public test conducted by Mr. Albert R. Ledoux, chemical expert to the subway commission, the crushing resistance of this concrete was found to be 4,591 pounds to



the square inch, and the crushing resistance of a conduit section was 59,210 pounds. This concrete deteriorates and disintegrates in a few years where exposed to great changes of temperature, so that it is not adapted for use in pavements, or where exposed to the heat of the sun and the action of snow and frost; but the experience of several years proves that it undergoes no appreciable change when used under ground. As a material for sewer and drain pipe, etc., it has been found satisfactory.

The conduits are being laid in a manner that ought to insure their stability. At the bottom of the trench is laid a bed of cement concrete six inches in thickness. This is allowed to harden, after which the sections are placed in position, in two rows, leaving a space of two inches between the rows, to be afterwards filled with hydraulic cement. The method adopted to insure the continuity of the 'ducts,' or holes, through which the wires will run, is simple but effectual. The holes are moulded with a slight enlargement at the

ends, sufficient to admit a short tube or ferrule of the same inside diameter as the hole. As each block is lowered into the trench, and placed in position, a large plate of iron, previously heated, is held between one end of it and the end of the block it is to join. The heat softens the pitch, and removes any oil which may have been left by the mould. The iron is then removed, the block drawn back a few inches, and the ferrules are put in place. These ferrules are of such length, that, when pushed firmly into place against the shoulders of the enlargement, the blocks remain about an inch apart. The block, with ferrules inserted, being in position, a round wooden bar, split lengthwise into two long wedges, is inserted into each hole or duct, running back through the ferrules into the other block. One part of each bar is then slid upon the other, until they fill the hole snugly, the result being that the blocks are brought into practically exact alignment. Next, iron plates, embracing the joined ends of the blocks, are clamped in position, and the space between the blocks and surrounding the ferrules is filled with hot pitch concrete solidly rammed. Then the aligning bars are removed, and the operation is repeated with each subsequent block. The space between the conduits is filled with hydraulic cement, and the double conduit enclosed in brick-work, the completed subway presenting the appearance shown in section in the accompanying diagram.

THE STANDARD TYPOGRAPH.

THERE is now being perfected in this city a machine intended to dispense with type and type-setters in certain kinds of printing. The 'standard typograph' is the name selected for it by its inventors, though the term 'matrix puncher' would be a more fitting title. A good idea of its general appearance may be gathered from the accompanying illustration. At first glance, it seems to be a combination of an enlarged type-writer and a sewing-machine, possessing the key-board of the former and the stand and operating mechanism of the latter. The typograph is in reality a kind of type-writer, but, instead of printing upon paper, it produces indented or depressed characters upon a sheet of soft metal, from which an electrotype may be made, as from the wax matrix taken from type, in the usual electrotyping process.

The principal parts of the machine are, the key-board, resembling that of the Remington type-writer; the type-wheel, which revolves in a horizontal plane; and the matrix carriage, immediately above the type-wheel. Part of the last is shown in the engraving, above the key-board, about the middle of the machine. Fitted in vertical grooves in the periphery of the type-wheel are a number of steel types, one for each character used in ordinary printing, the face of the type being upward, toward the matrix carriage. Two small lugs or stops project from the wheel at diametrically opposite points. Arranged in a semicircle at the rear of the wheel are two rows of detent levers, the outer end of each lever being connected by a link with a finger-bar of the key-board, much as the type-bar of a type-writer is connected with its key. The detent levers are pivoted near the inner end, so that the depression of a finger-bar, or key, as it may be called, raises the inner end of its connected lever into the plane of revolution of one of the stops of the type-wheel, each stop being located on the wheel slightly above its corresponding semicircle of levers.

The matrix carriage, one end of which is shown in the engraving, above and to the left of the type-wheel, has movement in two directions in a horizontal plane. The side movement, from left to right or *vice versa*, is communicated to the carriage by the return of a key to its normal position after being depressed to form a character in the matrix. This side movement, or letter-spacing, is variable, and is governed by the key depressed, so that the carriage is moved each time a space equal to the exact width of face of the type impressed in the matrix. Thus, for the letter *h* or *g*, the carriage would move twice as far as for *i* or *l*. By a simple adjusting device, this movement may be changed so as to leave a space between the letters, as shown in the concluding line of the sample paragraph given farther along. The other movement of the carriage, that required to bring the matrix into position for a new line, is produced by depressing a key provided for that purpose. This movement also may be varied so as to leave greater or less space between the lines.

The manner of operating the machine is as follows: the matrix, which, as at present used, is a sheet of lead about one thirty-second of an inch thick, is secured firmly to the carriage, and adjusted, face downward, in its place above the type-wheel. The operator, having his 'copy' within easy reading distance, puts the type-wheel in motion by means of the treadle, and depresses the keys one after another, according to the word or space desired, as in the ordinary type-writing machine. As each key is struck, the end of its detent lever, by contact with the projection on the wheel, stops the revolution of the latter, holding it in such a position that the type desired is in place for striking the matrix at the proper point. At the same instant the type is forced upward by a revolving cam, producing an impression of its face