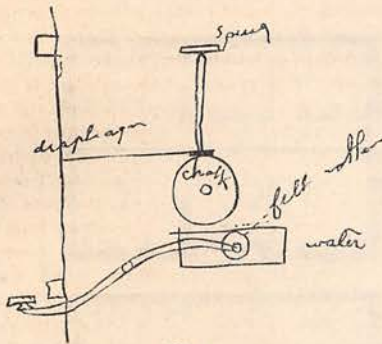


greater, and consequently, it will repeat the words with greater power. The electro-motograph is practically an apparatus for transforming electric action received from a distance into mechanical work. The amount of electric action has nothing to do with the amount of the mechanical work performed, because the movement of the cylinder is controlled by power independently of the electric action, the electricity merely releasing this power by destroying the friction in greater or less degree. The electric action set up by the sonorous vibrations at the transmitting end of the line may be very slight, while the mechanical action at the distant end may be powerful, and in this manner the amplitude of the vibrations may be increased to an indefinite extent, and a whisper may reappear as a loud shout.

In cut No. 2, details of the apparatus left out of



NO. 2.

the first cut are shown. The chalk cylinder is made by submitting precipitated chalk to great pressure, and it then becomes the vehicle for a solution of caustic alkali; and in this connection it may be noticed that any absorbent material would answer for the cylinder, but chalk has been found best. To compensate for the loss by evaporation, a dish of water is placed below the cylinder, and by means of a lever, shown in cut No. 2, a roller resting in the water may be pushed up against the cylinder till it is thoroughly moistened. This work only takes a moment or two once a week. In constructing the electro-motograph for telephonic use, the diaphragm is placed at the top of a box at an angle of 45° and the spring, cylinder, bell-call, etc., are inclosed in the box, while the transmitting disk is hung upon a double-hinged arm just above, in convenient reach. The electro-motograph is not only a solution of the telephone, making it capable of sounds of every quality and pitch and in greatly increased volume, but by this conversion of electrical action into mechanical work at a distance makes it possible to unite the telephone and phonograph. Telephonic messages by the electro-motograph may be impressed upon a self-acting (clock-work) phonograph, the same current starting and stopping the phonograph after the manner of the stock-reporting machines, and afterward the phonograph may be made to repeat the message impressed upon it. The electro-motograph offers a wide field for re-

search and seems destined to increase greatly the practical business of telephony. The two cuts possess a double interest, as they are off-hand ink sketches made by the inventor, Thomas A. Edison.

The telephone lines hitherto erected in this country have been single wire lines, the wire being exclusively used for sending message by telephone. By a device recently brought out, the common Morse sounder has been combined with the telephone, and it is found in practice that the use of one does not interfere with the other, telegraphic and telephonic messages being sent over the same wire at the same time. By a still greater refinement five messages can be sent over one wire at the same time by combining a telephone with a quadruplex instrument. These latest improvements promise to increase greatly our means of communication by wire, and it is to be hoped will tend to cheapen the cost.

[The next number of the magazine will contain a fuller account of the electro-motograph, brought down to the latest possible date, and considered with reference to its new and unexpected developments. The paper referred to will be the first of an important and authoritative series on the inventions of Mr. Edison, which will have a romantic as well as a practical interest, and will exhibit in an interesting way the curious and wonderful methods of the inventor.—Ed. S. M.]

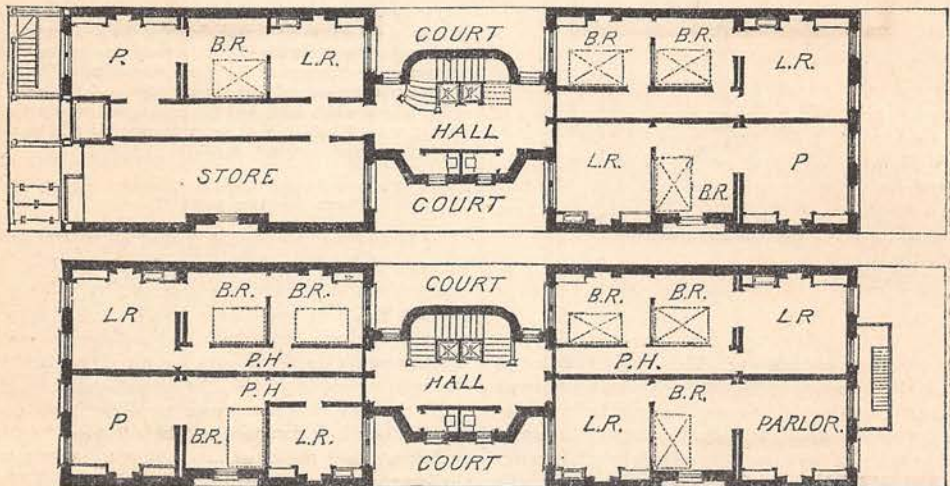
Plans for Tenement Houses.

IN laying out the city of New York, the blocks between the streets were cut up into house lots of one uniform shape and size, 7.62 m. by 30.50 m. (25x100 ft.), and upon these lots houses of every description have been built. For business and manufacturing purposes, and for the dwellings of the better class of people, the shape and size of these city lots have not proved specially inconvenient. The whole lot need not be occupied by the building unless the owner is willing to submit to the inconvenience of the dark rooms in the middle of the house. In the dwellings of the poorer class of people space under the roof seemed of more value than the comfort or even the health of the tenants; and the greediness of the landlords, combined with the excessive demand for accommodation, led to the erection of tenement houses occupying all or nearly all the surface of the lots. From this vicious system of building have come so many evils that much public attention has been drawn to the matter. Long and narrow buildings, often six stories high, and with four suites of rooms on a floor, present every sanitary evil,—want of light and air, darkness in the halls and interior rooms, want of privacy, and exposure to danger from fire, disease, and all the ills that flow from overcrowding, and there is but one redeeming feature: that such buildings do make a good return as investments. So great are the evils flowing from this mistaken system of land division and this unhealthy style of building that many attempts have been made to design and construct improved forms of tenements that shall be at once cheap, safe, and profitable. The most notable of these experiments has already been described in this department, and with this are now presented

plans for improved tenements. These plans are the outcome of a number of prizes recently offered by the "Plumber and Sanitary Engineer" for the best designs for improved tenements suitable for the very poorest class of people, and utilizing the city lot to the best advantage consistent with abundance of light and air and safety from fire and disease. The requirements of the model tenement house are: security against fire, distribution of light, ventilation, good sanitary appointments, seclusion for each set of rooms, and ease of access, convenience, and cheapness.

Plan No. 1 shows the first and second story of a tenement designed to contain four suites of apartments on each floor. The building is practically double; two wings, with a court in the center and a yard in the rear. By this arrangement, nearly the

dows, a fire-place and two closets. The second story, reached by the stair-way in the central tower, is divided into four tenements of three rooms each, divided as described for those below, and all the floors above are laid out on the same plan. This plan received the highest prize, and presents several advantages over the common tenement house. The dark and narrow stair-ways in the interior of the building give place to a broad stair-way in a separate fire-proof building having two windows for light and air on each floor. The sinks and water faucets are within the tenements instead of being in the dark halls. The closets are in the central tower and each is provided with a window, a change vastly for the better over the present system. Each suite of rooms has its own private entrance and private hall, or as may be seen in the

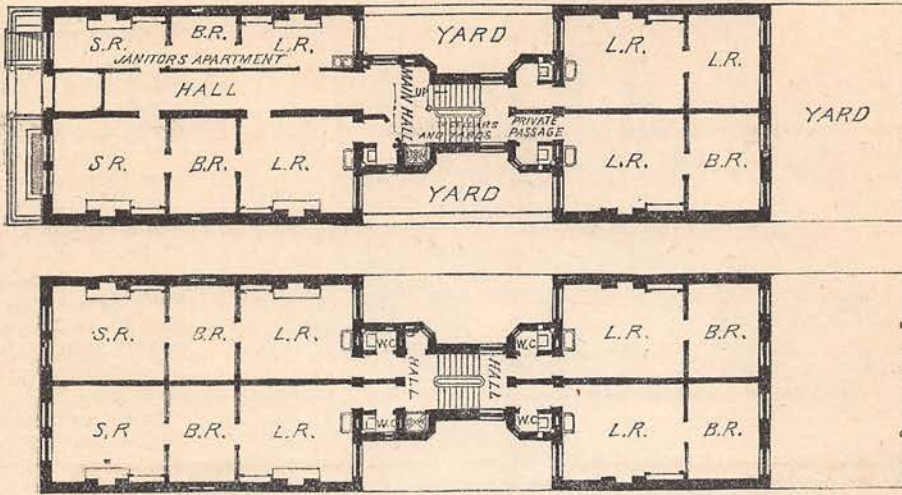


NO. 1. PLAN OF FIRST AND SECOND STORIES OF IMPROVED TENEMENT HOUSE.

whole of the lot is occupied, the dark interior rooms are reduced to the smallest possible number, and each suite has light and air both front and rear. To obtain more air a shaft is left open in the wall on one side, and the interior room has a window opening upon it. This seems to be of very little value, as such air-wells are merely wells by which the dead air sinks to the bottom and stagnates. On the street floor there is, in front, a store, one tenement of three rooms and a hall leading to the stair-way. Area steps lead to the cellar, and a bridge gives access to the main entrance. In the court between the two wings is a tower or stair-way very nearly detached from the buildings and containing the stairs, water-closets, and lifts. In the rear building, on the first floor are two tenements of three rooms each, entirely detached from all others, each set having its own private door. The rooms all open one into another, the first room having a sink and water, a fire-place and closet, and one large window, the second room designed to hold a bed, and the third room having two win-

plan, the private door may open directly upon one of the rooms. This plan is evidently carefully thought out and presents many features of interest that make it worthy of study.

In plan No. 2, the store on the lower floor gives place to one tenement of three rooms and three smaller rooms for the janitor. The building, by this plan, is divided into two wings joined by a central tower or stair-way, but the yard in the rear is made longer at the expense of one room in each of the rear tenements. The second floor is much the same except that the two front tenements are of equal size. In comparing these two plans it will be observed that each tenement has its water-works exclusively to itself and within its own entrance hall. This is decidedly an advantage, as the two things chiefly to be sought in this class of dwellings are privacy and separate sanitary fixtures. It will be observed that the stairs rise in short straight flights. This is accomplished by making the floors of the two wings on different levels so that each landing contains two entrance doors, instead of four. Ample light is secured to



NO. 2. PLAN OF FIRST AND SECOND STORIES OF IMPROVED TENEMENT HOUSE.

the stair-way as well as ease of access. In many respects this plan is better than the first, though it received only the third prize. There are only two rooms in the rear tenements and as the demand for two-room tenements is limited this may be a defect, but, on the other hand, there is a great gain of light and air. These plans appear to be the best of a large number exhibited and they offer as good

a solution of the tenement house question as may be found consistent with the vicious system of dividing the land that prevails in New York. If now some one would offer a prize for an improved system of laying out city lots, perhaps even the improved tenement house may be improved upon.

[The above diagrams were kindly furnished by the "Plumber and Sanitary Engineer."]

BRIC-À-BRAC.

Fanny Kemble's Journal.

THE same petty and provincial spirit which in France led M. Victorien Sardou to write his silly "Oncle Sam," and which in England is soundly berated by Mr. Matthew Arnold, and which in America rails against the warning truth of Mr. Henry James's "Daisy Miller," broke out rampant and raging in this country over forty years ago on the publication of a "Journal of a Residence in America," by Frances Anne Butler.

The elder daughter of Charles Kemble made her first appearance on the stage at Covent Garden Theatre as *Juliet*, in September, 1829, with extraordinary success. Three years later she and her father crossed the Atlantic to play a series of engagements in America. They made their first appearance in New York at the Park Theatre in September, 1832. After acting in all the leading cities of this country, Mr. Charles Kemble returned to England alone, his daughter remaining in the United States as the wife of Mr. Pierce Butler, of Philadelphia. During the whole time of her wanderings in America prior to her marriage, Miss Kemble kept a diary of her experiences, which was published shortly after she became Mrs. Butler by Mr. John Murray in London, and by Messrs.

Carey, Lea & Blanchard in Philadelphia, for the benefit of her aunt Victoire, as the author has informed us in her recent delightful "Records of a Girlhood."

The people of the United States had been taken to pieces and exhibited for the benefit of the assembled nations of the Old World by Captain Basil Hall, in 1822, and before they had fully recovered from their fit of indignation, Mrs. Trollope came forward, in 1831, with her strictures on "The Domestic Manners of the Americans." When the announcement was made, therefore, only four years later that Miss Fanny Kemble had been taking notes which she intended to utter and make current, another shiver ran through the land. Toward the close of 1834 a few extracts from the journal crept into print in Boston, and were copied far and wide. It was at once evident that Miss Kemble had a mind of her own, and full willingness to free it. Other extracts from time to time followed, and were everywhere read and commented upon. The newspapers—or rather some of the noisiest of them—took offense at the tone of some of Mrs. Butler's remarks, and especially at one passage, in which she said that next to a bug she most disliked an editor. It was doubted by some that the passages were genuine, and Messrs. Carey, Lea & Co., the