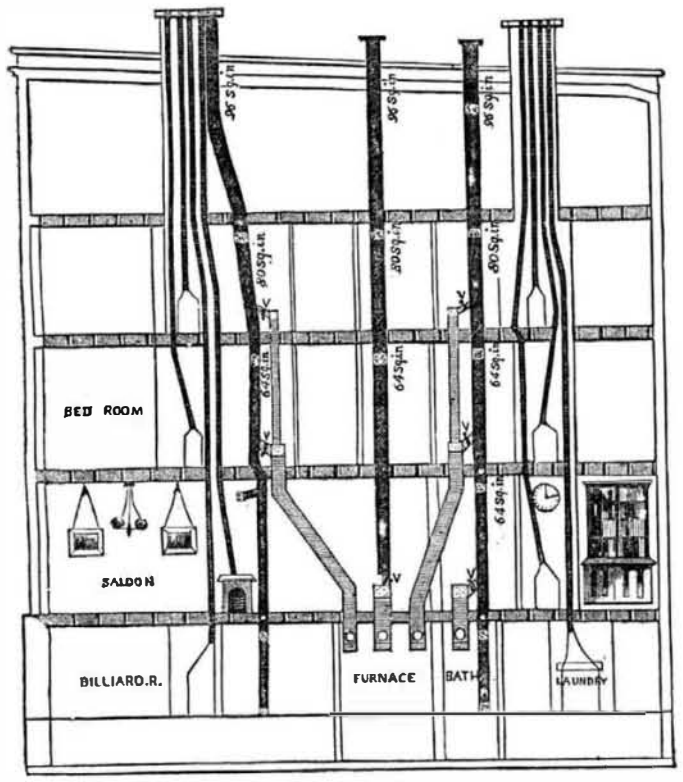
DR. GRISCOM'S IMPROVED METHOD OF VENTILATION.

This plan for ventilating houses, suggested and put in execution by Dr. J. H. Griscom, of New York, received the sanction of the Third National Quarantine and Sanitary Convention, held in this city. It pertains to the chemical method, the motive power of the air being heat, but requiring no extra expenditure of fuel, the heat used for the purpose being only the waste heat of the furnace by which the house is warmed. The arrangement consists in the construction of independent ventilating flues in the walls of the house, in proximity to the hot air tubes, so that the two may be connected together by means of a lateral or branch tube, by which a current of hot air may, at any desired moment, be transmitted from the hot-air tube to the ventilating flue. By this means, the ventilating flues, which terminate in the open air like an ordinary chimney, will be warmed by the hot air from the furnace, when the ordinary hot-air register is closed, as at night in a dwelling, or in a school-house after school hours.



If properly constructed of brick or smooth stone, the walls of the flue will, after a current of hot air has passed through it a short time, become sufficiently heated to rarefy the air within, thus giving the flue a good ventilating power, even after the current of hot air has been withdrawn. For example, if the hot-air register of a parlor be closed at ten o'clock at night, and the heat, instead of being thrown back into the furnace, is allowed to pass through the lateral tube into the ventilating flue, and so continue till six the next morning, it is evident that, during those eight hours, the interior of the ventilating flue must become thoroughly heated, so that the next day, when the current of hot air is restored to the parlor, the heated sides of the ventilating flue will continue to rarefy the air within them for many hours, and perhaps even days afterwards.

There being no danger of a reaction of the air of the flue through the ventilating register (as is the case when ventilating openings are made in ordinary fire-flues), connections with the apartment to be ventilated may be made at any point, and even carried to the opposite side of the house, between the beams of the ceiling, to ventilate distant apartments. Dr. Griscom's method has the advantage of being applicable to all edifices warmed by hot-air furnaces of any description, which, in general, are those most needing ventilation. This arrangement may be introduced into many houses already erected, by connecting the hot-air tubes with such of the ordinary chimney-flues as are not used with fire.

One of the principal advantages appertaining to this plan is the capability of having a large number of ventilating flues put in connection with the furnace. In fact, the number may correspond with the number of hot-air registers, and thus any desirable amount and extent of ventilation be obtained.

The cut represents an elevation of the west wall of the residence of E. V. Haughwout, Esq., Gramercy Park, Twenty-first street, New York, showing the position and connections of the warming and ventilating flues. The letter V indicates the valves in the connecting tubes; the figures indicate the areas of the ventilating flues in square inches.

PRODUCTION OF VALUABLE MANURE FROM THE AIR.

Plants are composed principally of four elements, oxygen, hydrogen, nitrogen and carbon, and it has been satisfactorily ascertained that the most of the hydrogen and nitrogen enter the plant in the form of ammonia, which consists of one atom of nitrogen combined with three atoms of hydrogen (NH^3). The value of guano and most other concentrated manures consists of a considerable extent, of the ammonia which they contain. As three quarters of the atmospheric air consists of nitrogen, and as hydrogen forms one ninth of all pure water, if some cheap means could be found for inducing the hydrogen of water to enter into combination with the nitrogen of the air in the form of ammonia, this valuable manure could be produced in unlimited quantities, and the agricultural products of the world enormously increased. The efforts to do this have been, at last, crowned with success, as will be seen by the following article which we translate from the Paris *L'Invention.* It will be remembered that cyanogen is composed of carbon and nitrogen; it is the bicarburet of nitrogen (C^2N).

"Since the remarkable labors of Messrs. Liebig, Schaltenmann and Kuhlmann, on the fertilizing action of ammoniacal salts, the production of ammonia at a low price has become a problem of the highest interest to agriculture. But to arrive at this result it is necessary to obtain the nitrogen elsewhere than in the nitrogeneous matters; which may, for the most part, be employed directly as manures, and of which the limited quantities and elevated price permits in any event only restricted and costly manufacture.

"Atmospheric air is an inexhaustible and gratuitous source of nitrogen. However, this element presents so great an indifference in its chemical reactions, that, notwithstanding the numerous attempts which have been made, chemists have not heretofore succeeded in combining it with hydrogen, so as to produce ammonia artificially. This result, so long desired, has been reserved for MM. Margueritte and de Sourdeval, who have obtained it by employing an agent of which the remarkable properties and, neat and precise reactions have permitted them to succeed where all others had failed. This agent is baryta, of which we have often spoken on the occasion of the recent applications that Mr. Kuhlmann has made of it in painting, but of which no person suspected the role that it was to be called to play in the development of the agricultural riches of our country. The manufacture of ammonia is based on a fact entirely new, the cyanuration of baryum. It had been believed until the present time that potash and soda alone had the property of determining the formation of cyanogen; that the earthy alkaline bases—baryta, for example—could not, in any case, form cyanurets.

"Messrs. Margueritte and de Sourdeval have ascertained that this opinion is entirely erroneous, and that baryta, much better than potash or soda, fixes the nitrogen of the air or of animal matters in considerable proportions. It is already understood that, for the preparation of Prussian blue, the cyanuret of baryum presents great advantages over that of potash, for the equivalent of baryta costs only about the one seventh of that of potash. Thus do we find practically and really obtained the result first announced by Desfosses and vainly pursued in France and England, the manufacture of the cyanurets with the nitrogen of the atmospheric air. This solution, so important, depends on the essential difference which exists between the properties of baryta and those of potash; the first is infusible, fixed, porous, becomes deeply cyanuretted without loss; the second is fusible, volatile, becomes cyanuretted only at the surface, and suffers by volatilization a loss which amounts to fifty per cent. After the cyanuret of baryum was obtained, the grand problem for Messrs. Margueritte and de Sourdeval to resolve, was the transformation of the cyanuret into ammonia by means at the same time simple, rapid, and inexpensive. The following is the operation:—

"In an earthern retort is calcined, at an elevated and sustained temperature, a mixture of carbonate of baryta, iron filings in the proportion of about 30 for 100, the refuse of coal tar, and sawdust. This produces a reduction to the state of anbydrous baryta, of the greater part of the carbonate employed. Afterwards, across the porous mass, is slowly passed a current of air, the oxygen of which is converted into carbonic oxyd by its passage over a column of incande-cent charcoal, while its nitrogen, in presence of the charcoal and of the baryum, transforms itself into cyanogen and produces considerable quantities of cyanuret. In effect, the matter sheltered from the air and cooled, and washed with boiling water, gives with the salts of iron an abundant precipitate of Prussian blue. The mixture thus calcined and cyanuretted is received into a cylinder of either cast or wrought iron, which serves both as an extinguisher and as an apparatus for the transformation of the cyanuret. Through this cylinder, at a temperature less than 300° (Centigrade), is passed a current of steam which disengages, under the form of ammonia, all the nitrogen contained in the cyanuret of baryum."

Cosmos, from which *L'Invention* extracts the above article, properly remarks that it is impossible to foresee all the results of this great discovery. Among other things, it suggests the production of nitric acid from the air by oxydizing ammonia.