

Planning of the House.
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I. Things to be considered in building a house.

1. Special needs of the family.
2. Funds available for expenditure.
3. Location.
4. Soil.

II. Cellar.

1. Relative size to house.
2. Finish of walls and floor.
3. Provision for ventilation.
4. Provision for light.

III. Foundation.

1. Means of preventing dampness.

IV. Plumbing.

1. House-drain.
 - a. Size.
 - b. Material.
2. Soil-pipe.
3. Sink.
4. Bath-tubs.
5. Stationary-basins.
6. Water-closets.

V. Heating.

1. Furnace.
 - a. Pipes.
 - b. Cold-air box.
 - c. Registers.

VI. Ventilation.

1. Fire-places.

2. Shaft near chimney.
- VII. Lighting.
 1. Electricity.
- VIII. Painting.
 1. Interior.
 2. Exterior.
- IX. Papering.
- X. Effect of the home upon the Character.

References:-

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There are four things which must be considered in building a house, namely, special needs of the family, funds available for expenditure, location, and soil. The soil is divided into two classes, pervious and impervious; the former permitting the water to percolate freely through it while the latter being of very compact nature, prevents sub-surface drainage. Gravel, sand, and soft limestone are instances of the first class, clays being of an impervious nature. The nature of the soil must be given greatest consideration in deciding upon a location for health depends largely upon the condition of the soil. Low poorly drained ground is productive of a great many of the most dreaded diseases while highly porous soil is freest from germs of diseases. The dry porous soil is essential to the maintenance of good health. Many soils contain decomposing organic matter, the gases from which if allowed to

enter the house are very injurious to the health. Therefore the ground upon which the house is to be built must be as free as possible from such organic substances. The ground water or sub-soil water is the water flowing on the surface of an impervious layer and below the surface of the ground; it passes in two directions, horizontal and vertical. This ground-water must be very far below the surface upon which the house is to be built. The depth at which the water is found may be determined by boring. If the soil is so wet, it must be thoroughly drained, tile drainage being the preferable method to use. The house should be built on an elevated spot which has a slight slope so as to favor natural drainage. It is best to have the house face south for then the kitchen will be toward the west making it a cool place in which to work in the mornings, and the living-rooms will be cool in the after-noon. The house should be

so situated that the sun will shine
 in every room, some time during
 the day for sunshine is essential
 to the maintenance of health. It is
 well to have trees near the house
 for they oxidize organic impurities,
 absorb ground-moisture, and make
 the rooms cooler and more pleasant.
 However, they must not be so thickly
 planted that an abundance of sun-
 shine and air cannot enter freely.
 If it is too shady about the house, the
 soil will be damp and hence a
 good place for bacteria. It should
 be situated at least two hundred
 feet away from any source of
 contamination such as opening
 of any drain, marshy place, etc.
 In the city, a corner lot is the
 most desirable plan for the house,
 for then the occupants can obtain
 more fresh air and can live a more
 peaceful life for there will be close
 neighbors on one side only, hence
 there will be less noise. When
 selecting the location, one should
 choose a lot which is convenient

to market and place of business and in a pretty part of the town where a good class of people live. The needs of the family and the amount of money which can be expended, determine the size and shape of the house and the materials to be used in its construction. The cost of the house depends upon the nature of the site and the ease with which the building materials and labor may be obtained. Everything should be the best for the best is none too good.

The cellar should be under the whole house for then the house will not be closely connected with the ground and hence the ground-air will be prevented from entering the house. It is essential that the cellar be constructed so it will be perfectly dry. Since the ground-air contains many gases greatly diluted, it is very injurious to health. The effect of such air is not soon apparent but the injury is none the less sure.

The best way to prevent the gases from entering the house is to have a thick bed of clay on the cellar floor and over this, a layer of coarsely broken stones, the spaces between the stones being filled with crushed rock and finally the surface covered with cement. This floor will give a firm support to the cellar walls which should be thick and firm to support the weight of the house and prevent frost and heat from entering. The walls should be covered with cement to prevent entrance of dampness and soil-air. To avoid dampness, the cellar should be drained and in order to do this, a trench, slanting slightly, should be dug, in which earthen pipes should be laid. These pipes must be covered with nearly two feet of clay. To protect the walls from moisture, clay should be packed in the space between the rough edges of the ground and the stone wall. The ceiling of

The cellar should be lathed and plastered, and the walls and ceiling white-washed. The foundation walls should be built hollow to prevent dampness entering the house and should be high enough above the ground, to allow windows six feet high to be inserted. In order to have the cellar sweet and in the best sanitary condition, it must have plenty of light and fresh air; there must be windows on all sides of the cellar and they must not be situated under porches.

The plumbing should be of the best quality and should be in sight so any defects in the pipes may easily be seen and repaired. There must be the least possible horizontal piping so the fixtures which include water-closets, wash-bowls, etc on the different floors are to be placed over each other. The house-drain receives the contents of the soil and

waste-pipes; the continuation of the house-drain outside of the foundation should be about five inches in diameter in order that it may be thoroughly flushed. It should be of iron and have tight joints. A trap should be in the house-drain near the cellar wall to prevent the poisonous sewer air entering the cellar. This trap must have an opening so it can be reached and thoroughly cleaned. A trap is a bend in the pipe which retains water to prevent the sewer air from passing. The water should stand at least one inch above the bend in the pipe. If it is lower, the foul air is permitted to pass, for a space is left above the water. If there is too much water in the trap, that is, if the water-seal is too deep, the solid materials will not be carried out of the trap. Each water-closet, bath-tub, sink, etc. should have a trap and only one. Siphonage, which is the

breaking of the water-seal by the formation of a vacuum, must be guarded against by ventilating pipes. The ventilating-pipe should be of cast iron coated inside and outside with asphalt. It should be four inches in diameter and should extend about two feet in a straight line above the roof. The opening must be protected from falling leaves and other things by a wire screen. This opening must be away from any windows or chimneys. Refrigerator waste-pipe must not have direct connection with the soil-pipe or the house-drain. The kitchen sink should be of iron with porcelain lining and it should have a high porcelain lined back. This sink will be easily cleaned and it is sanitary. The faucets should be set well up and back of the sink and the sink should be wide to prevent dishes being easily broken.

when washing there in it. It should have a shelf, grooved and slightly slanting towards the sink, at one end and a broad smooth shelf at the other end. It should have a fairly fine wire strainer screwed in place over the waste-pipe and the pipes underneath the sink should not be inclosed with wood-work. When a sink is inclosed with wood-work, a dark cup-board is formed which is an excellent place for filth to accumulate and bacteria to multiply. A bath-tub of iron with porcelain lining is sanitary and that is the kind with which this ideal home is to be supplied. The stationary-basins are unsanitary in the sleeping-room or in closets adjoining if without independent ventilation but when they have waste-pipes of proper size and material and the waste-pipes contain a good trap, they are perfectly sanitary in the bath-rooms. The earthenware

basins seem preferable. The wash-down water-closet is the best; it should be flushed from a special cistern of wood with metal lining and capable of holding from three to five gallons of water. This cistern should be situated about four feet above the receptacle and have a straight flush pipe not less than one and a fourth inch in diameter.

There are many reasons which indicate that furnace heat (hot dry air) is most to be desired. A furnace should be situated towards the northern part of the house. The furnace is really a large stove made of cast iron, the joints of which should be horizontal, inclosed with galvanized iron. From this inclosed chamber are pipes leading to the various rooms. Cold air is brought into this chamber by means of the cold-air box which is a passage leading from the exterior of the house to the furnace. The hot air pipes should be so arranged that the

air from the cold-air box has to
 pass around the furnace once be-
 fore passing into the hot-air
 pipes. The cold-air box must be
 perfectly tight so the cellar-air
 and dust cannot enter it and thus
 pass up the hot-air pipes and
 finally contaminate the air of
 the rooms. The area of the opening
 of the cold-air box should be equal
 to the area of all the registers, less
 one sixth; it should be about two
 feet above the ground and on the
 side of the house away from
 the street to prevent much dust
 from entering; it must also be
 away from any drain-venti-
 lation, cess-pool or any other
 source which may make the
 air impure. The ground beneath
 the opening must be sloping
 to aid in removing moisture
 rapidly. It is necessary to have
 a wire screen over the opening
 to prevent leaves and small
 animals from entering. It

is best to have two air-shafts and have them on different sides of the house. The cold-air box, furnace, pipes, and registers should be large enough to supply the house with a large volume of warm air but not heated to a temperature above 120°F . The pipes must be covered with asbestos and they must be at least two inches from any wood-work so there will be no danger of fire. The horizontal pipes should not be any longer than fifteen feet as heat has a tendency to rise, it would be difficult to heat the rooms on the first floor if the horizontal pipes were too long. It is more sanitary to have the registers placed in the wall for then they do not collect so vast an amount of dust; when they are in the floors, dust is frequently swept into them and this dust is again sent into the air of the room by

the rising current. The registers should be so they can be removed and cleaned.

As pure air is one of the most essential points to consider in maintaining good health, it is necessary to provide some means of ventilation besides the doors and windows, for this purpose it is desirable to have several fire-places, one for each bed-room if possible, as well as in the sitting-room, hall, and dining-room. A fire-place is not only a perfect means of ventilating but it adds beauty and cheerfulness to the room. The wood-work must be protected so there will be no danger of fire and this can be accomplished by surrounding the fire-place with brick. Shallow fire-places give more heat with less expenditure of fuel than the deep fire-places. The facing and hearth should be

of glazed tiles which are easily kept clean and reflect the heat. Another way of providing for ventilation is to have an air-shaft near the chimney. The chimney in order to draw well, must be constructed high enough so the opening will be free from all obstructions.

The most sanitary method of lighting the house is by means of electricity for then the air of the room is not made impure as is the case when other means of lighting is used. There must be one bulb in every room in the house, also in the basement rooms, bath-rooms, and halls; in the library and sitting-room, the bulbs must be provided with ground glass shades. The

The interior wood-work should be of hard-wood finish, by that I mean, hard wood covered with a filling and finally covered

with varnish. It should be simple and not have many creases and carvings which will collect dust.

The exterior should be painted in shades harmonizing with its surroundings.

In selecting wall-paper, there are several points to be considered namely; the size of the room, position of windows, the purpose for which the room is to be used, that the surface to be decorated is flat, that the walls are flat and the figures must be in accordance with this fact, that the paper is to serve as a background for the pictures and furniture, and that color of the paper must harmonize with the carpet. The paper should not have large designs nor should it be colored too highly; paper with small figures and in warm, sombre colors, makes

the best back-ground for pictures. If the room is dark, light colors should be used on the walls as they reflect the light and make the room more cheerful but if the windows are large and the room is light, dark colors may be used. The paper on the walls should always be darker than the ceiling paper and the color of the carpet should be darker than the walls.

This gives a general idea of the various points to be considered in planning a house. This house plan can be changed to suit the individual's taste but many of the things placed in this house must be found in every house in order for it to be sanitary and artistic. The home has a great effect upon

The character and health of its
inmates and as it makes the
nation, it should be as nearly
perfect as possible. A home
that has no conveniences and
beauty, mars the character of
those who live in it, for beauty
and artistic taste in the home
enables and enriches the character.
It is true that the house is the
expression of the human soul
that planned it."