occur chiefly in houses erected by speculative builders, who seem to be under no regulation of any kind in respect of floor timbers. * * * Many practical builders have a conviction that if a timber as a joist has a larger cross section than another it must be stronger. Thus they fancy a piece of timber 8 inches by 3 inches, which equals 24 square inches in sectional area, cannot be so strong as a piece 5 inches by 6 inches which has 30 inches in area. The fact is, the smaller piece is the strongest of the two if both are placed upon edge, as every one knows who has studied the principles on which the strength of beams depends. It is easy to convince the most practical of this seemingly inexplicable fact. If two beams of like size are placed side by side, two will resist twice the amount of one of the pieces. This is so self-evident that experiment is not needed to establish the fact; in the same way three beams will resist three times as much as one, and so on of any number. In plain English when lengths and depths are equal, a beam of six inches in breadth will bear three times as much as one of two inches in breadth. It may be shown by experiment quite as readily that the strength increases more rapidly than the depth. In point of fact, another law of proportion is observed—namely, that having two beams of the same breadth and length but of different depth, the strength increases more rapidly than the depth; thus it is found a beam nine-inches deep bears more than three times as much as one only three inches deep. These are very simple statements derived from facts and experiments and no complex conception of the resistance of certain fibres on both sides of a neutral axis, or quotations in algebra, are required to establish them.

In dwellings the load on a floor is chiefly made up of furniture, though this is generally placed, at least the heavy articles, round the walls of rooms. The space occupied by tables and other objects in the centre of a room reduces the available standing area, and thus, for all, ordinary floors, 70 lbs. per superficial foot may be calculated for as the full load in extreme cases. Rules founded upon the resistance of beams to rupture are, however, of little use, as the floors may be seriously affected by deflection, and deflection is directly as the cube of the length. In regarding stiffness the load per foot has been given by one authority as 90 lbs. per foot, including weight of materials. It makes all the dfference to place joists an inch nearer, though builders like to give as much interval as they can, for economy's sake. Instead of joists being placed 12 inches apart, it is oftener to find them 13 inches or even 14 inches, and the consequence is a scantling which has been found to answer in a well-built house fails when it is introduced with a greater distance or interval. Then the modern speculative builder's floor is seldom properly stiffened by cross bridging. There is only one row instead of two or more. Of course no practical man will deny the advantage of bridging his floor joists. It helps wonderfully to prevent deflection under a concentrated load, for the joist immediately beneath the load is relieved of direct strain, and the joists on each side take a share of the weight. Generally it may be taken that a properly bridged floor is capable of sustaining, without mere deflection, twice as much load as the same floor without bridging, so that the cost of the introduction is amply repaid.

A MODEST MAN (?).

The noted correspondent, Gath, lately said, in one of his letters, that "not long ago all the Examiners in the Electrical Department of the Patent Office were brought up to Menlo Park and shown Edison's light. He gave them a dinner. They had not the least conception of the thing. Sometime ago Edison said that there were but two things, which could work him any injury. The first would be the gas companies in despair putting down their rates to fifty cents a thousand or less, so as to underbid even his electricity and try to force him off by the dull weight of capital. He said he could stand that as long as they could. The next was the possibiiity that some other inventor might make gas out of water or some cheaper material. In that case,' said Edison, 'I have only to go back to my laboratory. I am a professional inventor, and the only problem presented to me is to go and make anything cheaper than it is now made, and I do it.'

"While he has this great confidence, he is one of the most modest men in the world. At the Government Electricians' dinner, his lawyer, Mr. Eaton, said: 'Gentlemen, I am going to show you what I can do with Mr. Edison, prodigy as he is, I am going to make him blush.' At this all eyes were directed to Edison, and there he was seen with his hand on his ear, and his face covered with blushes."

We have no desire to dispute Gath's testimony on this point. We fear there is a little too much sarcasm in the above. There was not the least necessity in the world for Gath to tell people that Edison is modest, everybody knows that, and the object of a correspondent is to detail *news*. Any man who says he needs simply to go back to his laboratory for the purposes of making something better than some one else is not immodest, he is only confident. Such a man ought to blush; hence we are inclined to believe that Edison did blush. A man who can't blush on a proper occasion is not fit to be an inventor, and if this great inventor didn't blush before a whole room full of examiners it is the most convincing evidence in the world that he isn't an inventor.—*American Inventor.*

DESIGN FOR A COMFORTABLE DWELLING.

On the following page is presented a house built in Champaigne Ill., by Prof. S. W. Robinson, formerly of Champaign, but now of the Ohio State University. It was built from plans of the professor as an amateur architect, and was the result of five years of occasional thought and study.

It is said that we often make the pleasantest room in the house the parlor, and then shut it up and live in the back rooms. This is too true, and many renters would say: "I would never build such a house." But probably many of them would when they come to build, because the putting of parlor, sitting-room and hall in the front is easier said than done, especially if other rooms are left in convenient and desirable relation. The things desired in a modest house plan, are: 1st. A parlor fronting on the street. 2nd. A sitting-room half or more fronting on the street, and connected to the parlor by sliding or folding doors, to throw both rooms into one for entertainments, or even family comfort. 3rd. A dining-room opening from the sitting-room, as it evidently should. 4th. A sleeping and toilet room of ample size, opening off the sitting-room. 5th. A hall fronting on the street, large enough at least for a hat and coat rack, or for receiving three or four persons, or as many as are likely to come at once, the same being in communication with the parlor and sitting-room. 6th. A kitchen opening off from the dining-room, with its stove, table, pump, sink, etc., in convenient relation.

The arrangement of rooms in the second story is a comparatively easy matter. When the house is to be heated by a hot-air furnace, still further thought will be needed in securing such a position of the smoke and air flues as to properly heat and ventilate all the rooms. Though the number of our days depends much upon this latter point, it is usually disposed of as if involving nothing but the number of hods of coal.

The hall has a winding stairway, and is located in the base of the tower, 9 feet square. This size of hall admits of its being in front, and at the same time allowing full front to the parlor, half front to the sitting-room, with a large doorway between; small stairs ascend to the second story of the tower.

The double rectaugle at the middle of the plans are the smoke and air flues, the latter being nearest to the front. Seven rooms in the house are heated with a hot-air furnace. The air enters the room near the base or through the floor, and rises. The exit is in the wall near the base in all cases, and into the air flue of the chimney. The registers have an effective opening of about a square foot, and have been found efficient. The furnace is placed in the cellar, where space is provided for a car load of coal.

The tower has another use than for ornament. In hot weather its efficiency as a ventilator is remarkable. In quiet summer nights an enjoyable air current is established through any room having an open window and an open door and passageways to the tower, the attic windows or ventilators of the tower being open. A tower is, therefore, found useful in three ways, first, in ventilation; second, as an observatory; and third in architectural effect.

The outside is covered with ordinary siding laid on tarred paper. The ornaments are mostly cut from boards, strips being sometimes laid on, forming panel work in addition. The entire adornments of the building cost about 6 per cent of the total cost of $4,400, the latter including everything permanent, such as foundation, furnace, etc. The carpenter's contract was $3,100. All the windows, except those of the kitchen, have inside blinds, the transoms having sand-blast glass, except those of the front hall, where all lights are of cut glass.

In bad seasons honey is apt to be poisonous. This arises from the fact that in such seasons the bees are often obliged to gather it from poisonous flowers.