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HOME FOR ALL:

OR A

NEW, CHEAP, CONVENIENT,

AND SUPERIOR

MODE OF BUILDING.

BY O. S. FOWLER,

AUTHOR OF VARIOUS PHRENOLOGICAL WORKS.

NEW YORK:

FOWLERS AND WELLS, PUBLISHERS,

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SECTION I.

HOME—ITS NECESSITY AND PERFECTION.

1. A NEW MODE OF BUILDING—ITS HISTORY AND PHILOSOPHY.

No invention can be of greater practical utility to man than one which shall CHEAPEN AND IMPROVE OUR HOUSES, and especially which shall bring comfortable dwellings within the reach of the poorer classes. Such an invention it is the object of this volume to expound. It points out a mode of constructing private residences and public buildings at much less than their present cost, and every way more beautiful, convenient, and comfortable throughout. Except in a single particular, it is an original invention of the author. To begin with the history of its discovery, in order to facilitate its complete understanding.

In 1842 I purchased a few acres of land, on which was a fine building spot, commanding a fine and extensive landscape prospect of the banks of the Hudson, and of both the Catskill and Fishkill ranges of mountains. While looking about, in my professional tours, for some pattern of a house after which to build, I saw, in Central New York, houses constructed WHOLLY OF BOARDS and WITHOUT FRAMES, though only one story. I liked the plan so well, that I immediately ordered boards sawed as required by this plan, and drew a plan after which to build it.

The timber arrived in the summer of 1843, and in the spring of 1844 I planned a small addition to my old house, to accommodate us while erecting the new, and left on a professional tour. Meanwhile the carpenter, in laying out the foundation,

not understanding my purpose, insisted on having an ENTRY, to which Mrs. F. assented, supposing I had forgotten this feature of it; and this made it a house, whereas I wanted only an ADDITION. Returning and finding the foundation planned for an entry, I let it go so, and finally concluded to make it a story higher than I at first designed, and have it do me till I was better able to build to my liking. But, as it was erected without any concerted plan, and therefore quite inconvenient, I continued my search for a PATTERN after which to build the home of my future years. My professional tours showed me all the new improvements as fast as they appeared. I read Downing and others on this subject, but none suited me, for reasons to be given soon. I kept continually asking myself, "Why so little progress in ARCHITECTURE, when there is so much in all other matters? We continue to build in the same square form adopted by all past ages. Is this necessary? Cannot some RADICAL change for the better be adopted, both as to the external form of houses, and their internal arrangement of rooms?" And in looking about for some general plan, I said to myself, "Why not take our pattern from NATURE? Her forms are mostly SPHERICAL. She has ten thousand globular or cylindrical forms to one square one. Indeed, how very few squares we see in nature. Why not, then, adopt this spherical form for houses? It is adopted in fruits, eggs, grain, etc., so as to enclose the greatest amount in the smallest compass, and also the better to secure them against injuries. What should we think of a square apple, or right-angled egg?" Taught in college the mathematical principle, that a spherical surface enclosed more, in proportion, than any other shape, and knowing that this was one end secured by the rounding shape of fruits, grains, potatoes, the head, etc., while greater protection is another, I said, "Why not build our HOUSES in a spherical, instead of square form?" "Because they cannot be FRAMED without costing more extra than is gained," was the practical answer. "But this BOARD wall can be constructed at any other angle as well as a right angle," thought I. "Then why not have our houses six, eight, twelve, or twenty-sided? Why not build after some mathematical figure?" I inquired. I had it. The PRINCIPLE involved in the architectural improvement here submitted

to lovers both of home and architecture, was thus seized upon and applied to this board-wall plan, and this combination of both gave birth to the architectural plans which we shall now proceed to develop.

2. MAN'S REQUISITION FOR A HOME.

Every living thing has its HOME. "Foxes have holes," and squirrels, rats, reptiles, and all burrowing animals, excavate habitations in the earth, in which they shelter themselves from the merciless storm and the piercing cold, to which they flee for safety from the face of danger, and where they bring forth and rear their young. Ants, bugs, beetles, crickets, and even worms, dig themselves holes, in which to live and breed, while the more ingenious bee builds its six-sided cells for storing its winter's provender, and reproducing its species. Bears and wolves have their homes in deep hollow trees or dark caverns; and even fishes deposit their spawn in crevices among the rocks, which serve as temporary habitations for their young.

Fowls, endowed with a higher order of Constructiveness, choose their domicil, and erect their habitation, strengthened by timbers of twigs, plastered with mud, and softened with down, and there live together in love till they produce and rear the children of their happy union. Eagles build in the rugged crag, hawks in the high tree, and ducks in the miry marsh; but all build themselves HABITATIONS, each after its own taste.

This home-providing principle equally pervades the entire vegetable kingdom. Every tree has its home in the cleft of the mountain rock, or by the rich banks of the running stream, and every species of herb appropriates to itself a place where it plants its roots and builds its cylindrical walls and leafy roof. So, too, the stem of the apple, or the nut, is the home of its birth and its youth, till it becomes sufficiently matured to put forth in search of some permanent residence, where it can reproduce its kind. Even every seed has its own chamber and bed in its parental homestead—every ear of corn its home on its stalk, and its husky walls for shade and shelter, while every kernel of grain has its own nest, and

every seed its temporary place of abode. The very hills make themselves residences, and the waters have their places of abode, while the earth and the planets traverse their own cycles in the fields of space, which no foreign foot molests. Thus every thing in nature has its home, and in turn becomes an abode for life, enjoyment, and development.

And is man an exception to this great HOME law? No; but, on the contrary, he is its most perfect exemplification. Endowed with the primitive faculty of Inhabitiveness, he seeks and craves a home just as he does food or friends, and for a kindred reason, namely, the resistless longings of a primitive element of his mind, implanted for the purpose of COMPELLING him to seek an abiding-place, which shall be the centre of most of the joys of life. Nor ought any to deny themselves homes; but all should provide themselves with a temporary or permanent residence, as much as with food or clothes—which are only cloth houses fitted closely, so that they can be carried about with us. As we set apart no inconsiderable portion of our time to procure food—or what is tantamount, to earn money to pay board—so all should appropriate as much time to procure and improve homes, and furnish them with the comforts of life. More especially ought every MARRIED pair to procure a permanent RESIDENCE for themselves and families, because, without them, one powerful faculty must suffer perpetual abrasion, and most of the rest a great diminution of action and consequent pleasure. This "moving" every few months or years is alike destructive of property and enjoyment, besides the enormous costliness of rent. It greatly diminishes planting, and cripples all sorts of husbandry, prevents setting out trees, and keeps tenants from having things GROWING, besides obliging them to go, money in hand, for every little thing wanted in the family, the expensiveness of which is ruinous even to the healthy, but death to the sickly. None can ever know the worth of a home but those who have once had one and lost it, and, after having been long cast out upon stone-hearted landlords, finally reobtained a comfortable domicil, and set down under their OWN grape vines and fruit trees. Father, mother, whoever thou art, heed this important advice—PROVIDE A HOME, whatever else you may do or leave undone. However great

your privations, however astringent your poverty, get a HOME FIRST, and the greater your destitution, the more need have you of providing a home—no matter how homely—merely as a means of escaping that poverty.

3. A POOR MAN'S HOME.

But you plead utter inability. In this you err. You are far better able to get you a residence, if it is only a turf hovel, than to live without one. Say to some land-owner, "Lease or sell me a small piece of your land."* If you cannot get a lot on the public highway, take up with one in the fields or woods, and pay your purchase money or rent in work, if you have no money. Then bank up with dirt, if you are too poor to procure boards, and live on bread and water, or boiled wheat and corn—you will not starve, nor your children, on this fare, but be all the better—till you can earn a few dollars to render your hovel passable for the time being. Plant some pear and apple seeds, and peach and cherry pits, and, when grown, bud and transplant them. Lay by all you now pay for rent, and all you save by having a place to raise vegetables and keep a cow, and in a year you will have enough to BUY your leased land, and put

* This pre-emption right to actual settlers is a law of nature. Land, like air and water, is the common heritage and constitutional birthright of every human being, and belongs equally to all. Only the IMPROVEMENTS on lands can justly be called private property. God gives a quit-claim deed to every one of his children of as much land as, well tilled, will supply them with the necessaries of life; and this putting of a government deed of vast tracts into land-holding pockets, on which to speculate, and making the poor pay an exorbitant tax for the right to cultivate, is a violation of the laws of nature. Whence did government obtain its right to sell? Of the Indian. And where he his? Echo answers, Where? I go for free lands, as well as free air and light, and for precisely the same reason. I would make all unimproved lands public property, till improved by actual settlers, and then only these IMPROVEMENTS saleable. Yet I would protect their maker and purchaser in them, as much as we now do the land itself.

The proposed law for rendering the homestead inalienable, and not liable for debt, has my cordial support. Many coax customers to run into debt just to get hold of their homes for a song. Such a law would injure no one, for sellers would then trust with their eyes open, and trust the MAN, instead of, as now, his house; and this would make men honest, because otherwise they could not be trusted. The seller, when solicited to trust, would say, practically, "You did not pay Mr. B., and I fear I shall not get my pay;" and this would make men prompt. It would also substitute the CASH for the credit system.

you up a small house on the plan proposed in this work. I speak now of those who have not a dollar in the world with which to begin. And the poorer a man is, the greater the need of his adopting this home policy in some form—of course, in the best form he can. You greatly mistake when you think yourself too POOR to have a home. The poorer you are, the better able you are to procure one, or, rather, the LESS able to do WITHOUT one. Your poverty is the very reason why you should build.

But perhaps you, or your wife, or your daughters, are too proud to live in a house as inferior as your present stringent circumstances would compel you to build. This is, doubtless, where the shoe pinches. Then let it pinch on. Those who, whether in high life or low, are too proud to CONFORM TO EXISTING CIRCUMSTANCES, are quite welcome to endure the pressure of adversity on the corns of pride. Do as you like, but "hear my opinion." I consider it no disgrace to BE poor, but I do consider it disreputable to REMAIN SO any great length of time. He who, in a country of liberty and plenty, cannot rise from the deepest poverty to comparative comfort, lacks either the wisdom to plan, or the energy to execute, his liberation from his galling yoke. Sickness—his own or that of his family—may retard his deliverance; but he can and should know HOW TO RESTORE AND PRESERVE HEALTH.* Any healthy, industrious, and intellectual man, however large his family, can, by due FORETHOUGHT and MANAGEMENT, soon rise from poverty to comfort, and then to affluence.

"But I have nothing with which to BEGIN," is the discouraged response. Then MAKE something. I know that "the destruction of the poor is their poverty," but, granted that you have nothing but your hands and to-day's provisions, with to-day's work bring home a bushel of corn: get no tea, or coffee, or sugars, or spices, or meats, but live WHOLLY on BOILED CORN till it is gone. Meanwhile, you can earn several bushels more—probably a month's supply. Or, if you prefer a change, substitute beans, wheat, rice, hommony, Indian in its various forms, brown bread, etc. But live on one or two

* See a discussion of this point in "Physiology, Animal and Mental," pages 22, 24, 26, 27.

kinds of food, without even butter; for hunger makes the best sauce. If you can afford fruit, stewed or raw, so much the better; and grain and fruit will support life and strength in all their vigor for months, and even years. Indeed, you will probably feel stronger and better able to work on them than on your present fare. All these extras, instead of being essential to health, only impair it. You can hardly live too plainly. Boiled wheat or corn alone, with apples, will relish first rate, and keep you strong and hearty for months and years. By living in this plain way, you can save at least THREE FOURTHS of your wages for a house. In a month you can save enough to buy a few square rods of ground, sufficient for a home; and in another month you can save enough more to build a rude hut, sufficient to stop rent and set things to growing; and in a year you can build a house on the plan here proposed, and in another year fill it with furniture and comforts. I repeat, there is no need of a man's being too poor to own a homestead, and the poorer he is, the more able he is to pursue some such home-erecting policy; and a home once created, he can soon turn himself as he likes.

But, to return from this partial digression with this sacred injunction: Let every one set apart as much of his time and means for a home as he does for food or clothes, as the best means of providing the latter; and then let him GROW things, instead of buying them.

4. A GOOD HOME.

Nor should we be contented with a POOR home. On the contrary, we should provide the BEST one we can. The residences of the various tribes of animals bear a close analogy to their characters. Thus, low-bred, coarse-grained, inferior animals make inferior homes, of which worms, moths, etc., furnish examples. So, too, foxes, squirrels, ground-hogs, snakes, eels, etc., are low-minded and inferior, and creep or run upon the ground, and accordingly burrow in the earth. Yet their habitations, like their characters, far surpass those of animals below them, while the beaver, higher in the scale of mentality, builds him a better habitation. So beasts of prey seek some dark hole or cavern in which to hide away

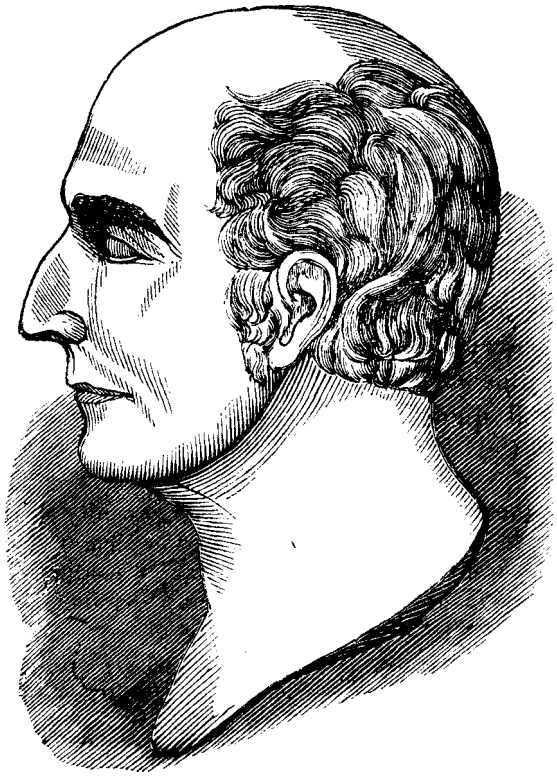
from the sunlight, from which to steal forth in search of hapless objects of prey, and in which to deposit their plunder. Walking and swimming fowls build on the ground, while soaring ones build in trees. Innocent singing birds build in low trees, near the residence of man, while the hawk chooses the tall, thick forest, and the soaring eagle the towering cliff. Throughout all nature the ABODES of all animals correspond perfectly with their characters, so that the latter can be safely predicated from the former.

This is equally true of man. The half-human, half-brute orang-outang constructs a rude hut of sticks and bushes, while the more advanced Bosjowan builds a habitation a little better, but of the lowest class of human architecture, as he is at the bottom of the ladder. The Hottentot, Carib, Indian, Malay, and Caucasian, build houses better, and still better, the higher the order of their mentality.

This same law equally governs individuals. Those who are content to live in old rookeries, when they possess the means of building palaces, and perhaps erect splendid houses to rent, have sordid souls, and only need paws to make them woodchucks. So, too, those who build better barns for their cattle than houses for their children, are both unwise and inhuman. Those who are destitute of refinement will build some outlandish tenement, as unsightly in looks as inconvenient in arrangement, while those who possess refinement and correct taste will build a neat, tidy, well-proportioned, good-looking edifice, and one as useful as it is beautiful. Lazy-minded, contented, easy souls, whose aspirations are low and weak, will build in hollows and rear low houses, while those who are lofty, aspiring, and high in character and aims, will build on eminences, and erect high houses. The ruins of Pompeii show only two houses above one story, which coincides with our theory. Men with the eagle form of nose and physiognomy, like Tristram Burgess, of Rhode Island, called in Congress "the bald eagle," will build on high ground, where they can have a commanding prospect, while those of a rabbit or squirrel form of teeth and face will dig their foundation in a bank, so that they can have a CELLAR KITCHEN; and thus of other subjects.

But especially will a man's INTELLECT show itself in the

house he builds. If he lets the mechanic play with his fancy and his pockets, by persuading him to build after this or that gaudy fashion, because it is popular, and popular because it is expensive, he shows the absence either of independence of mind or clearness of perception. While those of immatured tastes will build a try-to-be-extra exquisite monument of their weakness, those of well-balanced minds and good practical judgment will devise a comfortable and convenient mansion,



TRISTRAM BURGESS, OF RHODE ISLAND.

which they will finish off in a higher and still higher order of taste, according to their several casts of mentality. Indeed, the more powerful a man's intellect, and the better balanced his mind, the more perfect mansion will he construct.

Of course this general rule has a great many exceptions both ways. A man of a high order of mind may live in a poor house from necessity, from habit, from an unwillingness

to tear down the abode of his earlier years, or from sheer inattention, while others of poorer minds may build fine houses, yet owe them more to their carpenters, or to fortuitous circumstances, than to themselves. So a thousand other causes may prevent given individuals from carrying out their respective tastes, yet, as a general rule, a fancy man will build a fancy house; a practical man, a convenient house; a substantial man, a solid edifice; a weak man, an ill-arranged house; a well-constituted man, a good house, etc. And this diversity of tastes is well, for it gives a beautiful variety to our towns and villas. Yet this diversity is compatible with a high order of beauty and utility, and even promotive of both.

5. THE PLEASURE OF BUILDING.

Since man must have houses to shelter him from the pelting storm and winter's blast, nature has kindly provided him with a BUILDING INSTINCT, called, in phrenological language, CONSTRUCTIVENESS. As a knowledge of the true function of this faculty will facilitate our architectural progress, we will quote our analysis of it as given in "SELF-CULTURE:"

"The MAKING instinct and talent; manual dexterity in using TOOLS; INGENUITY; sleight of hand in CONSTRUCTING things, and turning off WORK, or whatever is done with the HANDS; disposition and ability to TINKER, MEND, FIX UP, MAKE, BUILD, MANUFACTURE, employ MACHINERY, and the like.

"LARGE Constructiveness loves to make, and gives an excellent practical idea of the best mode of constructing things, as well as manual skill and dexterity in executing all kinds of work, writing, drawing, sewing, folding, managing machinery, packings, and whatever we do with our hands. It also relates to the construction of ideas in sentences, discourses, and works.

"SMALL Constructiveness is deficient in these respects, awkward in manual exertion, fails in understanding and working machinery, writes and uses tools bunglingly, and lacks mental as well as physical construction.

"Located two inches forward, and one upward of Acquisitiveness.

"Every thing which is, is MADE. All nature is one vast workshop, and all things in and on the earth are the manufactured wares of the great MAKER of the Universe. And the skill and ingenuity displayed in every work of his hands are indeed infinite! Every thing constructed in the

best possible manner to subserve the great end of its creation. Every organ perfect in formation and function, and located just where it can execute its mission to the best advantage! Behold the infinite mechanical perfection of the eye, ear, lungs, heart! How infinitely minute, yet perfect, the capillary ramifications of blood-vessels, glands, nerves, muscles, fibres, etc.! How inimitably perfect in invention and execution the mechanism of the human body! Nothing superfluous—nothing wanted but is supplied. Its functions, how numerous, how complicated, how efficient! Yet every one of them effected by some INSTRUMENTALITY, for nature never works without tools. Though we do not understand a hundredth part of those contrivances employed throughout the human body, yet what we do understand is worthy of all admiration.

"The Infinite Mechanist of the Universe has also stamped upon all his works certain mechanical laws, which are generally SELF-ACTING. Of this the heart, lungs, stomach, and all our physical functions furnish examples. They 'whistle themselves' in their growth, their various functions, and their decline.

"This self-acting principle doubtless moves the earth, sun, and stars through their immense cycles, and both generates and applies the power required to propel such huge masses with such mighty velocity and precision. The Newtonian theory is probably incorrect. The true one will doubtless be found to proceed on certain simple, yet efficient mechanical principles—to embrace a self-moving and self-regulating law of perpetual motion. That principle undoubtedly exists in nature, and will yet be discovered and applied by man—not by any arrangement of machinery, but by the generation and combination probably of some application of those two forces—self-attracting and repelling—which constitute magnetism, light, heat, galvanism—all the same—and which produce growth, and probably constitute the motive power of universal nature.

"But however perfect all that physical mechanism of nature which attains ends so countless in number and promotive of happiness, yet all this is nothing compared with the mechanism manifested in the construction of the human mind. Here, all attempts at description only beggar it. None but the profound phrenologist can comprehend its beauty or perfection, nor he only begin. I admire the works of God—full of the divinity of their Infinite Author. But thou, O mind! excellest them all. Think of it! The creation of an immaterial, immortal, sentient, and thinking entity, capable of all the varied emotions, desires, and operations, we perform, and in such almost angelic power! O, thou Maker of heaven, earth, and the human soul! thy works, like thyself, are indeed infinite! And thy last, thy most perfect. 'Here the WHOLE Deity is shown.'

"Man, too, is endowed with this making instinct and capability. Constituted so as to require houses, garments, tools, agricultural, mechanical, and other implements, as well as machinery, without this faculty adapted to such requisition, he could never make a single article, nor do any thing whatever with his hands. But with it, the farmer, mechanic, and laborer execute every stroke with the hammer, saw, ax, scythe, and every other

tool used by man: the builder constructs houses and palaces; the machinist invents and constructs labor-saving machinery of all kinds, and therewith makes all sorts of fabrics and articles of comfort and luxury; and even compels water, wind, and steam to become his workmen. Behold that floating palace! See her plow the mighty deep, perform her prescribed voyages, and even outride that terrific gale! Every breeze, from whatever quarter, propels her forward. The very winds are her servants. See the innumerable machines all over the land, executing all sorts of labor for the comfort of man! Behold the human face divine transferred to canvas and the Daguerrian disk! How beautiful, how necessary, the possession of this faculty of man; and how innumerable and great the good it confers!

"A faculty thus promotive of human happiness should, of course, be cultivated. The idea that none but mechanics require this element, is a great mistake. Every human being uses it, in all to which he puts his hands. All farmers and workers in any and all sorts of manual occupations; all merchants, in putting up, taking down, cutting, packing, folding, and wrapping their goods; all who use the pen in making letters and words; all who frame books, essays, paragraphs, or sentences; all who speak in public or converse in private, or even think or feel; all who do any thing, in whatever they do, as well as mechanics proper—all mankind, rich and poor, wise and foolish, old and young—require and use this constructing instinct and capability. All should, therefore, cultivate it—artists, mechanics, operatives, and workers, that they may excel in their respective pursuits—and still more those who would live by or enjoy their mental powers.

"Skill in the use of tools is of incalculable value to all. It will enable them to execute many jobs, trifling and important, which they can do for themselves better than any one else can do for them.

'Its cultivation will also greatly facilitate that muscular exercise shown in 'Physiology' to be indispensable to health and talents. On this account, if no other, the rich should perform some kind of manual labor daily. But we need not repeat.

"A good CHIROGRAPHY—a plain, easy, and rapid formation of letters and words—is of great utility in all stations in life, and is secured in part by Constructiveness, and should be cultivated by all. And to acquire this, DRAWING should be taught along with writing. Both consist in transferring FORMS to paper, and greatly aid each other. In fact, reading, writing, and drawing are virtually one, and should be taught together. On this point, Hon. Horace Mann, state superintendent of Massachusetts' schools, says, in a report of visits to schools in Europe: 'Such excellent handwriting as I saw in the Prussian schools, I never saw before. I can hardly express myself too strongly on this point. In Great Britain, France, or in our own country, I have never seen schools worthy to be compared with theirs in this respect. This superiority cannot be attributed in any degree to a better manner of holding the pen, for I never saw so great a proportion in any schools where the pen is so awkwardly held.

This excellence must be referred, in a great degree, to the universal practice of drawing contemporaneously with learning to write. I believe a child will learn both to draw and write sooner and with more ease than he will learn writing alone. In the course of my tour, I passed from countries where almost every pupil in the school could draw with ease, and most of them with no inconsiderable degree of beauty and expression, to those where drawing was not practiced at all, and I came to the conclusion that, with no other guide but the copy-books of the pupils, I could tell whether drawing were taught in school or not.'

"Mr. Mann adds: 'Drawing, of itself, is an expressive and beautiful language. A few strokes of the pen, or pencil, will often represent to the eye what no amount of words, however well chosen, can communicate. For the master architect, for the engraver, the engineer, the pattern-designer, the draughtsman, moulder, machine-builder, or head mechanic of any kind, all acknowledge that this art is essential and indispensable. But there is no department of business or condition of life where this accomplishment would not be of utility.'

"This faculty should, of course, be cultivated in children. In them, this organ is usually large, and faculty active, and hence their fondness for hammers, nails, knives, and tools. This tool-using propensity should be indulged, and they encouraged to make and use kites, windmills, milldams, water-wheels, bows and arrows, cross-guns, miniature sleds, boats, railroads, steam-engines, etc. Instead of this, when boys draw pictures on slates, in place of ciphering, they are scolded or chastised. LET DRAWING BE ENCOURAGED. I would give a handsome proportion of all I am worth to be able to draw accurately, so that I could sketch and draw, exactly to suit me, such phrenological heads and illustrations as I often meet in real life; whereas now, I am compelled to obtain but few, and then to trust to artists who do not understand Phrenology.* Furnish children with tools. Let them have knives, and be encouraged to whittle, carve, make sleds, wagons, etc., and even have a shop of their own, supplied with tools with which to tinker. And this is doubly important to those who are delicate, as a means of strengthening their muscles, drawing the blood and energies from their heads to their muscles, and equalizing their circulation."

Since every faculty was given us to be vigorously EXERCISED, of course this important one should not be allowed to remain inactive. And how can it be employed to better advantage than in constructing houses? Indeed, this is one of the PRIMARY ends it was created to subserve. And, to

* The importance of combining a knowledge of Phrenology with the arts, especially with portrait painting and engraving, is very great, and too apparent to require comment. In a few years every artist must be a phrenologist, or be out of employ.

render such provision of houses CERTAIN, nature has rendered it among the most pleasurable offices in which we can engage. Mankind, in their civilized state, have a literal MANIA for building, which increases as civilization advances. As birds seem to be full of delight while building their nests, so man is perfectly happy while building, notwithstanding its expensiveness. And this strong natural instinct should be gratified, and even cultivated. Since few things contribute equally to human happiness, and especially since houses are so very high, more should be erected, so that even the poor can find shelter. And year after year should add one comfort and improvement after another to our homes, till the earth becomes literally studded with paradises, full of life and happiness.

Since many men have many minds about a dwelling, our next inquiry is.

6. WHAT CONSTITUTES A PERFECT HOME?

That which combines the most facilities for enjoyment, with more especial reference to FAMILY comforts. This is the sole end of having a dwelling, and all we can rationally seek in one. How, then, can THIS end be secured? This inquiry we hope to answer throughout the progress of the volume. Meanwhile, let us consider a few of the grand principles which govern this matter.

TO ENCLOSE SPACE is the first and main object in building. This is done by MAKING WALLS—and we will call roof, ceilings, floors, doors, windows, etc., walls.

STRENGTH AND TIGHTNESS are also required, the former to resist blasts, and the latter to exclude rains and colds. Light, ventilation, cleanliness, dryness, etc., embrace other objects; but of these as we proceed.

ROOMS convenient, easy of access, etc., should also be secured, and especially such an arrangement of them as shall facilitate "HOUSEWORK." Every housekeeper knows that it requires twice the labor to do a given amount of work in some houses that it does in others. Now, to have the rooms and their accompaniments so constructed as to have every thing handy and convenient—a place for every thing and

every thing in its place—is indeed a great desideratum. How much fretfulness and ill-temper an unhandy house occasions. Nor does the evil end here. It often—generally—sours the tempers of children, even BEFORE BIRTH, by perpetually irritating their mothers, and thus renders the whole family bad dispositioned BY NATURE, whereas a convenient house would have rendered them amiable and good.

WARMTH, easy, cheap, and complete, is also a great desideratum, because so promotive of comfort. What pleasure can be taken in a barn of a house, all open, and the chilling winds perpetually pouring in through a thousand crevices, so that you freeze one side while you roast the other—every thing frozen in winter, or your sleeping-rooms small, low, close, and right under a thin roof, so that you swelter the forepart of an August night, and perhaps catch a death-cold toward morning—and one or another of the family sick most of the time, or else now and then falling into premature graves?

CHEAPNESS is another matter, to some, and especially to the poor, of great importance. Indeed, all should inquire how they can build the best house with the least means. Not that I would stint a house, or sacrifice utility on the altar of cheapness, for, as already stated, I believe in appropriating no inconsiderable a portion of our earnings to improving home; but be the sum thus appropriated greater or smaller, all should strive to make the most of it, that is, to combine as many comforts for their money as possible. However rich a builder may be, he should WASTE nothing, but, after disbursing every dollar wisely and economically, should give the balance to some poor neighbor. Yet time and money are wisely spent which add to the real solid pleasures of home and family. All of us shamefully neglect this essential point. We carelessly tolerate evils and miseries by the score for days and years which a few hours or dollars would remove. We fail to give our domicils their due proportion of our time and funds. No matter what a house does cost, so that it is GOOD. Better spend our funds for this than for thousands of those things on which we now well-nigh waste it. Let others spend their money for balls, fashions, etc., but let me spend mine for a real family homestead: and then let me

year by year, spend no small part of my income in adorning and improving it, till, in the decline of life, I shall have a PERFECT HOME for myself and family, surrounded with every comfort, my land rich, my trees annually loaded with every variety of the choicest fruits, and the whole supplied with every thing that can conduce to beauty, utility, and comfort. Let every one procure as good a house as he is able—even better than most think they can afford, though at the sacrifice of many other things—but build as cheap as possible for the value.

Yet there are few things on which men can, and do, literally squander money as foolishly as in building. To build without a plan, or with a crude one, and then to alter this, and patch on that, is as wrong as it is imbecile. See how unwise C——, of Boston, is, in so often altering and remodeling his house. GET ALL READY before you lay the first stone. Especially MATURE YOUR PLAN. Know just what you want, and how you want it, and then how to do it. Leave less to the mechanic, for he may care less about your house than your money, and knowingly omit some good, or commit some error, just to get pay for altering it, and then excuse it by alleging that he knew nothing of how you wanted it done. Or he may propose some costly addition, of little real value, just to get a chance to put money in his pockets. I boss my own buildings, and will show you in this work how to boss yours. Besides, the judgment of carpenters is sometimes inferior to that of common-sense men, because the former are hide-bound in the old way, while the views of the latter are oftener allowed to act untrammeled.

7. A GOOD BUILDING SPOT

Is another most important matter. The same money will often build twice as good a house on one site as on another. A superb building spot was one of three leading motives which induced me to purchase where I did, the other two being good water and an excellent fruit locality.

As to what constitutes a good building spot, all sorts of conflicting opinions exist. Some prefer the valley, with its streams and lawns; others, elevation and sightly prospects.

especially water scenery. I confess, my own tastes favor the latter. Give me a beautiful landscape. This also secures a fresh, dry atmosphere, instead of valley fogs and miasmas; and though exposed to the bleak winds of winter, yet to what do they amount? Are they not even bracing and healthy? I will soon show you a plan for keeping them out of your house, yet which gives you the full benefits of the summer's breeze. At least, do not build in a mud-hole, but choose a DRY locality. Yet good and convenient water is a most desirable acquisition, and springs exceed wells.

Some sites may also be exactly adapted to one kind of house, but most miserable for another kind, and the reverse. The two should mutually correspond with each other. This correspondence every one who builds him a house must secure in accordance with his own tastes.

The best FORM of house is another matter of the first magnitude, and one which opens the widest range for selection. Some are far preferable to others, and you, of course, want the best. More depends on this than on any other condition, both as to beauty and utility. Indeed, this is the governing feature of a house, and worthy of full investigation. What shaped house, then, both general and specific, is best? This will lead us first to consider what is NOT, or,

8. THE DEFECTS IN EXISTING SHAPES OF HOUSES.

The sole object sought in building is to ENCLOSE SPACE, or room, and the more convenient this room can be partitioned off the better. This space can be enclosed only by WALL of some kind—doors, windows, ceilings, floors, roofing, foundation, etc. Now, since wall, as thus defined, embraces the only thing about a house which costs, and since we should build as cheaply as possible for the valuable ends sought, of course we should cast about for that shaped house which will give us the most room, and that the most available, for a given amount of wall or expense. Now, some shaped houses will contain two or three times as much room, compared with the amount of wall, as other shaped houses. A few illustrations.

A low or one-story house contains much less room, in proportion to its wall, than a high one. The foundation and

roof of a three-story house, say thirty by forty feet, cost no more than for a house of one story—and these two items are among the most expensive parts of a building—yet the former contains two hundred per cent. more room than the latter, and all for the trifling expense of longer timbers, more floors, doors, ceilings, chimneys, etc. You thus get THREE HOUSES FOR ONE, yet the cost is by no means doubled.

"But I want all my rooms on ONE FLOOR, for I don't like this running up and down stairs—this cooking in the cellar and living in the garret," say many. Be it so—build to your liking. Let me tell you what I like, and my reasons. I do not like to SLEEP on the first floor, because more or less dampness will find its way up through this floor, and induce colds, fevers, and premature deaths.

Nor do I like to sleep close under the roof, because such rooms are sweltering hot of a summer's evening, but become cool toward morning; whereas I want a room between the hot garret and damp cellar, neither heated to suffocation when I retire, so as to compel me to throw off all the bedclothes, nor rapidly cooled during the night by dew or rain, so as to give me a chill, but as evenly tempered as may be. Or, if I sleep on the first floor, my cellar story must be dry and airy.

A high house also gives a greater number of rooms, and those more conveniently situated, than a low one. How large a roof and foundation would it require, for a single story, to furnish all the rooms wanted for a large family? And why is not a bedroom as handy in the second story as the first? Is going up stairs twice a day—once to prepare the bed, and again to occupy it—so VERY hard a task? To cook a story below where you eat, is rather bad, unless a dumb waiter is used to transport food and dishes back and forth. Yet a light, airy basement is not so very inferior a place in which to eat. But even of this there is no need, as we shall presently show.

And then how squatty and mean broad one-story houses look, even if in cottage style. They are far more expensive, and less beautiful and comfortable, than a house about as high as it is wide. And those houses which LOOK best, generally are so. Beauty and utility are twin sisters throughout all nature; nor are they separated here. To appear well pro-

portioned, small houses should, therefore, be a story and a half, and large ones two or three stories, according to their size.

9. LONG AND NARROW HOUSES

Are by no means the thing. They are out of all proportion, in the first place, and, in the second, their rooms are necessarily far apart, and very inconvenient, so that you must perform quite a journey in going from one extreme to the other. COMPACTNESS of rooms is most desirable in a house, and this is prevented just in proportion as a house is longer than it is wide.

Another loss consists in its taking more WALL to enclose a given amount of room in a long and narrow than in a square one. To illustrate by diagrams:

Fig. 1 is four inches long by a quarter of an inch wide, and contains one square inch.

Fig. 1.

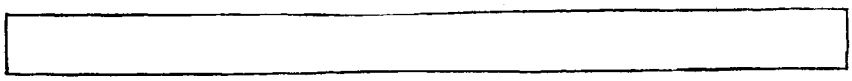


Fig. 2 is two inches long by half an inch wide, and contains one square inch.

Fig. 2.

Fig. 3 is one inch square, and contains one square inch.

Fig. 3.

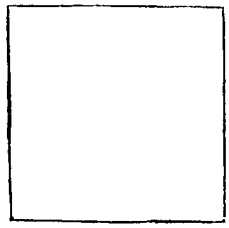
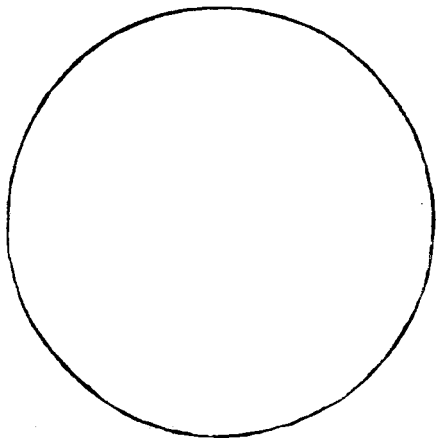


Fig. 4.

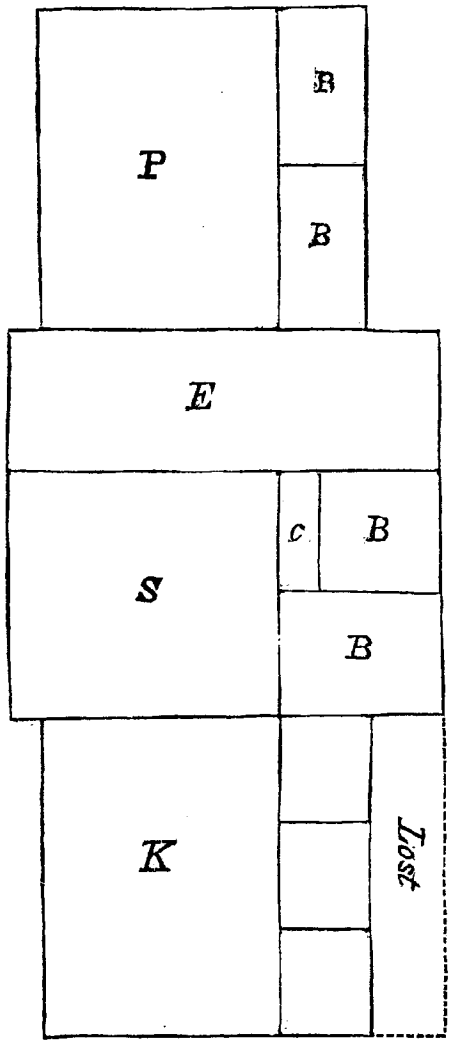


Now let Fig. 1 represent a box four feet long and a quarter of a foot wide: it contains only one square foot; yet its outside wall is eight and a half feet. Let Fig. 2 represent one two feet long and half a foot wide; it also contains one square foot, yet is only five feet in circumference; while a box one foot square contains just as much, yet is only four feet round—less by one half than Fig. 1, yet of the same capacity.

This same law, which governs all measurements, renders the circumference of the circle, in proportion to its capacity, less than that of any other figure; and, of course, the nearer any figure approaches to the spherical, the greater will be its capacity, compared with its surface.

Since, then, the circle gains even on the square, of course a square house holds more, for its wall, than a long and narrow one—and a round one than a square one. Consequently, long and narrow houses cost more for wall, roof, foundations, every thing, than square ones, compared with their room. The reader is requested to master fully, and to remember, the PRINCIPLE here demonstrated, as we shall have occasion frequently to use it throughout the volume. Indeed, it was a knowledge of this most material fact which led to those architectural improvements which this work is written to expound. For a similar, and also an additional reason, is

Fig. 5.



10. A WINGED HOUSE OBJECTIONABLE.

This is a ground plan of a winged house, drawn on a scale of sixteen feet to the inch, and represents the upright, thirty-two by twenty-eight, and the wings, twenty-four by twenty-four each. The arrangement of the ground rooms is usually much as here represented; P for parlor, twenty-four by six-

teen; E, entry, ten by thirty-two; S, sitting-room; B B, bedrooms; K, kitchen; *c*, closets, etc. It is, therefore, $24 + 24 + 28 = 76$ feet long.* Its circumference is, then, $28 \times 2 + 32 \times 2 = 120$ feet for the upright and gable ends of the wings, and 24×4 for the rest $= 96 + 120 = 216$, the total circumference of the outside wall. Yet it contains only 2048 square feet on the first floor; whereas, a square house of the same circumference $= 216 \div 4 = 54 \times 54 = 2916$, or a clear GAIN of ONE THIRD just by the mere FORM of the square house over the winged one. That is, if the square one costs $4000, the winged one, though not a foot larger on the ground, would cost $6000—an item worth saving—besides the additional expensiveness of building three small houses, as in the winged house, instead of one, as in the square one.

Another loss accrues in the HEIGHT of these wings, which are generally only one story high, while the upright is usually two stories. Not to reckon the attics in either house, because they are comparatively unused, observe that all this expense of foundations and roofs of these wings is incurred for a SINGLE STORY. Now, the additional expense of carrying them up another story, would scarcely exceed, if it equaled, the extra cost of making three frames, three sets of rafters, plates, eave-troughs, etc., for the winged house, in place of one in the square; and yet you have one story on each wing MORE ROOM. Or thus: the winged house contains $24 \times 24 \times 2 + 32 \times 28 \times 2 = 2944$ square feet; while the square house contains $54 \times 54 \times 2 = 5832$ square feet. Reduce these by fractions, thus:

$$\frac{5832}{2944} \div 8 = \frac{729}{368} \div 8 = \frac{91}{46} \div 5 = \frac{18}{9} \div 9 = \frac{2}{1}.$$

That is, the square house contains just TWICE as much as the winged one—another loss by the winged structure, of no small moment, in ADDITION to all the others.

* For the sake of simplifying and abbreviating, mathematical signs, as generally used, will be employed in our calculations, namely: + as a sign for addition, — the sign for subtraction, ÷ that for division, and × that for multiplication, while = signifies equal to. Our sum, then, reads thus: twenty-four added to twenty-four and twenty-eight equal seventy-six feet.

If you should carry this square house up three stories, it would contain 8748 square feet to the winged one's 2944; or,

$$\frac{8748}{2944} \div 8 = \frac{1093\frac{1}{2}}{368} \div 8 = \frac{136\frac{1}{2}}{46} \div 5 = \frac{27}{9} \div 9 = \frac{3}{1};$$

or OVER THREE TIMES as much room in the square house of three stories, as in the winged one two stories in the upright and one story wings. Yet the square one would COST THE LEAST. Just the FRAME of the winged one would cost considerable more than that of the three story square one.

The reason of this loss by the winged form will be seen by referring to those dotted lines in Fig. 5, which are no longer than the corresponding part of the walls of the house, yet they enclose all the room marked "lost;" and thus of each of the other corners; so that four rooms, each four by twenty-four, are lost by this winged form ON EACH STORY.

Another cause of this great loss, is its great LENGTH compared with its width. See Figs. 1, 2, 3, and 4.

Another proportionate loss is sustained by the ENTRIES, which, in houses of this kind, should be at least ten feet wide. Thus the room lost in the winged house is $10 \times 32 = 320$, and double this, or 640, in the two stories; whereas that in the double house is $54 \times 10 = 540 \times 2 = 1080$. Subtract the 640 square feet entry of the winged house from its 2944 square feet, leaves only 2304 square feet within the rooms; whereas subtract the 1080 square feet entry of the square house from its 5832 square feet, we have 4752 square feet within the rooms, which reduce:

$$\frac{4752}{2304} \div 12 = \frac{396}{192} \div 12 = \frac{33}{16} \div 16 = \frac{2}{1};$$

which is MORE THAN DOUBLE the number of square feet within the rooms of the square house than within those of the winged one!*

* In this, as in many like reductions of fractions and other calculations, the remaining fractions are dropped, because too insignificant to effect the general result.

To present these gains and losses in a tabular form—the circumference of each being 216 feet:

	Winged house.	Square house.
No. square feet in first floor - - -	2048	2916
No. square feet in second floor - -	896	2916
Total in both floors - - - - -	2944	5832

Subtract the 2944 square feet in the winged house from the 5832 square feet in the square house, and there is lacking only 88 square feet of being DOUBLE in the square house over and above the winged one. Or, if the square house be three stories, it will contain THREE TIMES as much as the winged one, lacking only 84 square feet. Better sink TWO THIRDS of your building money in the sea, and build a three story square house with the balance, than to build a winged house with the whole. So much for this fancy style.

And then, how they look! Wings on houses are not in quite as good taste as on birds. How would a little apple or peach look stuck on to each side of a large one? How foolish such a plan! Yet winged houses are just as disjointed and out of taste. Such a house—three times as long as wide; so low and yet so long; great outside and little inside; the parlor less than a mile from the kitchen, and separated from all the rest of the house by a wide, cold, cheerless entry; the heat radiating from every room OUT OF DOORS, instead of into adjoining rooms, as in a square house; every room in the house, except the second story of the upright, absorbing dampness from the three foundations, and all but the lower story of the upright heated in summer to suffocation by the scorching sun on the roofs; the freezing winds of winter pouring in direct from without through so much outside surface, instead of the different rooms sheltering each other's sides; the light shining from several points of compass, whereas it should shine into each room from but one direction, because a cross light is so bad for the eyes; one third of both stories of the whole upright, or 600 of the 2900 feet, or one fifth of the whole house, consumed by an entry which is a perfect nuisance in winter and almost useless in summer; and every thing about it so perfectly extravagant

and inconvenient—let purse-proud, empty-headed nabobs throw away themselves, their comfort, and their money, on winged houses, but give me some other form. Surely none will build winged houses but those who, from sheer thoughtlessness or inability, fail to perceive their disadvantages.

"This difference cannot be possible," many will exclaim; but, if such doubt my figuring, they will find their own to agree substantially with these results, for arithmetic cannot lie.

The principle here involved is also still further demonstrated by a calculation of the number of cubic feet contained in the two houses. Suppose each story of each house to be 10 feet high. The square house contains $54 \times 54 \times 10$ cubic feet in each story, equaling $29{,}160 \times 2 = 58{,}320$ in both, or, deducting 10,800 for the entries, 47,520 within the rooms; while the winged house has only 29,440 cubic feet in both stories, less 6400 in the entries = 23,040. Now, the difference in a lifetime between living in a house which contains 47,000 cubic feet of breathing timber, compared with one which contains only 23,000, or less than half as much, is no trifle. Give me air, and since we all spend one half of our lives within doors, a ROOMY house is a very great desideratum.

But the square house can be carried up three stories cheaper than the winged one can be built only two in the centre and the wings one, and will then contain 87,480 minus 16,200—a difference of $\frac{71{,}000}{23{,}000} = \frac{5}{2}$, OR TWICE AND ONE HALF more cubic feet in the three-storied square house than in the winged, which rarely is, and cannot well be, carried up higher than just estimated, whereas the square of that size LOOKS better three stories than less. All this, besides the greater heat in summer in the winged house, while the square one has a middle story neither damp nor hot, but admirable for sleeping-rooms. And in this winged house you have no wood-house, nor any place for any, without its darkening some of your rooms and enhancing its unsightliness. Not so with a square one.

Some will censure me for dwelling thus. I do so partly to show what foolish antics moneyed simpletons will play, for

no other earthly reason than to be fashionable, but mainly to demonstrate some mathematical laws—as enduring as nature—to be applied hereafter, as well as that the reader may fully comprehend the BASES of these calculations, which will render him CERTAIN that they are correct.

11. THE COTTAGE OR DORIC STYLE.

"Ah, this is the plan for a most beautiful and most perfect house. How cunning, how pretty it does look!" is the general talk. Being all the rage, it must indeed be "a good many touches above common." Let us see.

Every room joins the foundation or the roof. This is a decided objection, as already seen. And why this extra steepness of roof? Its admirers must certainly love to lay and swelter in an attic room August nights better than I do, or else they would not take so much pains to make so much more roof than is necessary, and this so steep as to catch the full power of the sun. And then, see how much more expensive such roofs are for the room sheltered, consequent on their steepness, which greatly increases their cost, at the same time that it actually injures the house.

And then why so many roofs, and corners in these roofs, which are doubly expensive and far poorer, in every respect, than if in two whole sheets? The raftering, boarding, shingling, uniting the eight sheets of roof at their catercornered junctions, so as to prevent their leaking, the room thrown away in the peaks, and the finified fixings around the roofs, put on for ornament, yet violating every principle of correct taste, all condemn this style.

And here let me develop the law which governs this whole subject of taste and beauty. Nature furnishes our only pattern of true ornament. All she makes is beautiful, but, mark, she never puts on any thing exclusively for ornament AS SUCH. She appends only what is useful, and even absolutely NECESSARY, yet so appends it as that all necessary appendages add to the beauty. Take the mouth, nose, ears, hands, feet, etc., as examples, or the various parts of flowers, etc. Every thing in nature is the perfection of beauty, yet is any single USELESS ornament found throughout all her works? Suppose

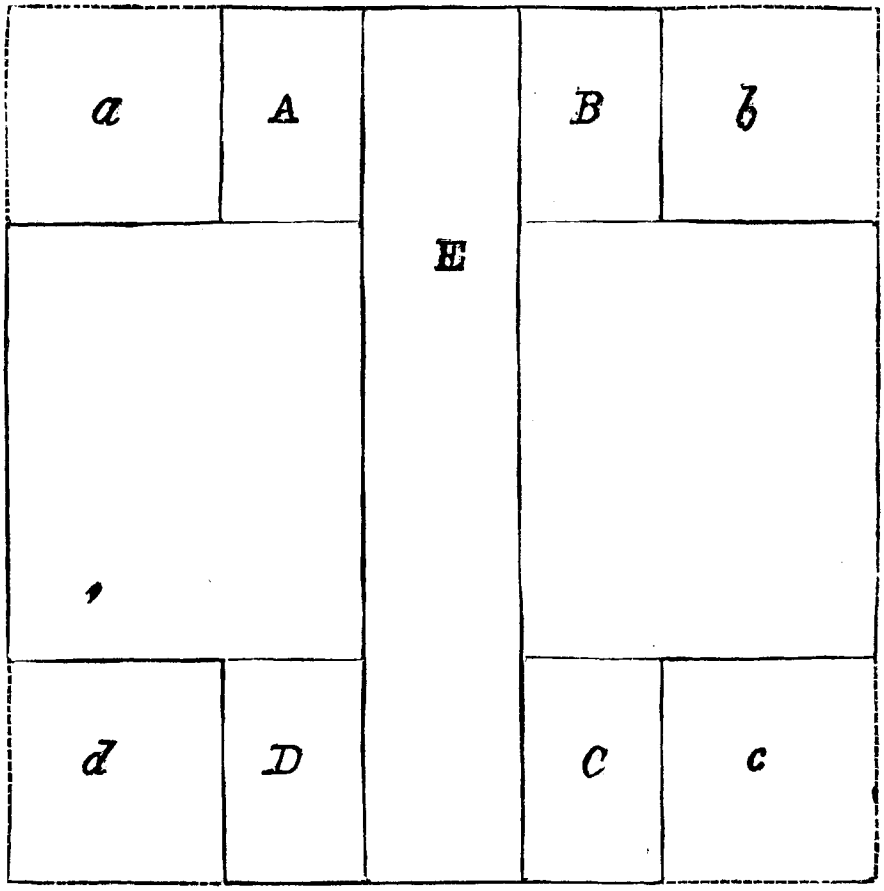
the body lumbered up with a parcel of useless appendages, however beautiful they might be where they were useful, yet should we be any more handsome? Should not we be deformed thereby? How would a gold ring, however exquisitely carved, look in the nose or lips? How ugly would these dangling ear-rings look, if custom did not reconcile us to their use. Other fashionable toilet appendages might be cited as still more ridiculous, simply because put on for ornament where they are worse than useless. But the law of things, that whatever appendage, however beautiful where it is useful, THEREFORE deforms, instead of adorns, where it is useless, is too plain to require additional illustration, and its application to these finified carvings and cornishings of the cottage style too palpable to excite any thing but disgust in those of correct tastes. For a child whose tastes are yet immature to be tickled by them would not be surprising, but for the ELITE to be enamored with them only shows how GREEN they are, at least in architecture.

For the same reason that the form of a winged house is objectionable, is the cottage shape proportionally so; for it consists in reality of an upright and two wings, excepting that there are four sets of rafters, etc., with roofs bunglingly joined, instead of three, as in the winged, and one in the square house. The accompanying diagram will best illustrate this point—(see Fig. 6, on next page.)

The entry, E, must of course be in the middle of the upright part, and this leaves four little rooms scarcely better than none—A, B, C, and D—and the balance of the rooms miserably partitioned. Suppose the house were built out square with the uprights, namely, with those dotted lines in the figure, besides the net gain of the four figures, *a*, *b*, *c*, *d*, the other four, A, B, C, D, joined with them, would make so much larger rooms of A *a*, B *b*, C *c*, D *d*, without building an inch more of outside wall, and with a saving of all those CORNERS, so wasteful of stuff, and so hindersome to the carpenter.

The same calculations which showed the loss consequent on the winged structure, will apply both to the cottage and the cross structure. Both are combinations of folly and extravagance, and destructive alike of beauty and utility.

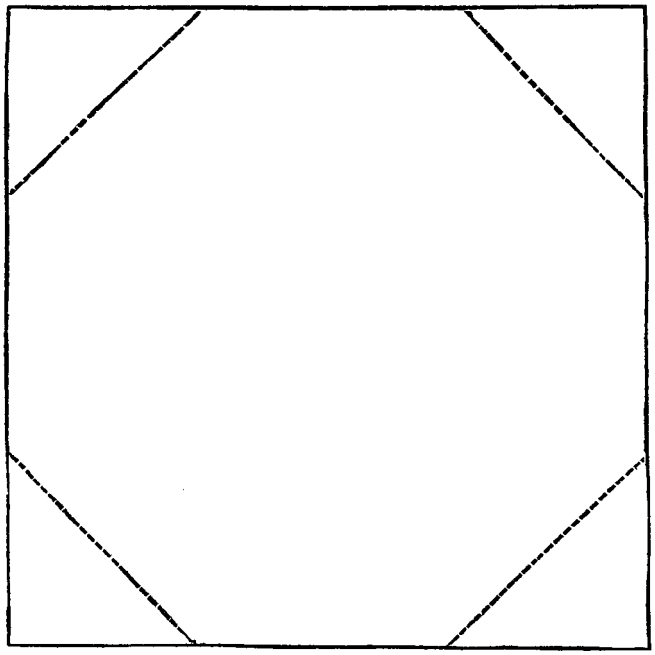
Fig. 6—The Cottage Style.



Another loss, not yet estimated, but consequent on the winged, cottage, and cross structure, is in their CORNERS. Reference is now had, not to the loss of time and materials consequent on constructing a wall of a given length all full of corners, compared with making a strait one of the same length—that is, the saving occasioned by building a square house with only four right-angles, compared with the loss of materials and labor consequent on making TWELVE corners in it, as in the cottage, cross, and winged styles—itself a very great loss—and all without gaining any thing but a loss;—but I refer to the loss INSIDE the rooms—not to the loss of time and material of making twelve INSIDE as well as outside cor-

ners, but to the ROOM lost in the corners themselves. The corners of rooms are of precious little use any way, because

Fig. 7—Loss occasioned by Corners.



they are dark, far from the fire, disparaging to furniture, and rarely ever occupied. This is true of all corners, and of course the loss is THREE TIMES as great in the cottage, cross, and winged styles, as in the square one, because they contain three times as many corners, and these nearer together. And this loss appertains to both stories. Let the above diagram (Fig. 7) illustrate the principle here involved.

A house with these corners left out, as in those dotted lines, would contain just about as much AVAILABLE or useful room as with them. Now suppose, instead of losing four corners in each story, you lose TWELVE, this loss amounts to considerable, in ADDITION to all those other losses already pointed out. Away, then, with all three of these fancy styles. Those who fancy or adopt them must be either weak or thoughtless—weak if they cannot perceive their inferiority in every respect, and thoughtless if they can, but do not.

The average results at which we have thus far arrived are, then, that the square form costs less, in proportion, by from one half to three fourths, than these other styles, besides being so much more AVAILABLE. And then how little show a $5000 cottage makes, compared with a $5000 square house.

But is the SQUARE form the best of all other forms? It is not, as will be seen by the following

6. COMPARISON OF THE SQUARE WITH THE OCTAGON.

For the reason already demonstrated, that the square house contains more room, in proportion to its length of wall, than these other forms, a circular one contains more than a square, etc., the nearer we approach to the circle, as shown in Figs. 1, 2, 3, and 4. And since the PRINCIPLE here involved is the grand basis of that architectural superstructure attempted to be reared in this volume, the author may do well to elucidate it fully, and the reader to comprehend it perfectly. To compare the square with the octagon, (Figs. 8, 9.)

Fig. 8 is four inches square. Let it represent a house thirty-two feet square, one inch representing eight feet. It is 128 feet in circumference, and encloses 1024 square feet.

Fig. 8—The Square.

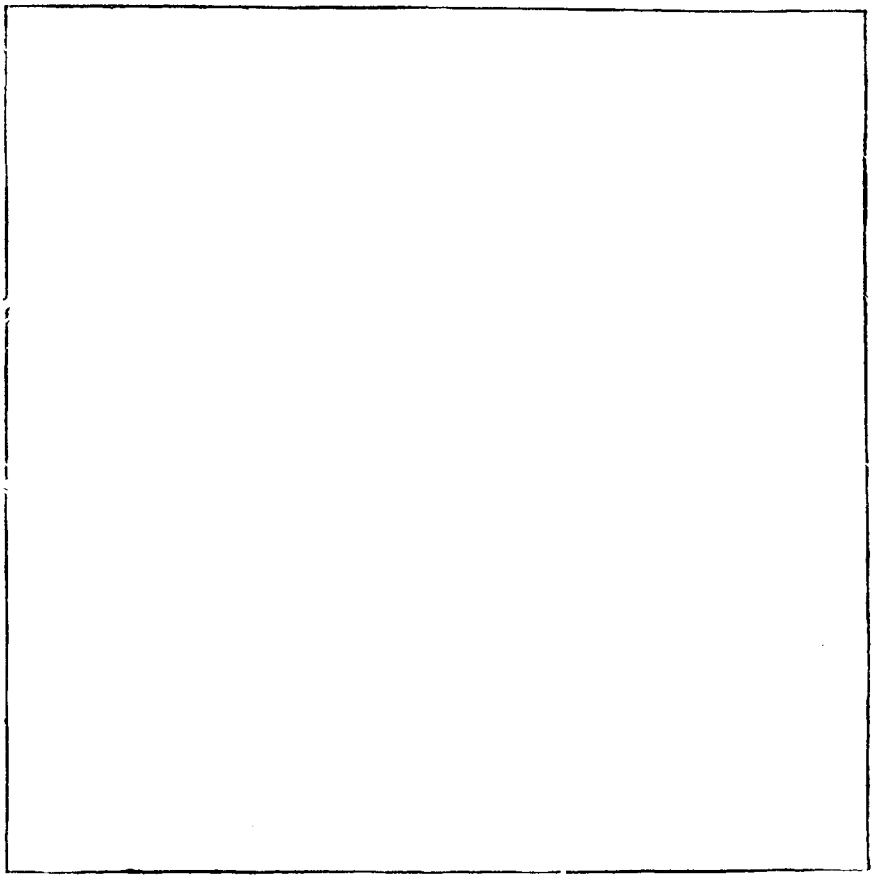
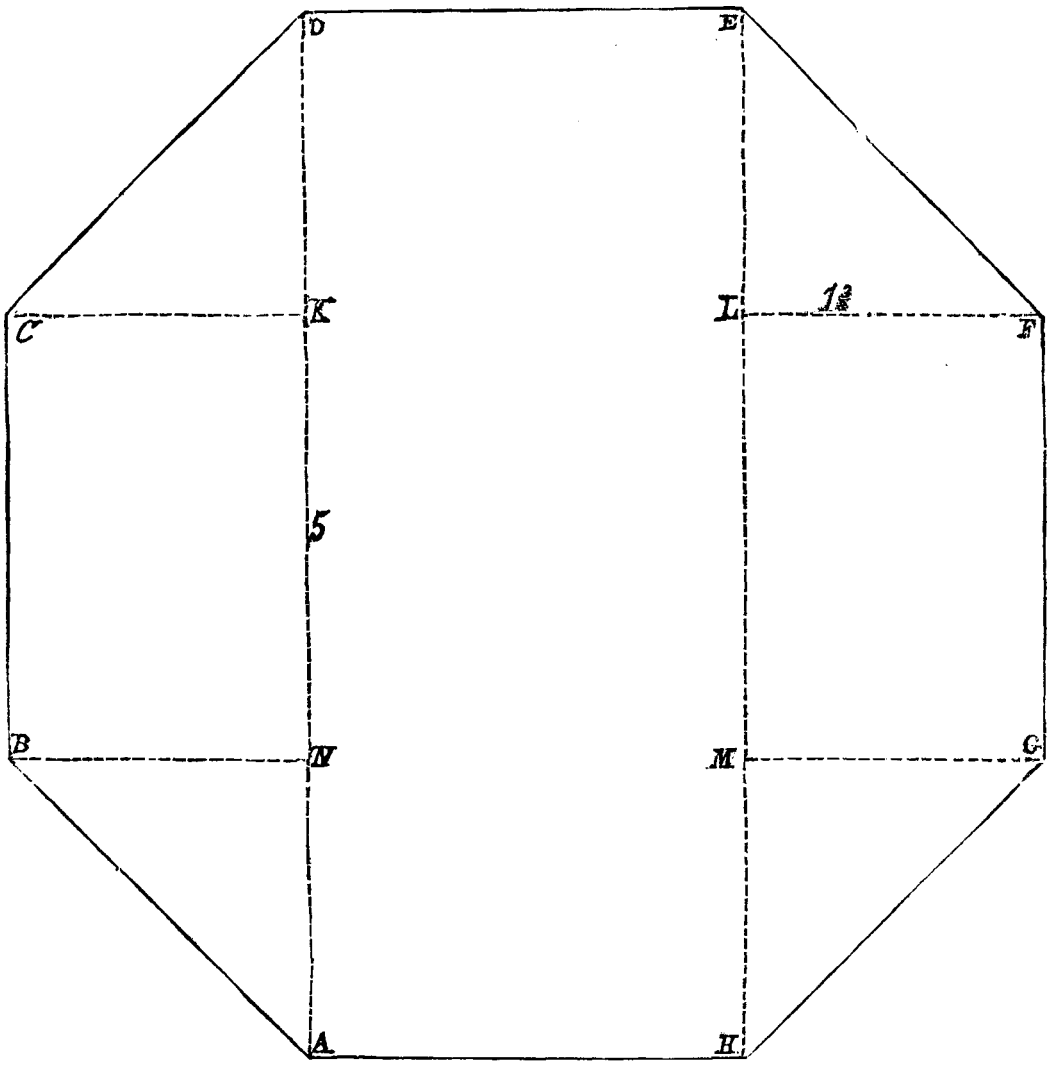


Fig. 9 is an OCTAGON, with two-inch or sixteen-feet sides, on the same scale, and having of course the same circumference, namely, 128 feet. But it contains 1218 square feet, as seen by the following demonstration:

	Square feet.
A, D, E, H, is 16 by 39, and contains - - - - - - -	624
B, C, K, N, is 11 by 16, and contains - - - - - - -	176
I, G, M, L, is also 11 by 16, and contains - - - - - -	176
The four half-squares, A N B, C D K, E I L, and G H M, make two squares, each 11 feet - - - - - - - -	242
Total number of square feet in the octagon - - - -	1218

But the square of the same circumference contains only 1024 square feet. So that the octagon exceeds the square by 194 square feet—a gain of ONE FIFTH.

Fig. 9—The Octagon Form.



To show this difference by reducing their respective numbers of square feet to fractions. Dropping eighteen square

feet from the octagon, and twenty-four from the square, the sum stands:

$$\frac{12}{10} \div 2 = \frac{6}{5} = \text{ONE FIFTH gain}$$

in favor of the octagon. That is, an octagon of a given circumference contains more than a square of the same circumference by one hundred square feet in every five hundred square feet. Now, since all that costs in a building is wall, roof, foundation, ceiling, floors, doors, and windows—and since a given length of octagon wall will enclose one fifth more space than the same length of wall in a square shape, of course you can have the same sized house for one fifth less money, or a house one fifth larger for the same sum; for this gain is just as great in the foundation, siding, plastering, painting, whitewashing, etc., as in the wall proper. It appertains alike to materials, labor, and EVERY THING ABOUT THE BUILDING. The doors and windows might be considered an exception, yet they are not. Given sized windows will even light a room more than a fifth larger in the octagon than in the square—first, because the latter has deep, dark CORNERS, which will be dark in a cloudy day however large your windows, which is not the case with the octagon; and also because the octagon form makes the same gain in the DEPTH of the rooms that it does in the length of the walls, that is, the room is more COMPACT.

To put together two important results at which we have thus arrived. We have seen that a square house of a given circumference contains more than an oblong one of the same circumference, and an octagon more than a square. Let us compare them. Take a house 24 feet front by 40 deep. Its circumference is, of course, 128 feet, the same as a 16 feet octagon, and a 32 feet square. But it contains only 960 square feet. The difference between it and the octagon is one fourth, as reducing the square feet of both to fractions will show. Thus:

$$\frac{1218}{960} \div 8 = \frac{152}{120} \div 8 = \frac{19}{15} \div 5 = \frac{4}{3} \div 3 = \frac{1\frac{1}{3}}{1},$$

equal to ONE THIRD more room in the octagon than in the

24-by-40 feet house, though the circumference of both are exactly the same.

The FORM of our houses, then, is not so trifling a matter after all. The practical difference between building a house for $3000, or just as large and good a one for $2000, or in that proportion, is considerable, especially to those laborers who earn their money by bone and muscle.

But the difference between the octagon and the winged is still greater. Suppose the upright of a winged house to be 20 by 15 feet, and the wings 10 by 15 feet each. Its circumference will then be 130—two feet more than the circumference of the sixteen feet octagon. The winged house will contain only $20 \times 15 + 15 \times 10 + 15 \times 10 = 600$, which compares with the octagon as follows:

$$\frac{1218}{600} \div 8 = \frac{152}{75} \div 6 = \frac{25}{12} \div 2 = \frac{12}{6} \div 6 = \frac{2}{1},$$

or not ONE HALF

But suppose the upright to be two stories, while the wings are only one, which is usually the case, while the octagon is two stories, which it should be to look well, the winged will contain only 900 square feet, while the octagon will contain 2436. Thus:

$$\frac{2436}{900} \div 12 = \frac{203}{75} \div 7 = \frac{29}{11} \div 11 = \frac{2\frac{1}{2}}{1},$$

TWO AND A HALF times as much room in the octagon as in the winged shape, though two feet more in circumference. Now the difference between building a winged house for $5000, or just as large an octagonal one for $2000, is something worth considering. All this TWO HUNDRED AND FIFTY PER CENT. SAVED, just by the octagonal FORM, over the winged! Yet even all this saving, great as it is, is but a small part of the advantages of the style of building which this book was written to propound over others now in use, which we shall see as we proceed.

One other advantage of the octagonal style over the square, and especially over the cottage and winged styles, deserves to be reckoned in this comparison, namely, their CORNERS.

We have already seen, in Fig. 7, that the corners of a square room are of little account, because dark, useless for furniture, and rarely occupied for any purpose. In fact, an octagon, drawn WITHIN the square, furnishes about as much AVAILABLE room as the square, yet contains only eighty feet to the square's ninety-eight:

$$\frac{98}{80} \div 2 = \frac{49}{40} \div 10 = \frac{5}{4} \div 4 = \frac{1\frac{1}{4}}{1},$$

all but two feet—a loss of TWENTY-FIVE PER CENT. in the amount of wall in the square over and above the same amount of AVAILABLE room in the octagon. But suppose, as in the winged and cottage styles, there are twelve right angles, instead of four, the loss is in the same proportion:

$$\frac{98}{54} \div 6 = \frac{16}{9} = \text{almost } 90 \text{ per cent.}$$

Fig. 7 also enables us to show—what has doubtless puzzled some readers—WHY this gain by the octagon over the square. It consists in the fact that it requires more wall to enclose the corners, in proportion to the number of square feet which they contain, than the house as a whole. Thus, those eight lines which form the four right angles of the four half squares in the corners of the square, which are omitted by the dotted lines of the octagon, are seven feet per side, making together fifty-six feet. Yet they enclose only two seven-feet squares, or ninety-eight square feet, or four feet wall to seven square feet enclosed. That is, a foot of corner wall encloses less than two square feet, whereas the octagon has only eighty feet wall to its four hundred and seventy-eight square feet, which is:

$$\frac{478}{80} \div 10 = \frac{48}{8} \div 8 = \frac{6}{1},$$

or six square feet for every foot of wall; whereas the four corners omitted by the dotted lines contain only two square feet for every foot of wall. That is, the octagon encloses six square feet to every foot of wall, while the triangles, or corners of square rooms, enclose only two square feet to every

foot of wall—a difference of three to one, which is lost in the corners of the square over the octagon as a whole.

The gain in twelve, sixteen, and twenty-sided figures over even the octagon, is greater and still greater in proportion as the figure approaches the circle. Figs. 1, 2, 3, and 4.

13. THE COMPARATIVE BEAUTY OF THE DORIC, SQUARE, AND OCTAGON FORMS.

The BEAUTY of a house is scarcely less important than its room. True, a homely but CONVENIENT house is better than a beautiful but incommodious one, yet beauty and utility are by no means incompatible with each other. Indeed, they are as closely united in art as in nature; that is, they are INSEPARABLE. It is hardly possible to have a truly handsome house without its being capable of being made as handy inside as it is beautiful outside; nor can a homely-looking house well be made convenient. I repeat, beauty and utility are as closely united in architecture as they are throughout all nature. If, therefore, the square or winged form of house is the best, it will LOOK best, and if it is the most beautiful, it can be made the most comfortable.

FORM imbodies an important element of beauty. Yet some forms are constitutionally more beautiful than others. Of these the spherical is more beautiful than the angular, and the smooth and undulating than the rough and projecting. WHY is it that a poor animal, or a lean person, is more homely than the same animal or person when fleshy? Because the latter are less angular and more spherical than the former. Why do we behold flat, smooth stones with more pleasure than those which are rough and irregular, but because there are less ANGLES in the former than the latter? Why are apples, peaches, etc., more beautiful than chestnut burs? This principle answers, excepting what beauty is imparted by color. And the more acute the angle, the less beautiful; but the more the angle approaches to the circle, the more beautiful. Hence a square house is more beautiful than a triangular one, and an octagon or duodecagon than either. Of course, then, the far greater number of right angles in the winged and cross styles than in the octagonal, and the high peaks of

the roofs of the doric, prove them to be less handsome than a square house, and doubly less than the octagon. For one, I cannot consider cottages or wings handsome. They always strike me as unsightly, and well-nigh deformed. And the basis of this sentence is an immutable law of nature. Look at a dome, and then at a cottage roof, full of sharp peaks, sticking out in various directions, and say if the undulating regularity of the former does not strike the eye far more agreeably than the sharp projections of the latter. This is not one of those fancy matters which allow of diversity of opinion, but is a fixed ordinance of nature, and passes no enviable sentence on the tastes of those who claim to possess as great a preponderance of good taste as of property, and likewise of other prerogatives. And fact sustains this theory, as all will say who compare Figures 5, 6, 8, and 20, with each other.

Since, then, the octagon form is more beautiful as well as capacious, and more consonant with the predominant or governing form of nature—the spherical—it deserves consideration.

"But," some will ask, "how happens it that our author is so very much smarter than all the world besides? Why has not this plan, if really so superior, been seen and put in practice long ago, especially since men are racking their inventions in search of building improvements?" Because of the greater ease of FRAMING the right angle than any other; and unless this difficulty can be overcome, it will be cheaper, after all, to build on the square than on the octagonal plan. This difficulty we propose to obviate by building

14. BOARD WALLS IN PLACE OF FRAMES.

Let the boards be sawed three, four, or six inches wide, and one inch thick—though probably two inches thick would answer every purpose—and nail them down, one upon another, taking pains to set one board half an inch out, and the other half an inch in, so that the plaster will adhere to them, and thus save the LATHING.

A slight variation of this plan consists in sawing half the

boards of a given width, say six inches, and the other half an inch wider, or else narrower, and then nailing down first a wide and then a narrow one, which also hold the mortar equally well, and both hold it better than lath.

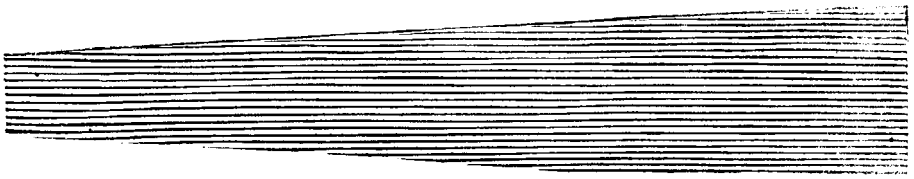
The floor timbers and rafters rest on this board wall, and this obviates all necessity for frames, besides rendering houses far more SOLID than the best of frames could make them. The corners are perfectly immovable, and the whole structure is firm and powerful. This is no fancy theory, but an EXPERIMENTAL REALITY. I HAVE TRIED IT, and write this work in a house thus constructed. And though its height is unusual for its ground dimensions, it being twenty-seven feet square and thirty high, yet I never occupied any house which resists heavy winds as effectually as this. The carpenter—an old framer—who sawed off the shingles at the top of the roof, expressed astonishment at its solidity, and added that he never sawed off the peak shingles of a house before which did not shake, whereas this did not tremble. The carpenter, however, committed one important error in laying one wall on the ground, while the other sides were laid on stone, and, as this board wall started below the level of the ground, and the eaves were allowed to keep it wet for a couple of years, one corner has sunk some, so that the floors tremble a little, yet it withstands our heaviest blows, although in a very bleak place, better than the best of framed houses.

My WIFE, who took some interest in my board-wall experiment, suggested that the PARTITIONS also should be carried up in the same way—an admirable improvement, and one that would render the whole perfectly solid, and allow the use of shorter floor timbers, because they can rest on any or all the ROOM walls, as well as on the outside ones. This would also anchor every part of the house so effectually, that there could be no more give to any part than stretch to a pile of boards. And the more sides and angles the more solid.

To be a little more specific. I advise that the boards be sawed four inches instead of six, because they seem to me to give even then a great surplus of strength, and, instead of laying one narrow one and the next a wide one, or lapping them a half inch, as stated above, I propose to use what we call scantling for half the wall; that is, instead of squaring the

logs by taking off four large slabs, I propose to saw the WHOLE—slabs and all—as in Fig. 10.

Fig. 10—Best Mode of Sawing.



Then, when you come to turn the log, to saw the boards three or four inches wide, whichever you like, saw through slabs and all. Of course some of them will be two, others three inches, and have irregular beveling edges; but what of that? Let every second board be of equal width and straight-edged, and the intermediate ones can be these scantling slabs. This will leave openings enough to hold the mortar, which will fill up all irregularities. I saw houses built on this plan like lattice-work, that is, every second board was omitted, with a row of blocks wherever they were nailed, leaving the plaster to fill up the interstices. But in this case, girths should be laid on for the floor timbers to rest upon, because the boards would spring, except on these blocks. Yet with such girths this plan is probably as good as the other, and saves half the boards, yet, of course, takes the more mortar.

The east and west sides of my house are built of four-inch boards, one inch thick, and set one out and the next in, etc., half an inch each, and the north and south sides are made of four-inch and six-inch boards laid alternately. I see no difference in their utility or strength.

"But what a sight of nails this plan requires," exclaims one. Not so many after all. I used only about twelve hundred pounds in my whole house, which, at $5 per hundred pounds, cost only $60, or perhaps $40 extra on account of board walls. But I decidedly prefer PINS, made as long as you can well bore—say twelve to eighteen inches, according to the length of your auger-worm—by selecting free splitting logs, sawing them off the right length, and laying them off on one

end, riving, and taking down the corners, except at the head, and then splitting the point and inserting a narrow wedge, when driven till it reaches the bottom of its hole, this wedge is driven UP, so that BOTH ENDS of the pin are PERFECTLY SOLID. The power of such a pin is immense, particularly at the corners, and allows not the slightest give. Pins in the middle of the board will also do good execution, except between windows and doors, where the distance will generally be too short to require them; in which case they should be pinned slanting into window frames made of timbers four inches one way, or as wide as your wall, their depth being immaterial.

The length of these boards should bear some relation to that of the sides of your house. If it should be thirty feet, let there be two lengths of fifteen feet boards, or half fourteen and half sixteen, so as to break joints; or else let those scantling slabs already described, some of which will be shorter as well as narrower—as seen in Fig. 10—break joints. If any of your boards should be too long, let them project beyond the corners till the whole is completed, when they can be sawed off all together, which will be better than to take up and lay down your saw to fit every board as you go, they being laid up straight at the CORNERS. If any should be too short, let plaster fill up instead. A single nail in each end of every board will hold it till fastened by pins—yet probably their mere weight will be all sufficient. These pins should be lapped one or two boards; that is, if twelve inches, they should be inserted every ten or eleven inches of your rise. Eight pins will, therefore, carry up a house thirty feet square, or a sixteen feet octagon ten inches, and twenty times eight, or one hundred and sixty—say two hundred on account of doors and windows—will carry up the outside walls twenty feet, which is about the average of two and a half story houses. The inside walls might require as many more, all of which a smart hand could make in two days. A log which will square two feet, will make five hundred and seventy-six inch pins, besides its slabs, enough for a common-sized house. The floor timbers should also be pinned to the board walls, and perhaps allowed to lap a few inches, and pinned where they meet on the inside walls, for the sake of rendering assurance doubly sure; yet of what use extra labor

when the edifice is rendered perfectly solid by previous pinning? And what is there to move these boards or timbers? A hurricane could not start pin or board, without lifting the whole house.

The octagon shape would still further strengthen the structure, first, because no wind could strike full upon over one-eighth of the surface of the house, whereas some winds strike one-fourth of a square house broadside; and because every corner becomes a solid brace, of which there are eight in the octagon to four in the square.

Now these boards can be laid up at any angle you please, so as to render your house triangular, or square, or octagonal, or whatever shape you like, and thus of the inside as well as outside walls. The opportunity thus afforded for diversifying the shape is surely a very great recommendation, alike serviceable to both fancy and utility. See how many shapes it allows you to give your house and your rooms, and each room a different form, if you like, without any perceptible increase of cost.

15. THE COMPARATIVE COST OF BOARD WALLS.

"But what a raft of timber it must take!" exclaims another. Let us see. Let your house be a square, thirty-two by thirty-two, or a sixteen feet octagon, and a two-inch board thirty-two feet long and one foot wide will make THREE boards four inches by thirty-two feet, and of course carry up one fourth of your house six inches; and four such boards, or $32 \times 4 = 128$ feet surface measure, will carry up your entire outside wall six inches, and two hundred and fifty feet will build it one foot all around, and $20 \times 256 = 5120$, will build the entire outside wall of a house thirty-two by thirty-two, twenty feet high! And suppose your inside partitions are one half as long as your outside walls—which is a fair allowance, yet the proportion increases with the smallness of your rooms—it will require only seven thousand six hundred and eighty feet of two inch boards to build your house! The floor timbers and rafters are of course excepted, as these are alike in both cases.

Or if your boards are only three inches wide instead of

four, it will take one fourth less, or only five thousand seven hundred and sixty! And half of these scantling SLABS! And since knotty hemlock or whitewood—any thing which will hold a nail or pin—will answer every purpose, they need not cost over four to eight dollars per thousand—varying with the locality—at the most, and can generally be procured just for the drawing of the logs and sawing; because this kind of timber, being hard to split, is peeled in great abundance all over the country for tan-bark, and the logs left to rot, so that they can be had for little or nothing. Your timber, then, will not cost you over from twenty to fifty dollars for your whole house, floor timbers, rafters, and all, for you can select sound and good logs enough to make the latter.

If you build in the LATTICE style, only HALF as many boards, or from three to four thousand feet, only will be required. This will surprise you, but make your own calculations, and if you come to any other conclusions it will be because you figure wrong.

Mark, moreover, that every scrap of board can be woven in, and neither knots nor shakes make any difference, for all count the same, and the plaster hides them, and stops all decay.

Mark, again, that even all those slab-scantlings already described in Fig. 10, work in and make wall as fast as if clear stuff and full width; whereas these slabs are generally thrown away, or else used for fire-wood. Indeed, the entire wall might be built of the slabs made in sawing ordinary timber, provided they were sawn, as already directed, along with the log they come off from. Does not a plan which turns these slabs, now wasted, to as good an account as good boards, deserve consideration? It will save hundreds of millions of money to our country, and many of you will live to see it, and I trust help save it.

Moreover, these boards can be made of any kind of sound timber. My house is made of hemlock, but I see not why oak, maple, and even poplar and willow will not answer every purpose, because the strain on it is trifling, and the mortar will prevent its decaying. I first plastered the outside of my house with a single rough or scratch coat, and after it had remained thus for a year or so, built an addition, and in saw-

ing through this board wall, for a door to connect the addition with the upright, I found it perfectly dry and hard. I never saw hemlock as hard, and the nails stuck so fast as to give us much trouble to start them, even though these boards had been exposed to the weather a year and a half after sawing before building, and a year after building before siding. Till then I feared the dry rot, but this experiment showed how effectually the mortar prevented all decay.

The outside of your house can be plastered—it is already LATHED—and then sided; or a plaster covering can be made to adhere to these boards probably quite as well as to brick or lath, and if any kind of plaster or cement can be made to stand the weather, it can, of course, be substituted for siding, and save painting. Yet to side on this kind of wall costs no more than on studs, and the expense of sheeting, so common in New England—quite an item—exceeds the plastering.

Now this plan will redeem from utter waste this vast amount of lumber, and convert it into comfortable dwellings. And I leave it to benevolent readers to say whether bringing this plan forward is not accomplishing a great PUBLIC GOOD by CHEAPENING AND BETTERING HOUSES. Houses are very costly, so that the poor cannot buy, and are obliged to pay a most exorbitant rent. Now this plan will convert this vast amount of waste timber into comfortable houses at a trifling cost, and thus make houses plenty, and rents low—decidedly the greatest of public benefactions, except cheapening food.

"But it must take a good deal of LABOR to put up such a house; it is no fool of a job," some will still further object. How so. He is rather soft, though no carpenter, who cannot put one board above another, and pin them together, and put up a good many of them in a day. Remember, every six boards carries up your wall a foot, the length of your boards; and every forty-eight boards, sixteen feet long, raises your whole wall one foot! Now, any tolerably-ingenious man can lay and pin two or three hundred boards—provided they are previously sawed of the right length—per day; which would lay his whole wall in from three to five days! and half as many more will put up the partitions. Make your own figures if you doubt mine. You will hardly believe this possible,

though you see that it is all just so; but experiment settles the question. Ten days work of a carpenter, with a little help from myself, brother, and father, who worked leisurely now and then, put up my house, though over half of this time was spent in splicing floor timbers, making rafters out of boards, and other similar things, which had no reference to the putting up of the wall, and although we measured, sawed off, fitted, and laid every board singly as we went—whereas the whole should have been sawed beforehand, or else the logs made of the several lengths required at the mill. We were also all unacquainted with it; whereas this book will show men how to put up twice as fast as we did. Believe me, when I say that lumber, pins, labor, and nails, to put up the outside and inside walls—both of which must go up together—of a house thirty-two feet square, or of this dimension, whatever be its shape, will not cost you eighty dollars! Now ask any carpenter what he will do the same job for in the old way, and he will tell you some $200! My carpenter said he would not have put up the bare frame of my house for less than $120; whereas mine cost me only about $80, notwithstanding all my disadvantages. And, mark, it WAS ALL READY FOR RECEIVING THE PLASTER.

The cost of the inside partitions, made of boards, will be in the same proportion, and vary with the number and size of your rooms. But suppose they equal the outside walls—and this is by no means likely—your house, all ready for shingling and plastering, except overhead—indeed, throughout—will be LESS THAN $100!! subject to variations consequent on the cost of lumber, number and arrangement of rooms, and other little contingencies. Yet, since the gross cost is only about $75, these variations will make no appreciable difference.

Some of the rafters and floor timbers of both my house and barn were made by nailing these six-inch wall boards together, and placing them edgewise. By this means, and breaking joints, either can be made any length—say hundreds of feet, if desired. Yet, there is no use in sawing timber apart and then pinning it together again, unless to make up a wanting timber or two, or to make them of a length greater than they can be got sawed—a matter worth mentioning, yet no way peculiar to this style of building.

Now foot up the cost of this frame and wall, in accordance with the price of materials and labor in your various sections of country, and compare it with the cost of the mere frame of a house of the same shape and dimensions—remembering that our estimate is for a house two and a half stories high—and then choose the new, cheaper, and better style, or the old, costly, and poorer way.

16. THE QUALITY OF THIS BOARD WALL.

Is it as GOOD as the old kind? Far better, every way. Let us examine its advantages. Air rushes in freely through the open crevices of the siding, and, of course, through every crack in the plastering and flooring, and therefore troubles you to keep warm in cold weather, even with considerable fire; and especially your feet, in consequence of the air coming up through the floors. This the board wall prevents. It can and should be plastered outside and in; which, of course, excludes the air from getting access under the floor, or to the inner coat of plastering, leaving only windows and doors for its ingress. Now, a WARM house is quite a desideratum, both as saving fuel—quite an expensive thing—and as promotive of comfort. A house built in this way not only retains the heat, but preserves an EVEN temperature, and thus escapes the one-minute-warm-and-the-next-cold, incident to the old plan.

A fact in regard to my own house. The woman who occupied it in the winter of 1844–5, says, that she had water standing all winter in one of the rooms, in which there was no fire, nor any below it, and yet that but once all winter did that water freeze; and I will prove practically, to all who will give me an opportunity, that the house is thus easily made and kept warm. I speak not of doors and windows, which are the same in the new as old style, but of floors and walls. I would not, on any account, exchange my walls even for brick or filled-in walls; because the former retain moisture, which these never do; and the latter allow more or less air to pass in around the siding and next the plastering, whereas these shut up every possible avenue against its entrance, from top to bottom, with DOUBLE DOORS. All cracks in lath and plas-

tering, the wind finds and pours through ; but if a crack occurs in my inside wall—and I have none, except such as are caused by that settling already alluded to, and the carpenter should have known better than to have begun a wall on the bare ground—no wind can get TO it, and therefore none through it ; for it cannot press against the inside coat of plaster the whole length and breadth of wall, as by the old method, nor come in around the wash-boards, for it cannot get TO them, but must STAY OUT. I consider my house worth much more, just on this account, than if built in the old way.

You see, then, how and why it is that this kind of wall is not half as costly as the present kinds, and yet is twice or thrice as good, in EVERY respect.

This plan also allows you to build your floors of hemlock. That timber is not used for this purpose, because it cannot be grooved and matched, which is necessary in order to keep the WIND out. But by the proposed method, no wind can get access UNDER the floor, and of course no grooves and joints are necessary to keep it from coming up through it. And yet this method will render your floors far warmer than all the matching, aided by all the lining you can put on. Then see how cheap your hemlock floors, every way as good ; for, carpeted, they are never seen. The lumber will cost you only six to ten dollars per thousand feet, instead of twenty to twenty-five dollars, and they can be put down in far less time. Hence, since your thirty-two feet square house contains but 1046 square feet, your flooring, for the three floors, will cost only some thirty dollars, instead of seventy-five dollars, and can be put down for five dollars, instead of fifteen—in all, forty dollars instead of one hundred dollars : or you can even put them down yourself. Nails the same in both cases.

17. VERMIN EXCLUDED FROM BOARD WALLS.

Moreover, the old method allows rats and mice free range throughout the house, and furnishes a complete harbor for them. But this board plan shuts them out effectually. They cannot, as by the old plan, climb up and harbor between siding and plastering, nor get up between the ceiling and floors ; for all is solid board, encased in mortar. They can be effectually

prevented from entering, while building, in five minutes, by just making one single place around your chimney mouse-tight. But when I come to speak of chimneys, I will show how to stop them out wholly, from cellar to garret. You will, at least, see how effectually this board wall plan excludes these exceedingly annoying and destructive customers from all parts of the house, by filling up all access and all harbors; and is not this worth $1000? Many would give twice as much to be rid of these torments.

To one feature of this new plan I beg special attention—to its very great superiority, not in one or two trifling respects, but in EVERY respect. Any one of these advantages is amply sufficient to secure its universal adoption, and all combined render it incomparably better than any other—it having the advantages of all, no disadvantages, and many excellencies unknown to all others. In short, it is NATURE'S style of architecture. And its allowing the eight or twelve-sided plan already shown to gain one-fifth by its FORM alone, caps the climax of its value.

We have, as yet, only just alluded to the lathing. They cost from $1,50 to $2,50 per hundred, according to locality and fluctuations in price—say two dollars all around New York—and a hundred will lay about fifty square feet; so that your outside walls will take about five hundred, which will cost ten dollars, besides nails and putting them on. And all your INSIDE walls, built in the old way, must be lathed on BOTH SIDES; which, estimating them at half the length of the outside walls, will cost ten dollars more; and about ten dollars more for nails, and putting on—the WHOLE of which this board plan saves. All the lathing required about the whole house is just overhead, which is the same as by the old plan, except that the wind cannot get TO, nor, of course, through the ceiling, by this method, but can through that. Many other advantages this board wall possesses over all others. The windows, doors, and wash-boards, and some other kindred matters, will cost the same by this method as by the old; and the masonry the same, excepting a little more mortar, and also labor, in case you plaster the outside, which I decidedly recommend, even if you side it. Yet four days' work will put on a rough outside coat on your thirty-two feet house—

at least, it did on mine, though a quarter higher—the first extra cost we have yet found incident to this method, and this is trifling, and not necessary unless to make your wall far better than by the old plan.

18. BOARD WALLS FOR THE BASEMENT STORY.

This board wall plan, as it will keep out cold and frost, can be used in the cellar wall in place of stone—except enough for the house to rest upon—and be much cheaper and better, especially on account of rats and mice. I do not believe in these deep, dark, damp pits for cellars, perhaps half full of water, to dig and wall which costs so extravagantly. The foundation of the winged house already drawn, Fig. 5, cost over five hundred dollars. But to dig down, say two feet, will not cost much, as the top of the ground digs easily, and can even be ploughed and scraped to that depth; bank up a foot or two with the dirt thrown out; make a stone wall three feet high, so as to keep your boards off the ground, and build the balance, partitions and all, of boards; and then light and air it amply, so that you will not feel, any time you want an apple or a potato, that you are going into a damp, dreary dungeon—or be obliged to take a light—or have your first story rendered damp and unhealthy by your cellar. Double windows—one hung so as to swing outside, and the other in—may be necessary, so that the dead air between them may arrest frost; or, possibly, a double board wall may be requisite—though probably not; yet both of these will cost less than ordinary cellars; and then see how much more pleasant and convenient, and every way better. But more on cellars hereafter.

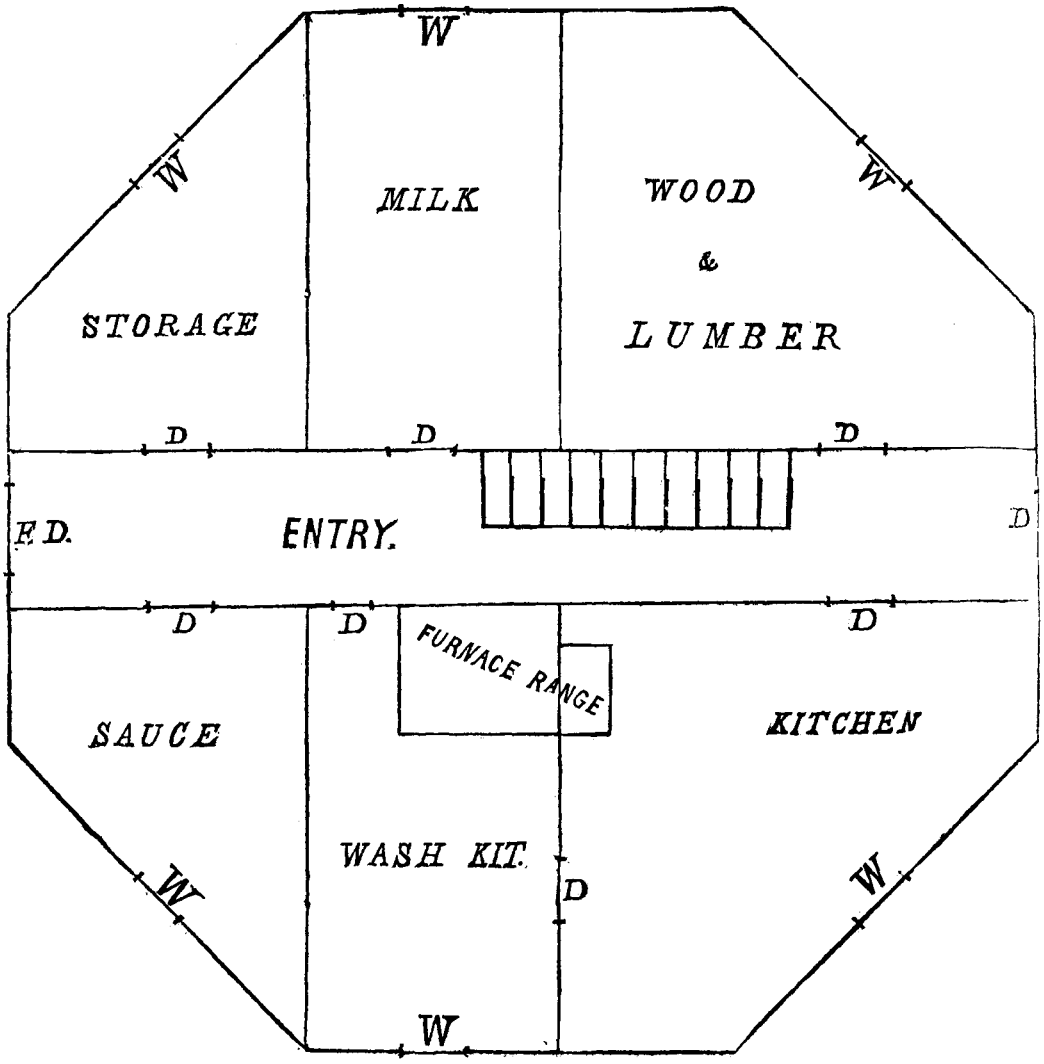
This board wall plan, then, allows us, without any extra expense, and with far greater strength, to secure our octagon form. It remains to see whether this octagon form can be partitioned off into rooms as advantageously as the square.

FAR MORE.

19. INSIDE PLANS OF THE OCTAGON STYLE.

It enables us to dispense with the ENTRY almost altogether, and thus to save one fifth of our room, and thereby to escape

Fig. 11. The Octagon Basement.



this great thoroughfare for winter air, as well as this separator of the main rooms of a house. Entries are of very little use,

waste about a sixth of the entire house, are right in the way, and are perfect nuisances in many respects.

"But must we enter directly into our best rooms? How can we do without them?" I will show you. Your house requires a thoroughfare, that is, an entry, so that you can pass through it. But WHERE shall this thoroughfare be? Not through your main story, for this will bring in the most dirt where it is most troublesome, namely, near your nicest rooms, but through that light, airy basement already described. You require this entry quite as much for going to and from your cellar story with barrels, garden sauce, wood, etc., as for the special accommodation of your parlors. At all events, I think this great thoroughfare should be through the cellar story, a plan for which is seen in Fig. 9.

One great advantage of this plan is, that it allows us to have the basement story mostly above ground, which enables us to convert the WHOLE of the room enclosed by the foundation to some good use, instead of, as by the old plan, wasting all but a twenty-feet square hole, which is less than a third of the 1218 square feet, enclosed by a sixteen-feet octagon. See to what an excellent use the accompanying ground-plan converts the entire octagon basement. A wash-kitchen for the rough work of the family is much needed in every house. This great convenience our plan furnishes. It is also even with the ground, and, of course, handy for wood and water, and away from your nice rooms; it is, in short, just where it should be.

A MILK ROOM

Is another great desideratum. This should be below stairs, yet be light and airy; and our plan gives just the one wanted, and just WHERE it is most convenient, namely, near your basement kitchen. The milk can also be taken in and out through the cellar entry, and thus save steps, and be wholly by itself.

A FURNACE

Is by far a better plan for warming a house than separate fire-places, or grates, or stoves, for each room. It is much more effectual, and every way more convenient, less expensive, and easily tended. Then, the making of one fire per

day serves for the whole house, and saves time, kindlings, and much expense and trouble, besides the great saving of fuel. For this convenience our plan provides, and its location is central, so that it can easily heat any or all the upper rooms.

A WOOD-HOUSE

Is an appendage indispensable to a comfortable house. Nor should it be away off at the extreme end of a long row of buildings, but it should be CENTRAL. Now one quarter of this cellar story is just the place for it, and saves the ENTIRE expense of foundation, roof, timber, siding, and all, yet provides an admirable one, and in a CENTRAL location, close to the furnace, and to that central staircase which connects it with the whole house. When you want wood, therefore, you are not obliged to go through hall and kitchen, away out of doors, perhaps through snow and rain, but you can go from any part of the house directly to it, as if you were going from one room in the house to another. This room is also large enough to hold even more than a full storage of wood, and will furnish an admirable place for tools, etc. The wood can be cut outside, and thrown in through the window, W. Mark, you have this superb wood-house WITHOUT ANY EXPENSE, for you build it WHILE LAYING THE FOUNDATION of your house; whereas the mere expense of roof for one is considerable.

A LARGE LUMBER ROOM

Is also provided for by this plan. Every house should have such a room, to take the place of garrets, only more accessible and convenient, for waste lumber and seasoned timber—for, perhaps, a work-bench—a very handy affair about a house. Our plan provides just the place required.

Two large lighted sauce-cellars, in addition to all these other conveniences, are provided for by this plan, which are, of course, indispensable, and one of which is connected with the basement kitchen. But see how easy of access all these rooms are, and how light and pleasant, instead of damp and dark. And the arrangement of the stairs is such as to render every room in this basement perfectly accessible. You do not have to go through several to get to one, but go from

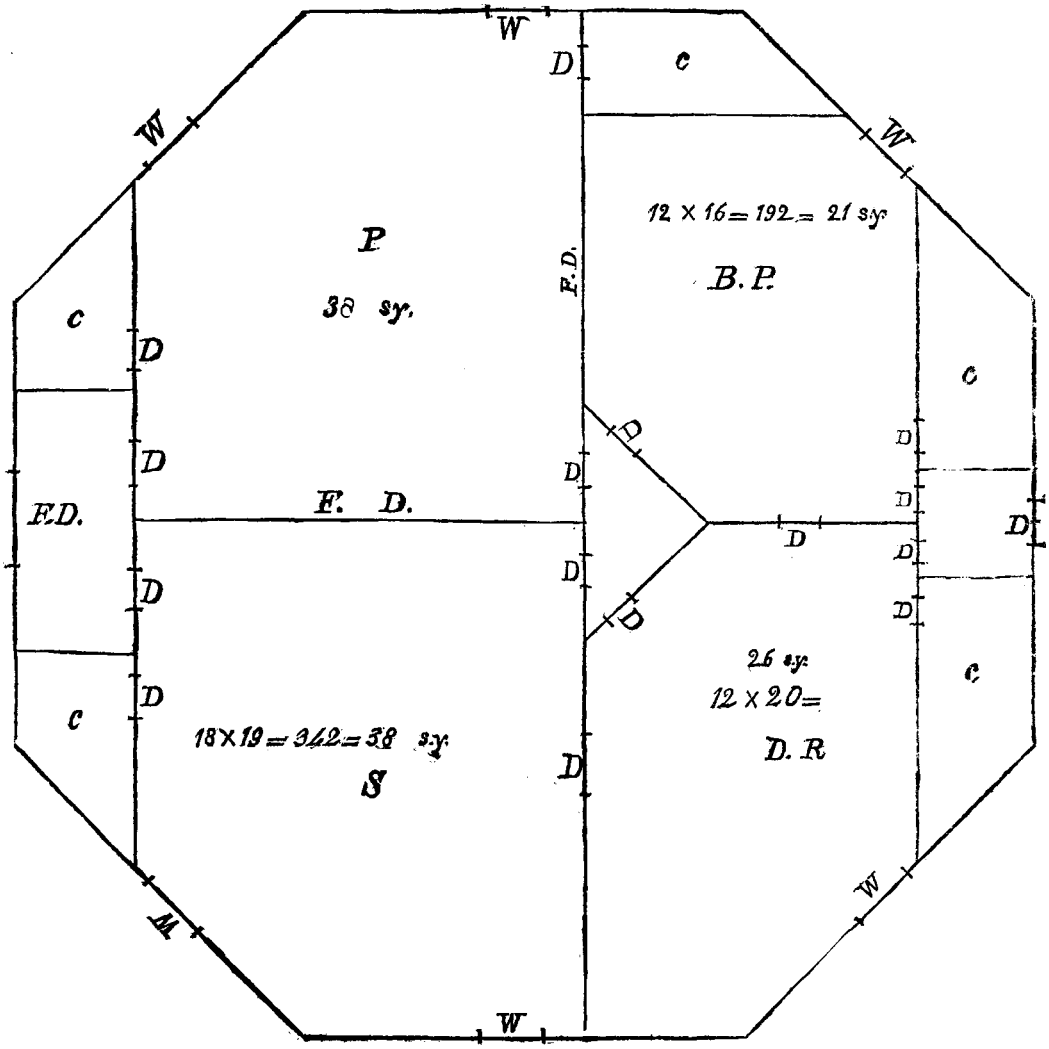
the centre to any one of them, and from this centre up to any required room above.

The aggregate number of square feet already shown to be contained in a sixteen-feet octagon, is 1218, or 136 square yards. Of this, the entry, six or eight by thirty-nine, occupies 234 to 312;* the sub-kitchen contains about 184 square feet, or twenty square yards, equal to a room twelve by fifteen, but can easily be made larger, and can have two windows, by having the partition on the other side of the window—though this would render one sauce-cellar dark and small, yet, perhaps, all the better—while the milk room can be made of any size you like. Or, the milk and wood rooms can be made to change places. There is space enough to render these rooms sufficiently large for all practical purposes, and you can vary their relative size and location at pleasure—no small recommendation of this plan. How incomparably superior, in every respect, this basement to our present pit-hole cellars, with all the rest of the foundation-room thrown away, besides the expense of wood-house, which is no trifle!

But let us ascend by these stairs—the foot of which should be toward the sub-kitchen—to the principal story of the house, and see how we can arrange its rooms.

* In these and subsequent as well as preceding estimates, no allowance is made for the room occupied by WALL, which, being only four or five inches thick, is trifling, so that we come near enough for all practical purposes.

Fig. 12.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D
C
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W
12 × 16 = 192 = 21 s.y.
P
38 s.y.
F.D.
B.P.
C
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F.D.
F. D.
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D
D
D
C
26 s.y.
12 × 20 =
C
C
18 × 19 = 342 = 38 s.y.
D. R
S
D
W
W
W

This diagram, drawn on the same scale—sixteen feet per inch—gives four fine large rooms, of the following dimensions :

A Parlor, P, 18×19 =	342 sq. ft.	= 38 sq. yds.
Sitting-room, 18×19 =	342 "	= 38 "
Back Parlor, 12×16 =	192 "	= 21 "
Dining-room, 12×20 =	240 "	= 26 "
Closets included in rooms.		
Total net room on first floor,	1116* "	= 123 "
" " second "	1146 "	
" " third "	1146 "	
Basement, 1218 — 420 for entry and fire-place, =	798 "	
Attic, 1218 — 18 stairway, =	1200 "	
Total net room,	5406 "	

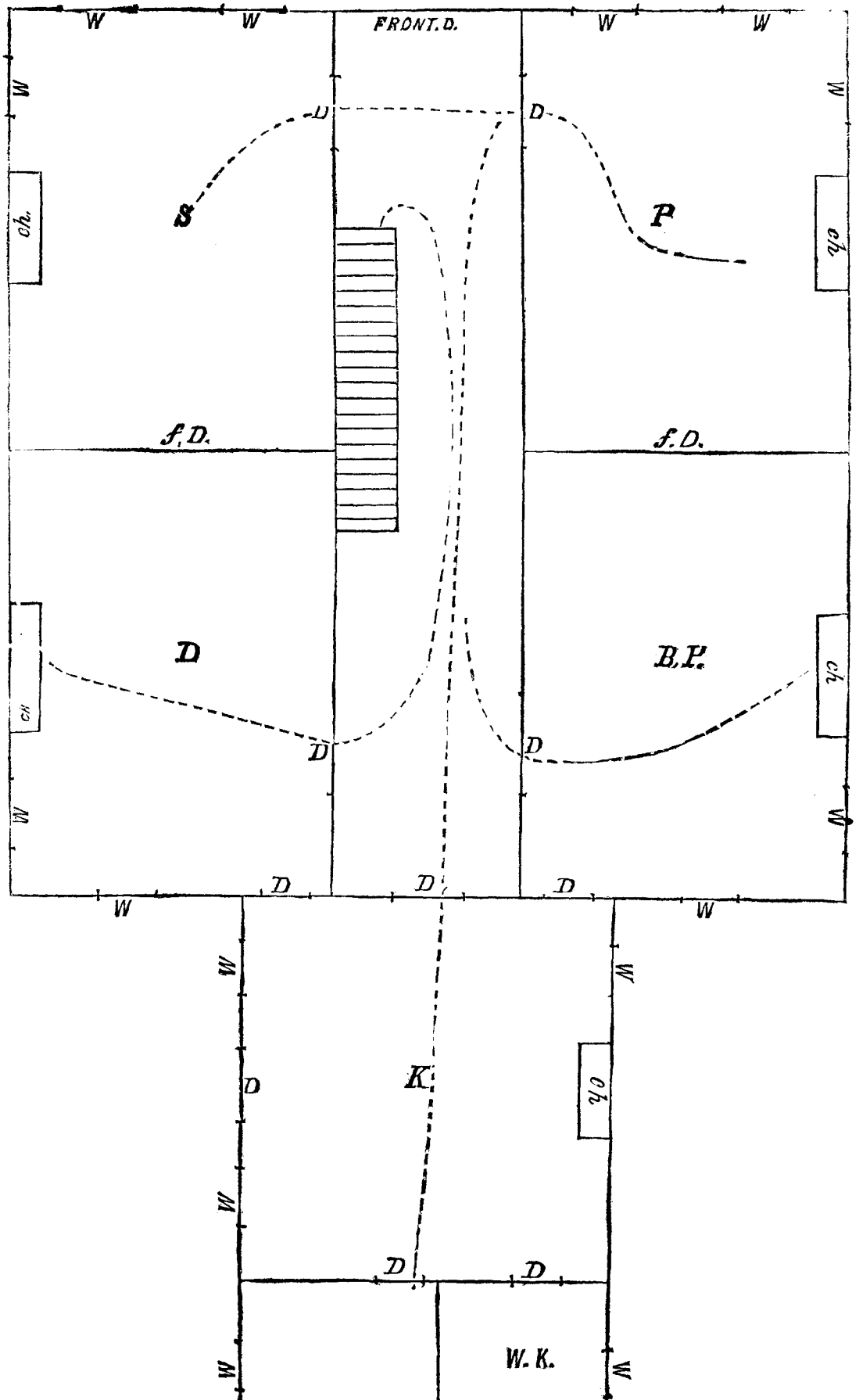
To compare this sixteen-feet octagon with a large house having a kitchen in the rear, and a wood-house still further back, which is the usual style of large double houses. Slight deviations from this partitioning off of rooms is allowed by this plan, but this is the generic type of nearly all such houses. Their sizes vary, yet this will not materially affect our general results.

Let this large and splendid mansion be three stories, forty by forty-two, with a rear kitchen, eighteen by twenty-six, as represented in Fig. 13, made on the same scale of eight feet to the inch.

Its total circumference is 216, exactly the same with the winged house drawn in Fig. 5. Its entire contents is 42×40 +26×18=2148 on the first floor, kitchen included. From this deduct its entries, 10×42+ R, e, 10×4=460, and 120 for five stacks of chimneys, 3×8=24×5=120, and you have only 1568 square feet within the rooms.

* Add 112 for the entry and stairs = 1228, which shows our estimates to be correct, excepting ten square feet.

Fig. 13.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On the first floor, of net room, - - - - - - - -	1568
" second " " - - - - - - - -	1568
" third " " 1680 — entry, 400, and chimney, 120, = - - - - - - - - - - - -	1160
Cellar, 20×20 = - - - - - - - - - - - -	400
	4696
Garret story, - - - - - - - - - - - - - -	1568
	6264

This magnificent mansion, then, exceeds the small sixteen-feet octagon, in net available room, only 858 square feet, or ONE NINTH. Or, to show this result by reducing the fractions—

$$\frac{6264}{5406} \div 12 = \frac{522}{450} \div 10 = \frac{52}{45} \div 5 = \frac{10}{9};$$

equal to one ninth difference. That is, the large mansion and the small octagon are to each other as tenht to nine. Yet the mansion will cost more than four octagons; nor will the former bear any comparison with the latter in point of convenience; of which anon.

20. COMPARISON OF THIS MANSION WITH A TWENTY-SEVEN FEET OCTAGON.

Let us next compare the net room in this massive double house with that in an octagon of the same circumference, namely, 216÷8=27 feet; the dimensions of which are given in the diagram on page 61, drawn on a scale of twelve feet to the inch. The outer line is its portico,,which is nine feet wide.

This octagon is sixty-four feet through. Square this, 64× 64=4096; from which take the four half squares at the four corners (one of which is illustrated by dotted lines), which equal two squares twenty feet each =20×20×2=800; and you have 4096 — 800 = 3296 square feet within the octagon. From this deduct 200 square feet for entries and stairway, and you have 3096 net room.

Net room on the first floor, - - - - - - - - -	3096
" second " - - - - - - - - -	3096
" third " - - - - - - - - -	3096
" in the garret, $3296 - 4 \times 8 = 32 =$ - -	3264
" " basement, deduct entry and furnace, - - - - - - - - - - - - - - - -	2600
Total net room in the three stories, garret, and basement, = - - - - - - - - - - -	15,152

Reducing the net room in both houses by fractions, they stand thus:

$$\frac{15,152}{6264} \div 12 = \frac{1263}{522} \div 8 = \frac{158}{65} \div 2 = \frac{79}{32} \div 32 = \frac{2\frac{15}{32}}{1}.$$

That is, the octagon contains TWICE AND ALMOST A HALF AS much net room as the splendid mansion of the same outside wall, saving that the kitchen is only two stories. True, we reckon more of the basement of the octagon, relatively, than of the mansion, because the whole of the former will be turned to an excellent practical account; yet we have reckoned as much of the cellar story of our first houses as is generally used. Nor have we deducted any thing on account of those useless corners between the chimneys and walls.

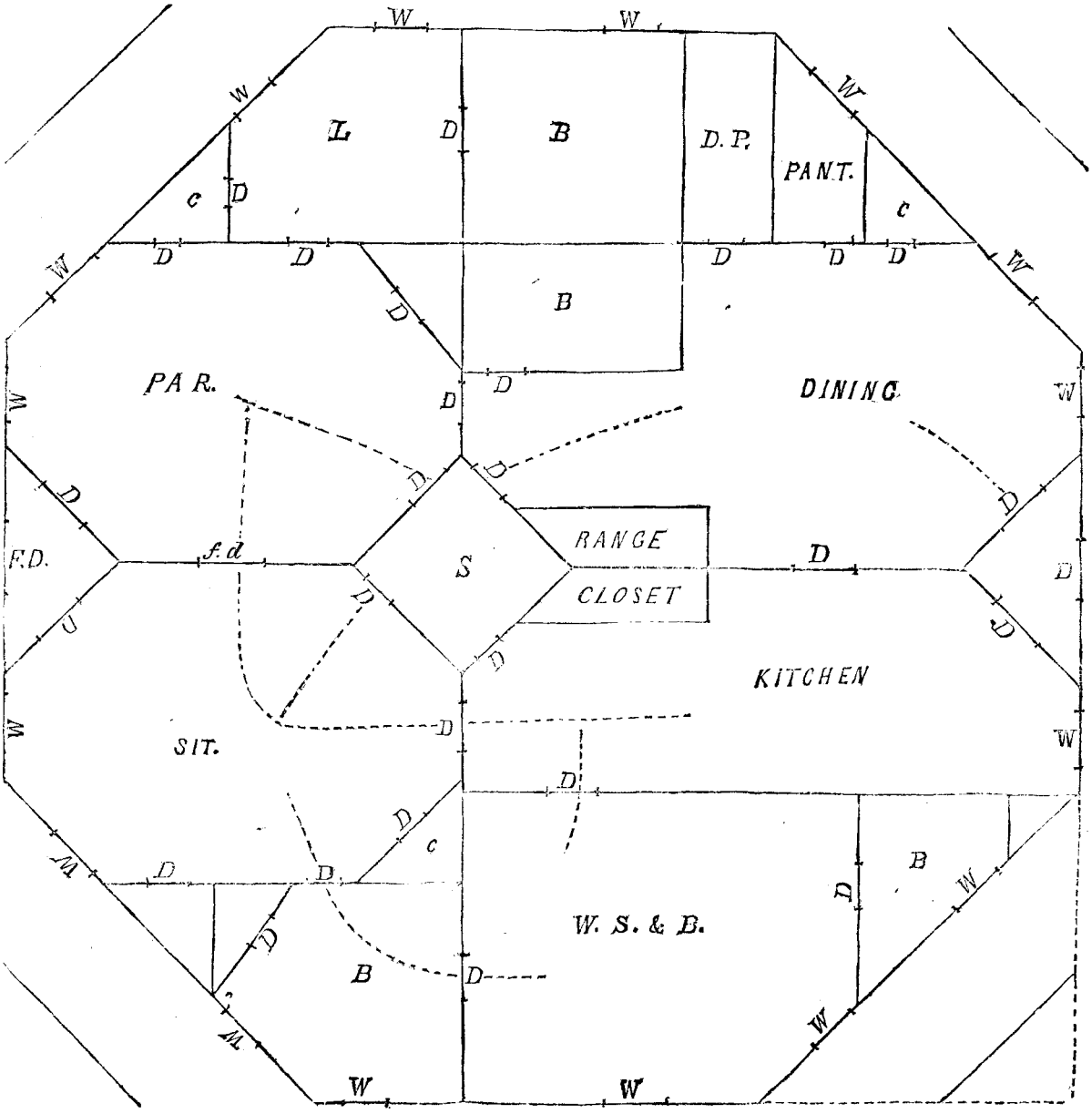
Besides, see what a mágnificent dome we have in our octagon, compared with the garrets of the mansion. But the octagon exceeds the mansion no less in its size, than in

12. THE SUPERB ARRANGEMENT OF ITS ROOMS.

But the size and CONVENIENCE OF ITS ROOMS are a still greater advantage.

(F) front; (D) door; (W) window; (c) closet; (B) bedroom; (Par.) parlor; (Pan.) pantry; (D P) dark pantry; (Sit.) sitting-room, etc. The outside line is the portico. I do not say that this inside arrangement of rooms is the best that can be devised, but I do say that it incomparably exceeds any arrangement of rooms of which the square house admits. Besides the charm of novelty—of differing from all kinds of rooms now in use—it will combine an amount of advantages

Fig. 14.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found in no house extant. To examine them more particularly:

The Parlor is 19×27—100	sq. ft.=513	sq. ft=57	sq. yds.
Library (L), 12×13=156	"	"=21*	"
Bed-room (B) off library, 13×13=169	"	"=19	"
Sitting-room (same as parlor), 513	"	"=57	"
Bed-room, 12×15=186	"	"=21	"
Winter sitting-room, 18×24=432	"	"=48	"
Triangular bath-room, 72	"	"= 8	"
Kitchen (K) and closets, 13×36=468	"	"=52	"
Dining-room and closets, 19×36—100=584	"	"=65	"
Pantry and dark pantry, 138	"	"=12	"
3231		360	

Now I submit to any practical housekeeper whether the arrangement of the rooms in this house is not two and a half times BETTER, as well as larger, than that of the splendid mansion, forty by forty-two, as regards every story, from basement to attic. Instead of being separated, all the rooms are UNITED, so that you can go from one to another without being obliged to pass through a cold and cheerless entry. And you go to and from the same point to go up as down; and that point is the CENTRE, which makes the distance much shorter. Nor, from whatever part of whichever room you may start, have you to make any angle in going to and from this stairway; whereas, in the square house, you must go a long and circuitous route, as seen in those dotted lines. Now the difference, especially to a weakly woman, between going from room to room by a few direct steps, and by those long and crooked roads, as illustrated by those tracks or dotted lines in the two houses, is very great—MORE THAN DOUBLE—in the square, compared with the octagon house. I submit this point to the special consideration of every housekeeper, and leave them to say whether they could not do TWICE THE WORK with the same ease in the octagon. To draw

* Fractions of yards, and of fractions, are sometimes omitted; and sometimes, if over half a yard, the whole yard is reckoned.

a specific illustration from getting an armful of wood for your square house parlor. You must first go several steps out of your way—west when your wood is east—to get to your entry, and then traverse its whole length, then go through your kitchen, and finally out of doors to get it, and retrace your steps by the same long-winded and door-hedged route, and through three doors; whereas, in the octagon, you go direct from every room, by a few steps, to your stairway, at the bottom of which is your wood-house, completely enclosed. The same difference in favor of the octagon is equally great in going from any part of either house to any part of the other. What a vast number of steps will the octagon save a large and stirring family annually over the square. This single feature of this plan renders it invaluable, even though three times more costly, whereas it is much LESS expensive, as we shall soon see. It will at least enlist all HOUSEWIVES—I do not mean parlor toys—in its favor: and whatever saves THEIR steps and vexations is truly invaluable.

The accommodation of a large party of friends furnishes another illustration of the decided superiority of this plan over the square, and doubly so over the winged or Doric style. Here your sitting-room, parlor, and a large bed-room are thrown open into one room, and they all join the dining-room, so that your entertainment is handy, and that your guests may go from room to room without going through a cold, wide entry. You can accommodate a much larger company in the same sized house, and this juxtaposition of rooms greatly promotes sociability, whereas the dividing entry partially breaks the spell.

See, too, how much farther the same heat will go in the octagon than in the square. Its escape is by radiation through walls and crevices, and by open doors. In the octagon, it radiates from the sitting-room into the parlor, and the reverse, or INTO ADJOINING ROOMS, and is therefore saved: whereas in the square house it radiates from both sitting-room and parlor into the ENTRY, and so escapes. And if an inside door is opened in cold weather, the wind does not rush in like a hurricane, as if an outside door was opened, but only the confined air of an adjoining room gently enters. All five of the inside or entry doors of the square house are virtual outside doors, un-

less you have a fire in the hall, at a great cost of fuel and trouble, and without even then doing much good.

The KITCHEN of the octagon deserves especial remark. The kitchen is the stomach of the house. Shall it then be thrust away back out of doors, into another building? This would be like putting the human stomach away down in the feet. In the octagon kitchen, the wife, when she leaves the sitting-room to attend to kitchen duties—pleasures—instead of feeling that she is going away off alone out of doors, feels that she is only a step removed from the rest of the family. What say you, wives, to this?

The sight of a tidy kitchen is not so very disgusting, even to men of refined tastes. None who are not too extra nice, fastidious, and fashionable to eat, but like the sight of the kitchen—excepting those double exquisite LADIES who are as cordially disgusted with household duties as with good sense. I know enough of sensible men to aver that they love to see the kitchen, and that they even take pleasure in going into it. In fact, the kitchen is as much the home of the house as the house is of the farm—is the "holy of holies" of fire-side comforts. Then put it, as in this plan, alongside of the sitting-room and dining-room, and in the very heart of the house, instead of out doors, as in the square form.

It is then very important that it be tight and COMFORTABLE. Yet the square house kitchen has an outside door, an entry door, a wood-house door, and a back kitchen door, which are tantamount to four outside doors, besides two other doors and all its windows; so that the wind draws through and rapidly dissipates its heat, besides being in a separate building, having its kitchen stairway—virtually five outside and three inside doors. Now I like my one outside and two inside doored kitchen the best. I say two inside doors—the stairway and sitting-room—because that marked in our plan between the kitchen and bedroom can be omitted, and probably should be. And then no cold could come in from my sitting-room door, for, by supposition, that room is warm, nor much from the stair door, because there should be a door at the head of the basement stairs, so as to open or shut the draft from the basement at pleasure. This may be my conceit, but, really, I had rather have one of my kitchens than ten of your

old-style, wind-riven, out-of-doors, stomach-in-the-foot shanties.

Moreover, see what a handy little BASEMENT kitchen—close by well and cooking range—this plan furnishes, which the old virtually denies, all but a little back room, unless you add another L on beyond your kitchen. And my wash-room is just where it should be—down stairs, yet light and dry—out of parlor sight and smell, where all the heavy and unpleasant work of the family can be done. Or, if preferred, this basement kitchen can be made larger, and have two windows, and a dumb waiter to carry food and dishes up and down, and serve as the kitchen proper—one of the other basement rooms being appropriated to a sub-kitchen—and this up-stairs kitchen be made a dining-room, and the omnium gatherum or common rendezvous of the whole family, and connected with the bedroom—probably the best arrangement, and incomparably superior, in every possible respect, to the general arrangement of our kitchen and adjoining rooms. I may overrate this plan, and underrate that, yet I can hardly help thinking that the former will render a family much more comfortable than any yet devised, besides enabling women to do their work with double dispatch and comfort. This plan also joins the sauce cellar and well with the work kitchen—a very handy arrangement.

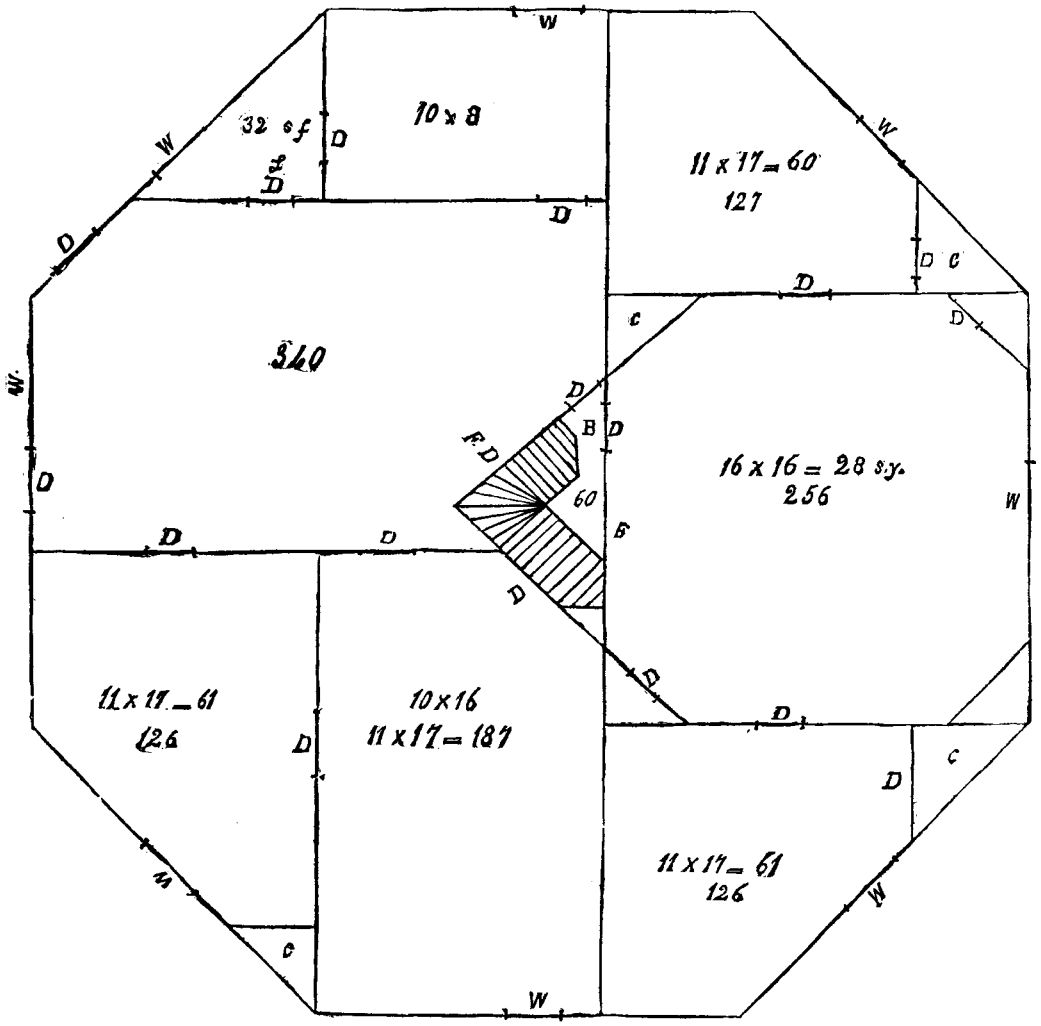
But see WHAT WE HAVE SAVED by the octagon plan. We build our kitchen as well as wood-house WHILE LAYING OUR HOUSE FOUNDATION, and thus SAVE ALL OUR KITCHEN AND WOOD-HOUSE MATERIALS, LABOR, FOUNDATION, AND ROOF! or somewhere near ONE FOURTH the net total cost of the whole house; not, be it observed, by our board wall plan, but by our OCTAGON SHAPE. All this in ADDITION to all the items already shown to be saved by the board wall, in length and superiority of wall, cheapness, permanence, etc.

22. THE THIRD STORY OF THE OCTAGON.

To return to our sixteen-feet octagon, Fig. 15. Stepping on to our stairs, which start close by the door which connects the sitting-room with the stairway, we will go up two or three stairs, toward the acute angle B, in Fig. 16, and after rising

two or three steps, as our space will allow, we will turn on a broad stair, and go up that central partition, rising high enough to clear the cellar door, and, perhaps, turning again before reaching the top, let us see how this suite of rooms can be divided.

Fig. 15—Third story of the sixteen-feet octagon.



We will start our stairs so as to land at B on a broad stair, and turn to the right into a delightful room rendered octagonal by making a closet in each corner, thus corresponding with

the shape of the house, sixteen feet square, with one window and two light bedrooms, with closets. Now this square parlor, opening into two bedrooms, is a very rare convenience, such as our best houses rarely furnish, and for which, at our boarding and public houses, whoever has them must pay dear. This is a real and rare luxury.

A friend, wife, and children, or a small family of boarders, wish to have a common parlor with an adjoining bedroom for themselves, and another for their children, or some near friend: this plan gives just the thing required. In your square house they can find no such accommodation, but only TWO connecting rooms—nor are these plenty; and hence they must either have a bed in their sitting-room, or their children must lodge across a cold entry and out of hearing. Or the heads of the family may wish this for their private room, they sleeping in one room, and their children in another.

Yet for them, probably, the other side of the partition would be best, as it is largest; and, besides having one large and two small bedrooms—enough room to lodge a good many—in addition to a spacious parlor, see what a snug library, L, or cabinet of shells, opens into it, lighted, and triangular, so that, for its size, it furnishes much more shelf-room than if square. Or some other use can be made of it, as utility or fancy may dictate. At all events, it is a "cunning little room," admirably suited and situated to a variety of appropriations. It would also make a fine bathing-room. Now is not this a delightful and most superb suite of rooms, unequaled in any of our best houses?

Mark, here, the appropriation of the WHOLE of the 1218 square feet, except the fifty square feet occupied by your ten-feet half square; and, in place of wasting $8 \times 36 = 288$ square feet in a room-separating entry, observe, also, that the access from each room to and from the stairway, both above and below, characterizes this plan, the great utility of which was shown in the lower story.[19] The same principle of saving the heat, by its radiating into adjoining rooms, instead of being carried off by a bellows entry, also characterizes this suite of rooms. Nor can the wind get in, except at the windows. From the entry it is excluded by the door at the top of the cellar stairs; and the escaping heat from the stories below,

furnace, etc., will render the entry quite warm enough, in the coldest of weather, so that HEAT, instead of cold, will come in at the entry doors.

The fire will be at F, opposite the window, so that, as you sit with your feet to the fire, your back will be to the window, which is just the thing for reading. And one large window lights a room far better than two or three cross lights, which confuse and injure the eye, shine through a newspaper and blur it from one window, as you hold it up to read by another, and are every way objectionable, as all opticians assert, and the laws of optics prove.

This beautiful feature of this plan is so vitally important as to deserve illustration. We generally wish to sit with our feet to the fire, and comfort, in a cold day, requires that the wind come upon our BACKS, instead of sides, else we are in danger of freezing one side while we scorch the other. Wind at our backs is warded off. Not so when it strikes at our sides. Now sit down with your feet to the fire of either of those square rooms of the old-fashioned house. You have an entry door at your back, two windows on one side, and one in front, pouring a stream of cold air on all sides. You may ward it off by turning half around, but then you are half FROM THE FIRE, which is a position as unnatural as uncomfortable.

Sitting before the fire, you wish to read a paper. You have no light at your back, and must either twist yourself into a double bow knot, or else forego a front posture to the fire. You turn some and raise your paper, when the light from the window between the chimney and the corner shines through and blurs your paper, so that you cannot distinguish a single word. This compels you to turn FROM the fire, and try again, and again you are disconcerted by three cross lights—one at one side, one at the other, and the third behind; and these causes of discomfort are PERPETUAL, because incorporated into the very structure of your house. Both these evils this plan obviates. It receives light and wind at your back, just where you require them, relatively to your fire, prevents all cross lights, and is just the very thing for a comfortable read or chat. Your smoke ascends through brick or earthen pipes in those TRIANGLES formed by the stairway partitions, of which hereafter. This plan also enables you to

have fewer windows; yet these can be large enough to light all your rooms effectually—which is the cheaper for the same surface of glass—as well as write at a desk without cross lights, or the sun shining in from several places, and is exactly what I fancy.

The dimensions of the rooms in the sixteen-feet octagon, on this story, are as follows:

A square room,	16×16	=256 sq. ft.	=28 sq. yds.	
Two adjacent bed-rooms, each	11×11	=242 "	=13 "	each.
A large parlor,	13×22	=286 "	=31 "	
A connecting spare room,	10×16	=160 "	=19 "	
" bedroom,	12×10	=120 "	=14⅔ "	
" "	10⅔×8	= 85 "	= 9 "	
L, a half square,	4×8	= 32 "	= 3½ "	
Stairway, half of a square,	10×10	= 50 "	= 5½ "	
Total,		1231		

This is 13 square feet more than our 1218 square feet, but the excess is made up by fractions of feet not counted, and comes so near as to prove the general correctness of both estimates.

To ascend by those winding stairs drawn in the staircase so as to land, as before, on a broad stair opening into the attic suite of rooms, partitioned in the same manner, or in any other desired.

But instead of going only four feet before we put on the roof, let us go six or seven, since it will not cost ten dollars extra to do so, and will give us as fine a suite of rooms on the fourth story as need be desired.

Now for our attic story and roof. Suppose we try some other plan besides rafters. Bend a board for a pattern, and after bending another to it, and then a third, pin them together, and fasten the lower end at each corner. We thus form a DOME-SHAPED roof, as in the old colony house roof, Boston, which roof-boards will render abundantly strong; and thus

make an octagon DOME, and light it and the stairway from the top. Will not this look splendidly? And then see what a large and magnificent room here is for a children's play-room, or gymnasium, or any like purpose to which you choose to put it.

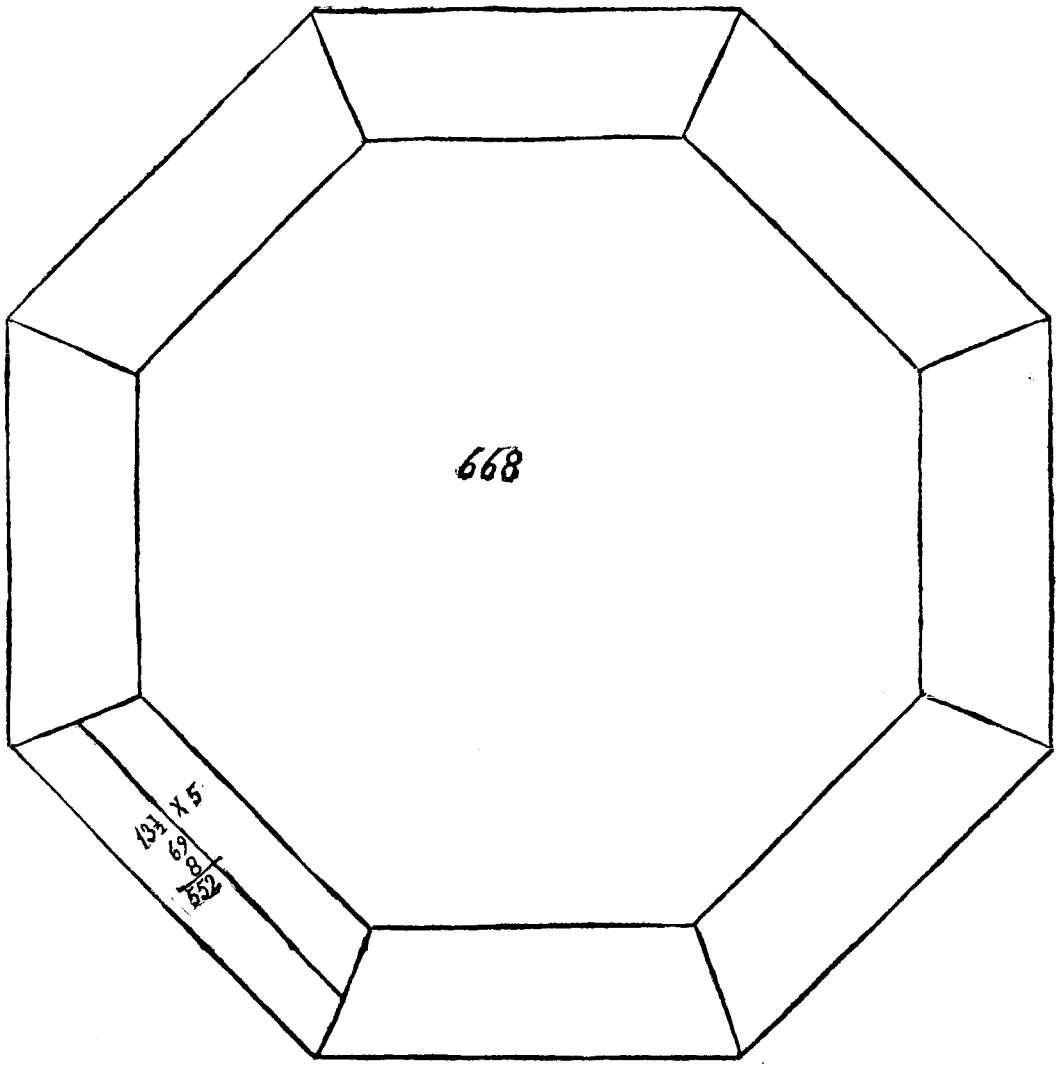
Or if rafters, boards, and shingles are preferred, we will proceed thus. In the space close down between the roof and floor we will make eight bins, as drawn in the accompanying diagram, five to eight feet wide, as we like. By pinning rafters on to the wall at the eaves, and also to the inside walls of these bins, we have a solid basis at the latter for rafters, which we will have at each of the eight corners, and let them in to a large block at the apex, around which we will have our windows. Short rafters can then be inserted into the wall and these main rafters, and a roof, perfectly solid, formed thereon, in the usual way of boards and shingles.

But a friend of mine says that a friend of his has invented a water and frost proof composition, composed of bitumen. It is perfectly hard, and can be put on at two dollars and a half per hundred square feet, which is some THREE TIMES as cheap as shingles—and be guarantied to stand, and answer a far better purpose than ordinary shingles, and at a much less pitch of roofs. It has recently been put upon the roofs of several large houses in New York. Nor do I see why it cannot be plastered upon the outside of our whole house, either alone, or else on top of a coat of plaster, for it is said to "STICK like wax." At all events, it may be worth trial, as, if it does not stand, it need not be paid for, and the house can still be sided on over it just as well as if it were not there. This will make a covering as cheap again as clap-boards.

At the peak of the dome, outside, a platform can be built, say six feet above it, to keep off hail, rain, and snow, and for an observatory, reached by a scuttle made down near one of these bins, rendered safe by a railing, and accessible by steps fastened on the roof. The chimneys can also be made to come out down near these bins, and thus leave this magnificent room some thirty feet in diameter. This dome room we will draw. It is twenty-nine feet in diameter, and contains about 668 square feet, less sixteen for stairway, the same as in the stories below, of course guarded by balusters.

Now, did any body ever see a more delightful play-room for children, or gymnastic room for all? A simple contrivance

Fig. 12.



for storing beds and gymnastic apparatus in these bins will allow it to be converted now into one use and now into another.

But I esteem it most as a play-room for children, a gymnastic room for females, and a dancing-room. In my "Physiology," I urge the importance of private dancing parties, especially for sedentary fashionables and confined operatives. How many a debilitated constitution they would resuscitate! How many hopeless invalids, now dying by inches, would such rooms in our buildings restore to life, health, and happiness! How many a child save from a premature grave! The fact is, mankind are dying off like diseased sheep, in consequence of pure ennui. They want ACTION. How extravagantly fond of play are all children! Why? Because their growth demands, with resistless imperiousness, muscular exercise and free inspiration. But no; if in a village or city, they must not go abroad for fear of accidents and bad associates—nor make any noise within doors, because it disturbs ma's, or aunt's, or granny's tea-intoxicated nerves, lashed up almost to the point of derangement by the want of just such an exercise room. I do believe no one thing would confer so great a blessing on men, women, and children, physically, intellectually, or morally, by developing their physical, and thereby their moral faculties, as an exercise room. Here they might use their lungs, and race about, without disturbing any one, because they could not be heard from the street, and there would be a story of vacant bedrooms between them and the third story, and two stories between them and the main family story. And this room would be perfectly solid beneath, because its floor timbers rest on a solid board wall, all the way up, to which they are all pinned fast.

Each roof-board would, of course, be pinned to two rafters, so that there could be no sagging or giving, because this cannot occur without a shortening of the board, and this cannot occur, because prevented by a board fastened at each end, and these held fast by others at their respective ends, and so on around the roof. Besides, all know what solidity is given by the arched form.

And then, what a splendid prospect from the top observatory, thirty-six to forty feet above the ground!

And what a magnificent figure such a house would make, situated on a commanding eminence! What a sunset view from its observatory! What beauty of configuration! And

every thing about it on a scale so imposing, yet so chaste, so stately, and at the same time so beautifully proportioned! The stupendous structure perfect from basement to dome! A house better than the castles of princes, in every respect! Every way calculated for an earthly paradise!

Its ventilation how easy, how perfect, by means of port-holes opening into that great thoroughfare through its centre, and also the entry leading to it through its base. When a summer breeze is stirring, every room in the whole house would catch it, to say nothing of the ascent of air given by the pneumatic law that air is less dense as we rise upward, and therefore at the top than bottom of this house, and this would secure a perpetual current. Moreover, every breeze would enter it at three connected sides, and pass THROUGH THE HOUSE, provided doors and windows were opened, besides the ascending current up the stairway.

And this board wall keeps out cold and heat so much better than joists and plastering, that it would not strike through during the day, but would preserve an even temperature, and render the house warm in winter, cool in summer, always dry, its ventilation perfect and easily controlled, room in any abundance and just where it is wanted, and the whole structure complete from basement to dome.

Only one other thing remains to complete the most perfect dwelling ever created—A PIAZZA ALL AROUND, AT EVERY STORY. Those who have ever enjoyed these luxuries, are loth to do without them, while those who have not, know not how duly to prize them. For one, I dearly love sunrise and sunset. They diffuse through my whole being so sweet and holy a calm, as literally to ravish my soul with earth's sweetest pleasures.

'Tis then I love to retire within my own soul, and draw near to my Maker, imbibe his spirit, bask in the smiles of his love, and open my soul to the influx of divine ideas and feelings. And would not such a house—its three porticoes, its commanding prospect, its sky as well as land scenery—promote these heavenly aspirations?

But their structure. Let your floor timbers, which form the floors of each story, project over the outside wall, say eight feet, and be pinned at their inner ends, On pillars to

they cross the outside wall, and they will of course be stiff enough to support all the weight that could well be put on the piazza, and could not give a particle ; and there is your piazza, hung out along the walls of your house, without any need even of pillars, unless you think they would look better, though I think they would not. Lay their floors along with that of your house, and all your floors as you go up with the house. That is, when you get the floor timbers of a story laid, before going up with the outside walls, stop and LAY YOUR FLOOR, commencing at the outside of your portico, and laying the whole 1218 feet—which an eight feet portico would almost double—irrespective of where either the outside or partition walls are to come, and then start them on top of this floor according as you wish your rooms. This would still further strengthen the house, already solid enough, and thus add certainty to security.

The portico to the second story should form the roof of that of the first, and that of the third, which should not be over four feet wide, to that of the second ; and eave-troughs, instead of, as now, projecting and hanging out beyond the walls, should set right on to, and form the top of the outside walls. As the roof rises, it of course retires enough to empty its contents into them, while they at the same time form a fourth piazza, and a fifth should be made about half-way up the dome, just above where the chimneys come out, and near which the scuttle stairs should lead out to the observatory; the ascent to which should be by stairs on the top of the roof.

The floor of the bottom piazza would also form a roof over eight rooms, one each side of the octagon, eight by twenty each, some of which might be inclosed by the board wall, and others left open, and appropriated to various purposes. The one on the north side, and along side of your milk room, should be appropriated to an ice-house, made of three walls on each side—the outside and inside of boards, and plastered, and the inner of boards set up edgewise, with charcoal pounded in between the inner and middle, and sawdust between the outer and inner, or the reverse—connected with your milk room by a door, or perhaps a double door, so as to keep your cream and butter good, and in which to deposit

fresh meat. An ice-house is a great family convenience. It could be sunk into the ground several feet, and be filled through the milk house, or by a trap-door on the piazza.

Another of these rooms—that opposite the wood cellar—should be appropriated to ranked wood, preparatory to its being sawed, and would hold some eight cords, which, with a wood-house full, would warm the house amply the year round.

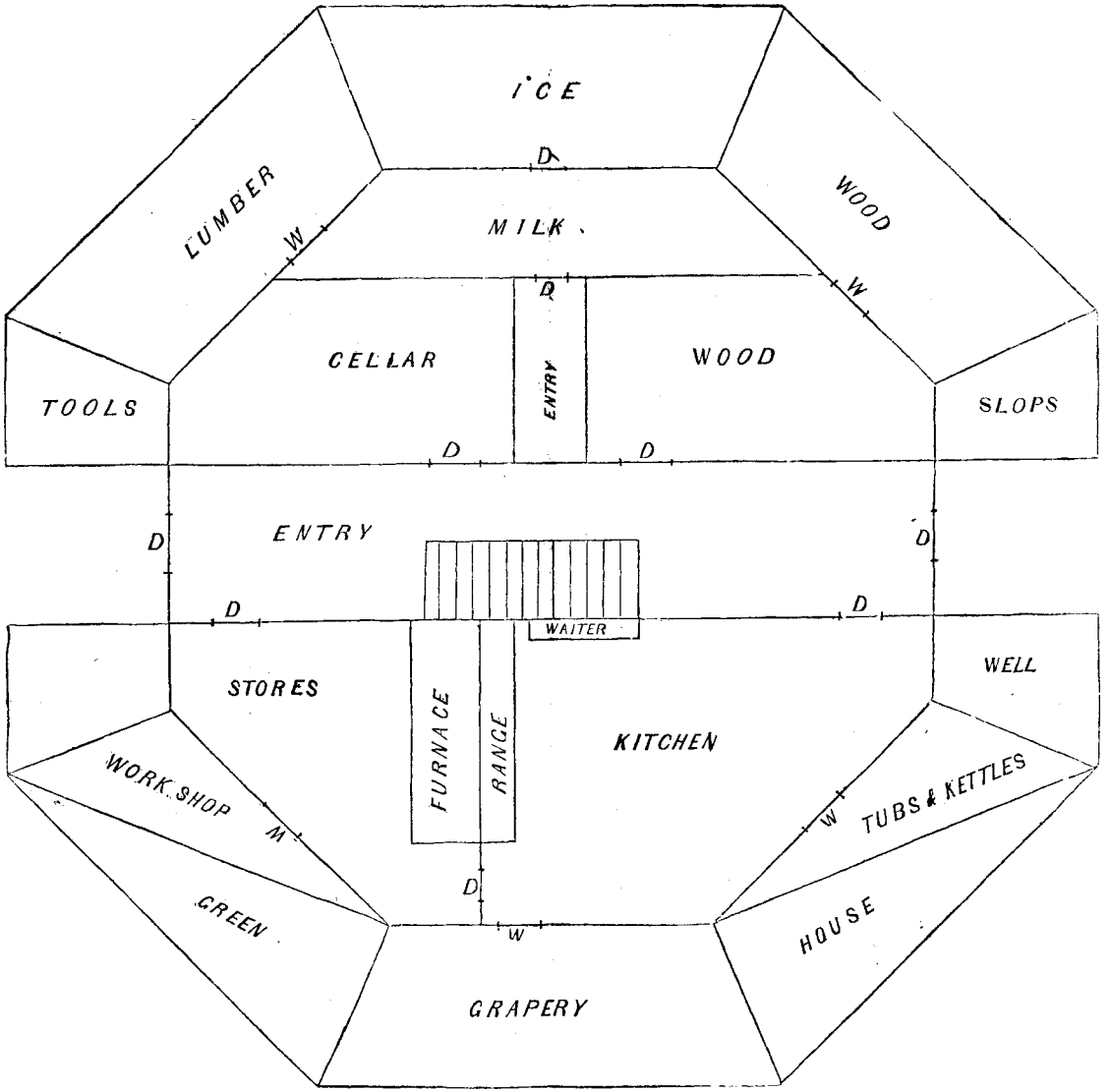
The south, south-east, and half of the south-west sides should be appropriated to a green-house, which would require nothing to complete it but glass, sloping from the outer edge of the portico to the ground, and the two ends.

EDWIN FORREST suggested that beach pebbles, a foot or more deep, at the bottom of a green-house, becoming heated by the summer and diurnal sun, would retain and give off sufficient heat to ripen the black Hamburg grape—as good eating as a prince can enjoy—WITHOUT ARTIFICIAL HEAT, and thus save the expense of flues and fire to heat the green-house. He said his observation of the warmth of pebble beaches, in cold mornings succeeding warm days, convinced him that these pebbles, deposited to a due depth in a green-house, would carry this grape through. If not, our furnace, which is near, could be made to contribute to this end. In fact, this grape ripens, under glass, without artificial heat.

And then the cultivation of green-house plants, besides being so delightful to women and children, as well as to men, could be made to subserve the important end of teaching children practical botany.

The basement entry would divide two of the portico octagons so as to make four boxes, eight by five, to be just the things for tools, and which are often wanted, yet require shelter. If kept in their places, they could be very easily found. Stairs may also connect the first and second porticoes, and perhaps narrow ones the second and third; egress to which from the inside of the house may be by a door, as marked in a plan of the second story, Fig. 16, or by low windows from the rooms, or both. I think the latter, as a door and a window on one side, and only a window on the others, would not look so well proportioned.

If thought best to put pillars between the first and second


ICE
LUMBER
MILK
WOOD
CELLAR
ENTRY
WOOD
TOOLS
SLOPS
ENTRY
WAITER
STORES
FURNACE
RANGE
KITCHEN
WELL
WORK SHOP
TUBS & KETTLES
GREEN
HOUSE
GRAPERY
D
W

these piazzas for looks—they will not be needed for support—bee-hives could be hung on both sides of those at the south, south-east, and south-west sides, that is, over the top of the green-house, on shelves—in place of banisters—on which to set them; so that their swarming, working, etc., could be easily seen.

Than such a house, what earthly habitation could be more beautiful, more imposing, more convenient, or more comfortable?*

Let us now estimate the ROOM in this sixteen-feet-sided octagon, both absolute, and as compared with that of a thirty-two feet square house (Fig. 10, 40 × 42), with a rear kitchen and wood-house to boot.

SIXTEEN-FEET OCTAGON BASEMENT.

Sub-kitchen	270 sq. ft.	
Store-room and cistern	250 "	
Cellar	120 "	
Milk-room	100 "	
Wood-house	120 "	
		860
Entry	350 "	
Total in basement	1210	

UNDER THE PORTICO.

Ice-house	128 sq. ft.	
Wood rank	128 "	
Lumber	128 "	
Green-house	256 "	
Tubs, tools, etc.	160 "	
		800
Total		1660

* Those who preach that we should hate this life and its blessings in order to prepare for another, would, of course, object to so enchanting a mansion, as making us love the world so well as to be loth to leave it.

Total of basement and portico			1660
MAIN OR SECOND STORY.			
Parlor	300	sq. ft.	
Sitting room . . .	300	"	
Kitchen and pantry . .	294	"	
Back parlor and closets .	196	"	
			1090
Add entry and stairway .	121	"	
	1211		
THIRD STORY.			
Square room . . .	256	"	
Triangular bedroom and closets . . .	127	"	
" " . .	127	"	
Long " . .	187	"	
Triangular bedroom . .	126	"	
Large parlor L, etc. .	340	"	
			1163
Add stairway . . .	60	"	
	1223		
FOURTH STORY.			
The same . . .			1163
ATTIC STORY.			
Outside bens . . .	552	"	
Play room . . .	650	"	
			1202
Stairway 5 × 3 .	15	"	
	1217		
Grand total . . .			6278

Let us next estimate the room in a thirty-two feet square house.

Total room - - - - - - - - - - -	32 × 32=1024
Deduct entry - - - 7 × 20—and two chimneys	176
Net room left - - - - - - -	848

Its three stories and attic=848×4, and a 20×20 feet cellar=grand total net room 3392.

The octagon and square, then, compare thus:

$$\frac{6278}{3392} \div 12 = \frac{523}{282} \div 10 = \frac{52}{28} \div 2 = \frac{26}{14} \div 14 = \frac{1\frac{12}{14}}{1},$$

which equals six sevenths, or ALMOST DOUBLE THE ROOM in the octagon over the square—a part by its shape, a part by its entries, and the balance by the use of the whole basement, instead of a part, as is usual. Yet we reckon the whole of the garret room in the square house, whereas only a small part of it is usually converted to any valuable use. We reckon both garret and cellar in our octagon, to show how unwise to throw away room which can be converted to ends thus valuable.

Estimate of the net room in a house thirty-six by forty-four, and kitchen. Each room 18×18=324, less 24 square feet for chimney, and fourteen lost between the chimney and corners, as already explained,=286.

The four rooms on each story, and four stories,

16×286=	4476
Kitchen, 20×16, - - - - - - - - - - - - - -	320
Cellar, 20×20, - - - - - - - - - - - - - -	400
Wood-house, 16×8, - - - - - - - - - - - -	128
	5324

Less, by 954 square feet, than our sixteen-feet octagon contains. Yet there remains a ten by twelve garret room over the kitchen, but this will require a deduction for stairs off of the kitchen.

But suppose the builder to be a man of means, and to want a large and superb double house, with a great abundance of room, and every convenience. He builds an upright, with wings.

Upright, 32×2+42×2=148 cir., and three stories, 148×3=	444
Wings, each 27 feet long, ×2=54×2=108×2 stories,=	216
Wood-house, 27×2=54×2 stories,=	108
	768

Fig. 18—Winged house, 32 by 42.

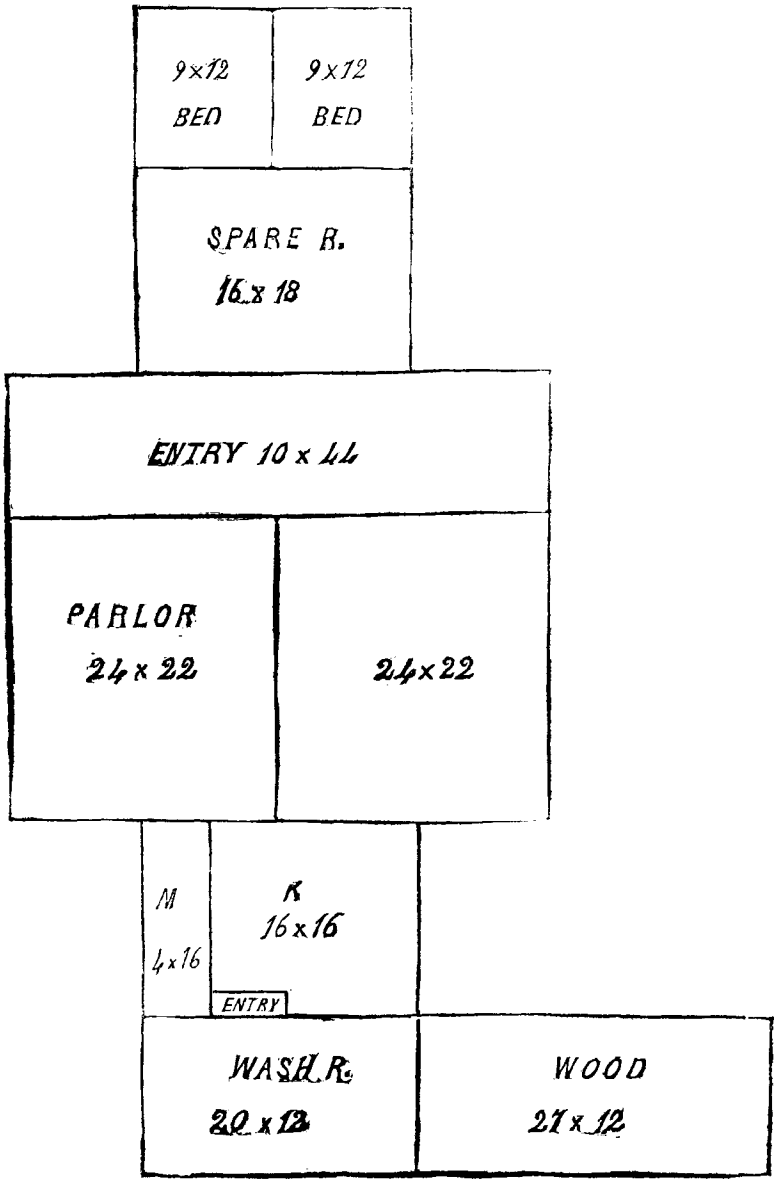
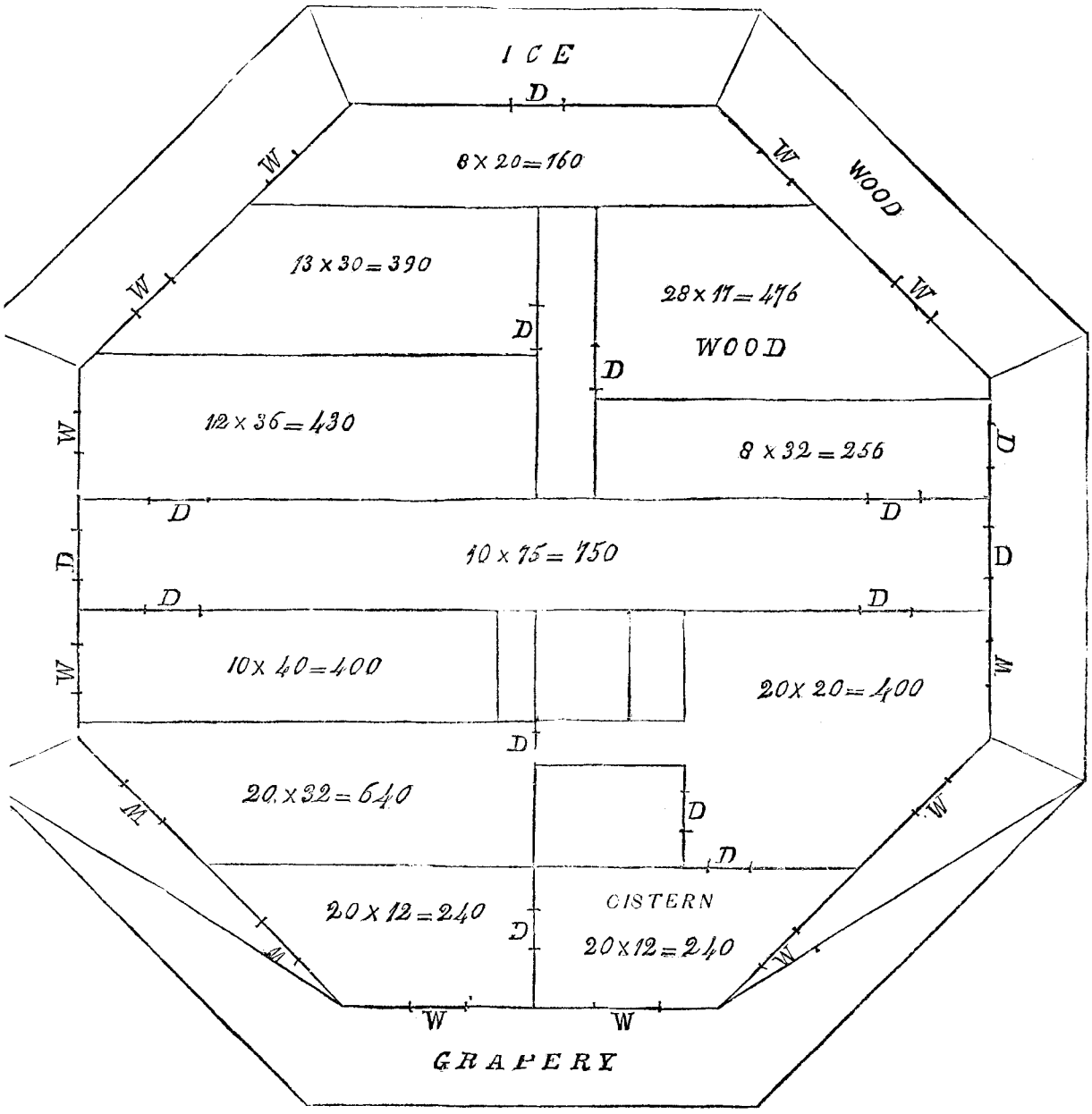


Fig. 19.—32-feet Octagon.

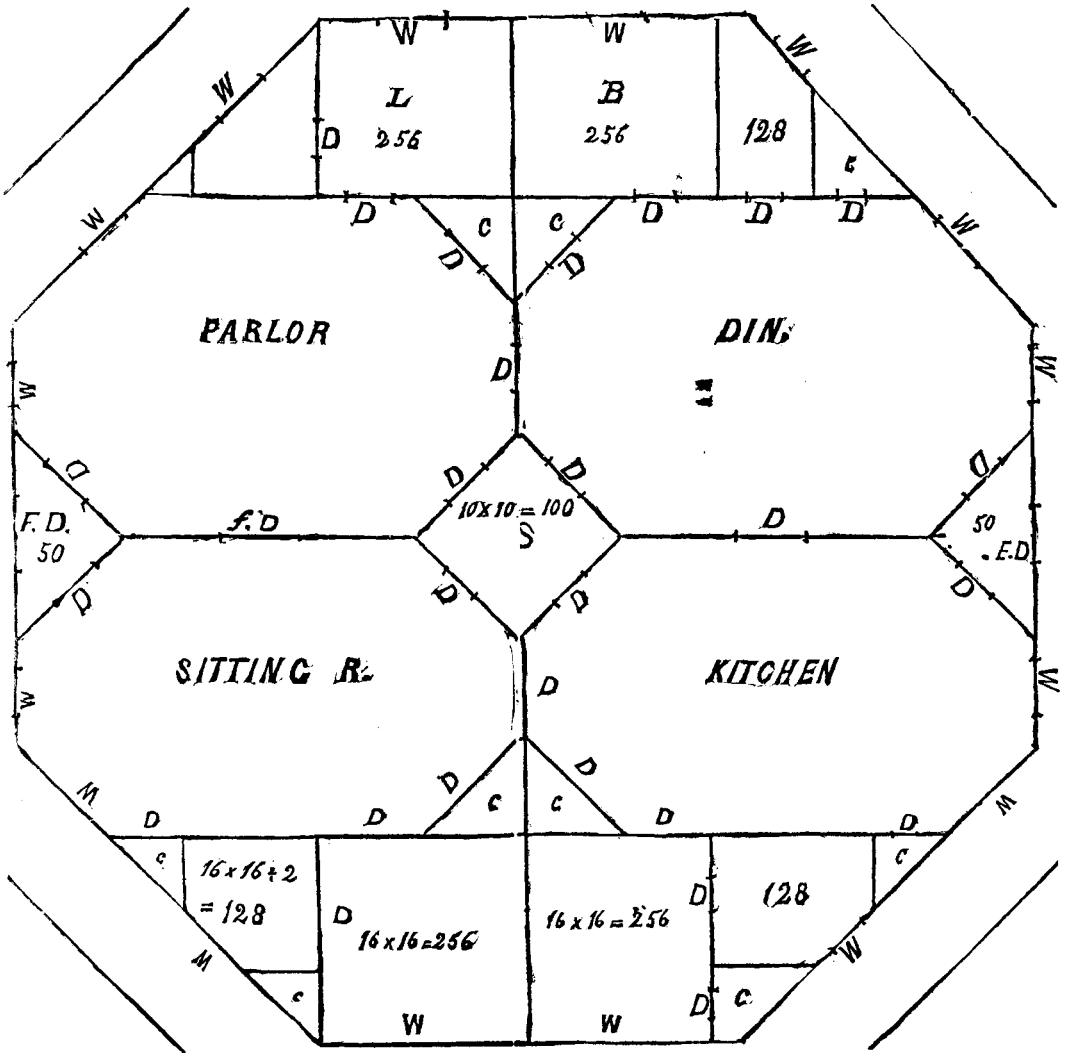


In reckoning the upright, we virtually reckon the gable ends of the wings, and hence should reckon only their sides, and so of the wood-houses.

Each wing is 20×27=540 square feet × the 2 wings = 1080 × the two stories, =	2160
The upright rooms, exclusive of the entry, are 24×44=1056 × the three stories, =	3168
Three attics,	2336
	7664
Deduct kitchen entry, 3×12=36× the 2 stories, =	72
Grand total,	7592

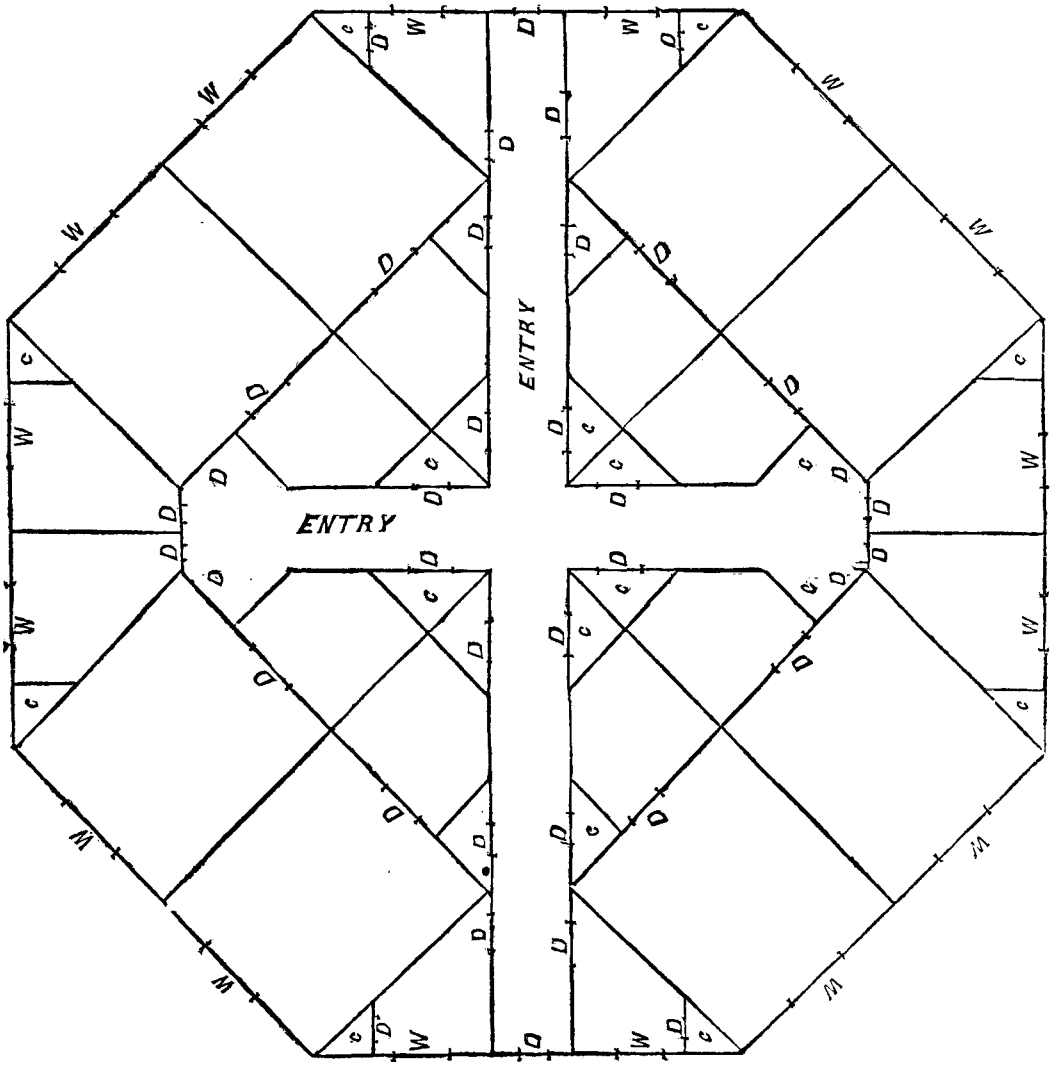
I also wish to build an octagon of 32-feet sides, also three stories, 32×8=256× the 3 stories =768 outside wall, or just equal to that of the winged house. It will cost little more to put up this 32-feet octagon than a smaller one, except the additional boards, which is but a trifle, because it requires no more time to lay and pin a 16-feet board than one ten feet, unless you increase the number of windows and doors. One window to a side of a first-class octagon would be deemed hardly sufficient, and hence our 27-feet octagon embraced two, sixteen windows per story, which many think will give a better arrangement of rooms. At least, it will give double the NUMBER of rooms in both basement and upper stories, and add to the beauty of the house. This plan also gives a superb suite of rooms alongside of the four main rooms. And since it costs little more time or pins to place and pin a 16-feet board than one 10 feet—that is, since a 32-feet square octagon costs but a trifle more than one twenty-four or twenty-seven feet, if room be an object, let us plan one for thirty-two feet, as drawn in the accompanying diagram.

Fig. 20.—32-feet Octagon, main story.



SECOND STORY OF THE 32-FEET OCTAGON

Fig. 21.—Second story of the 32-feet Octagon.



This diagram is drawn on a scale of sixteen feet to the inch, and gives us

A parlor, kitchen, sitting and dining-rooms, each 936×4 - - - - - -	3744	
Four square rooms, each $16 \times 16 = 256 \times 4 =$	1024	
Four half-square = two square $16 \times 16 \times 2 =$	512	
	5280	
Deduct for entry and stairs $10 \times 10 \times 2 =$	200	
		5080
Second story, the same aggregate, - -	5280	
Deduct entry and stairs - - - - - - -	450	
		4830
Third story, same - - - - - - - - -		4830
Dome and side rooms, less $4 \times 4 = 16$ for stairs		5264
		20,004

The grand total of the winged house was 7592 to 29,400 in the octagon, which gives almost FOUR TIMES more room in the octagon than in the winged house, though their outside WALL is the same number of feet; reckoning our basement, which contains - - - - - - - - - - - - - - - - 5280

Less the two entries $= 750 \times 96 = 846$ - - - - - - 846

4434

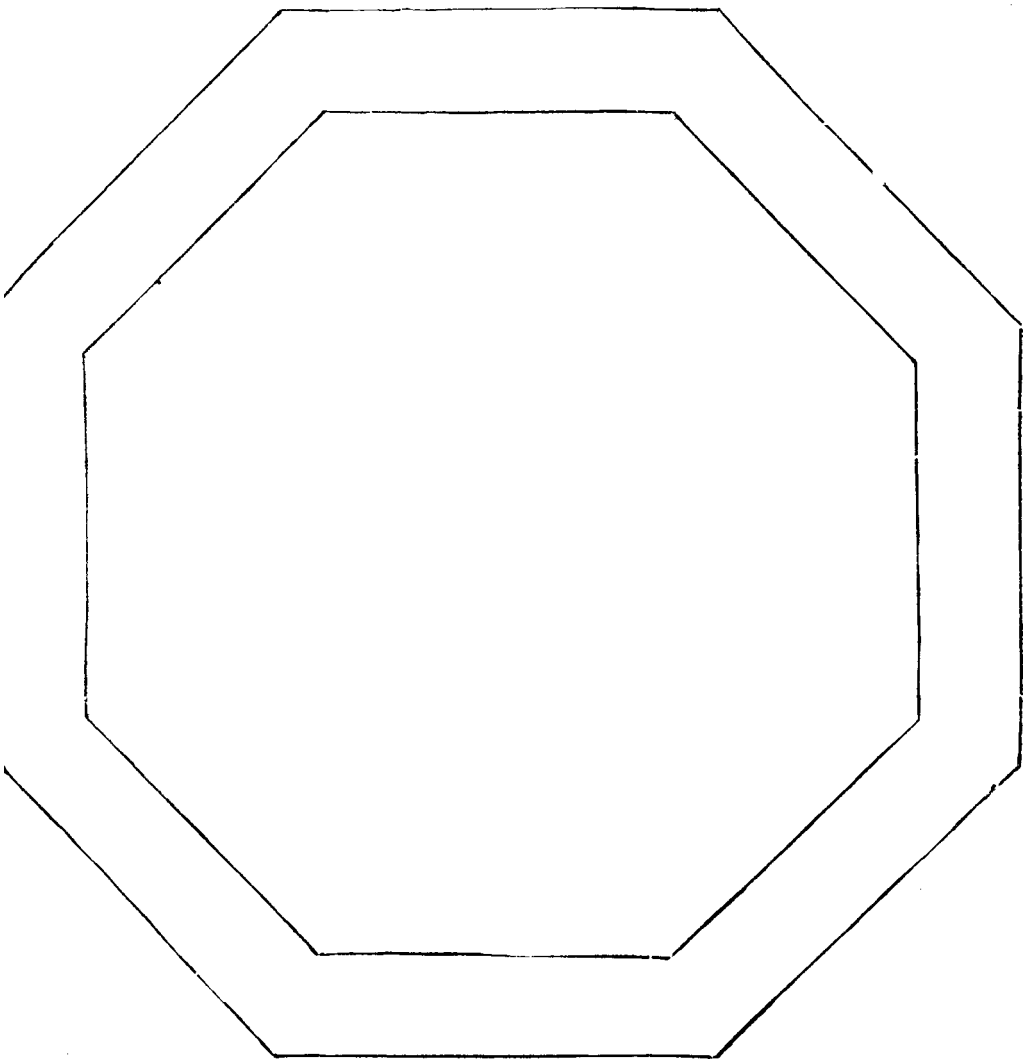
The whole house will then contain 29,400, besides the grapery, ice-house, and all the room under the portico.

To the splendor of its dome we invite special attention. It contains 5280 less these bins, $29 \times 8 = 232 \times 8 = 1856 \times 24$ stairway $= 3400$. It is capable of seating eight hundred, and holding some thirteen hundred persons.

And what could equal it for dancing and gymnastics combined, as the gymnastic apparatus could be so arranged as to leave ample room for the largest dance. Admirable as are all the other features of this magnificent palace, this is one of the most useful, pleasure-giving, and health and life manufacturing appurtenances of this plan. How infinitely does it surpass those attic rooms generally made in our first class houses.

Then look at the commanding and stupendous appearance of this edifice. Its ground size would seem to require, and its

Fig. 22.—32-feet Octagon dome.



entire plan facilitates, its being carried up story after story, at pleasure, and the construction of porticoes all around it at each story desirable. Look at these two figures, the octagon and the winged, or even the square, and say which strikes you as the most noble looking and truly beautiful. The octagon solid, massive, compact, and spherical; the winged full of outs and ins, all long and no wide; its wings low and centre

high, that is, a break between them, or the same as three houses set close together; the octagon beautifully proportioned every way, the winged out of all proportion; the octagon exactly adapted to have a promenade all around at each story, with pillars, which would add greatly to its coolness, beauty, and utility, the other not thus adapted; the octagon with a single regular roof, the winged with four roofs; the octagon exactly adapted to make a magnificent appearance on a rise of ground, the other not; in short, the octagon perfectly beautiful, and the winged a violation of every principle of taste and beauty.

The same difference in kind, though less in degree, obtains between the octagon and the square, with an L or a J in the rear. In short, you have only to look at our ground plan of the three figures to see which is incomparably superior to both the others.

23. ITS SUPERIORITY FOR LARGE FAMILIES AND PARTIES.

The superiority of its internal structure we have already shown. But some advantages of this large octagon over the small one deserves additional remark. The entry takes out one corner of a square, the staircase another, and the angle of the house another, from each room, each of equal size. Now by making a closet of the same size in the other corner of each room, you perceive each of these four rooms to be an octagon—in beautiful keeping with the form of the house. Behold those four large and splendid rooms. Each 936–75 square feet, or 95 square yards; and all together almost 4000 square feet, and 400 square yards! You will look in vain for as splendid a suite of rooms. Now throw open all the doors, and stand in the folding-doors, between parlor and sitting-room, or between the sitting and dining-rooms, and what an audience could be accommodated, both with sight and hearing! and how many also on the portico!

The time will come when the order of conducting social parties will be changed, so as to require sentiments, toasts, short speeches, pithy debates, racy comments, as well as dancing. Behold what rooms for such purposes! They would accommodate a large number of persons seated, and many

more standing, two thirds of which, besides the hundreds that could see and hear from outside, could see the speaker!—almost equaling a church.

CLOSETS are among the most convenient appurtenances of a home. Their utility every housekeeper must know—negatively, if they have kept house without them, and positively, if they have enjoyed them. A room without them, if used much, must always be in disorder. Things we MUST HAVE, and if there is no place in which to put them away between times, they must of course lie around on chairs, under foot, on tables, beds, and bureaus, and hence keep the entire room perpetually lumbered; nor can the nicest housekeeper KEEP them in place; because, how can she keep things in their places, when she has no place to put them? Order about a house is one of its greatest possible promotives of domestic enjoyment, and this order these closets in those acute angles, as seen in our drawings, admirably facilitate, not only without impairing the room, but actually turning to this best of purposes, room otherwise both useless and unsightly. And then each child can have a closet exclusively to itself, its order practically inculcated, and also, different closets for different kinds of things, and thus the most perfect order secured.

Suppose two brothers, whose families could live together in love, should occupy this house. They could have two front doors, a wall between both houses, the stairway made twelve feet instead of ten, divided by a middle partition, with separate flights of stairs for each house; the kitchen could be converted into a sitting-room, and, together with the parlor, constitute a front and back parlor united by folding-doors, and thus of the other side; abundance of room in the upper stories for both families, and cellar room below for both; another kitchen could be made of one of those bedrooms, and also another sub-kitchen provided out of the great surplus of room in the basement story; the dome could be common ground, and the four piazzas all around, connected together by stairs, what could surpass it? They might have an internal door connecting the two suites of apartments or not, as they liked. How much cheaper and better than to have two houses!

Suppose parents and a large family of children love each

other cordially, and desire to live together. Let the children marry good companions, and those who are agreeable to all parties, and bring them home to their father's house, and thus save all that heart-breaking solicitude and painful anxiety consequent to the parents and daughters, on leaving the old home associations and dear friends. Let the four large rooms be common ground, where all meet at every meal, and spend as much or as little of their time in these common rooms as they like, yet each could have a suite of private family rooms above. The grand-children, who do not like to emigrate, could pursue a like course, as here is room for EIGHT FAMILIES on each of the upper floors, with a lighted cellar for each, besides all those rooms on the main floor. Here both association, and also isolation, just as far as each individual pleased, could be enjoyed. And then, what a common play-room for all the children, or a play and school-room, in the dome! This would save mothers that inexpressible tedium of being confined, every hour and day of every year, to one or two children, who, having nothing to satiate their craving for action, tease and fret their mothers perpetually every hour of their lives, keep them from lectures, visiting, and recreation, and render those children ill-natured and sickly by confinement within doors. But where there are a score of children together, the larger ones care for the smaller, and all amuse each other, and thus relieve their mothers of this most distressing confinement, as well as allow them ample time to work, visit, attend lectures, and the like. The advantages of association in this respect are great indeed, as also in the matter of cookery, fuel, and many like respects. And a house like this could easily accommodate TWO HUNDRED.

Or a large hotel is wanted. See how direct this plan renders the access to all the rooms in the house—twenty-four on each floor, or one hundred rooms on four floors, besides the basement, the dome story being cut up into rooms, excepting a small dome at the peak. Or it could be carried two stories higher, or be made larger on the ground, or contain twelve instead of eight sides, and thirty-six rooms on each story for five stories, besides the first story and basement, equal to two hundred and sixteen rooms, capable of accommodating five hundred boarders! And all around one central point, instead

of, as now, having ups and downs, criss-cross entries, much room wasted, and the whole exceedingly inconvenient.

Or let the house be twelve sided, with forty feet to a side, no central stairway, but two front doors on each side, opening into a suite of rooms, each large and numerous enough for a family, and, of course, sufficient to accommodate twenty-four families to each floor for five or six stories, or some hundred families in the house—each the same as if in a separate house, opening on to the portico, and with its stairs giving ease of access, along with perfect isolation, together with a coal and sauce-room for most of them in the basement, and costing not over $6000.

Or suppose a stock company of poor men organize and contribute a given sum toward building it, say from $50 to $200 each, according as the rooms chosen are on the upper or lower stories, with the privilege of renting it if he prefers. See how cheap and how excellent a home.

Or as accommodating factory operatives; see how vastly more convenient, and less expensive, than the hundreds of houses now required to accommodate the same number of operatives. In this case, one house would furnish living room for all who could work in one factory.

For cities, too, where room is so scarce and high, how great the saving—more than TEN-FOLD; though in this case it would take about three lots for each house. How great a relief would it furnish a dense population.

Look at this form for churches, lecture rooms, etc. The same sized wall could accommodate one fifth more hearers than the square, and a fourth more than that oblong form in which they are generally built. And this form brings all the hearers much nearer the speaker than now, and obviates those deep, dark, distant corners which break the voice, produce echoes, and remove hearers far off from the speaker. Hence this form, besides seating a fourth more within the same sized wall, will enable the same volume of voice to reach one fourth more, that is, accommodate twice as great an audience as the present. This form would also bring the entire congregation facing EACH OTHER as well as the speaker, and thus promote that SOCIABILITY for which they meet. Yet for this purpose a ten or twelve-sided house would be preferable.

Or Associationists, who wish to begin on a comparatively small scale, and to enlarge their home as their numbers increase. This house can be built for some three or four thousand dollars, according to size and style, and then house after house added—a provision for anchoring them together being easily made—and these can be built one by one, around a common centre, in the form of a grand octagon, or decagon, or duodecagon—the latter probably being the best, so as to allow them to build by degrees, and yet when completed to be a most commodious, yet most imposing structure. And what a place for a grand assemblage in the court formed by this circle of houses, and from the five story galleries of each of the eight or twelve houses! What could equal this general plan for this or any kindred purpose?

For state asylums, also, how incomparably superior to the present plan—say to the Massachusetts State Lunatic Asylum, as an example, which has a disjointed front, composed of half a score of houses, and as many roofs, and then half as many L's or wings projecting back at right angles, and a most homely object beheld from the rear. Or if the New York State Lunatic Asylum, at Utica, had been constructed on this general plan, one hundred dollars would have gone further than one thousand now have, and made a far more sightly and commodious structure.

Or look at this plan for a college—the basement for cooking and dining-rooms, the next for lecture-rooms, and the upper floors capable of accommodating just as many students as you like, according to its number and length of sides and stories. Access through the centre, and folding-doors through the middle, which, closed, divide it into lecture-rooms, or, opened, form a splendid chapel.

But the variety of most useful applications of this form of building, over all those now in use, is innumerable, and its superiority most marked in every conceivable respect. Nor is the day far distant when it will supercede all others. It is the style of NATURE, and will commend itself to the good sense and practical application of all classes.

Its comparative cost has already been shown to be less than that of the present form. Windows, doors, and finishing, would of course be the same in both forms, and vary with the

number and style of finishing, but the frame and floors will be from a quarter to a third less. At all events, if in this line of business, I would engage to put up such a house, and fit it for plastering, at three fourths the price of ordinary carpenters for a like stage of advancement.

24. A RAIN-WATER CISTERN

Is too convenient an appendage of a good house to be omitted in our plan. Where, then, shall it be located? Out of doors, under ground? Why not in our basement, especially since we have spare room in abundance? Why not on a level with, and by the side of, our sub-kitchen, and also adjoining our green-house? We can then, when it is full, draw water directly into our sub-kitchen, and pump it into both kitchens, and also draw it from a conductor into our green-house. It should be made of water cement, plastered upon our board wall, so that its cost would be trifling. If thus enclosed within the house, it would of course never freeze.

It should have two drains—one from the bottom, so that it can be emptied and cleansed, and the other from the top, so that any surplus water may run off; both of which should lead into, or through, the green-house. Another pipe should connect it with an apparatus for cooking food for animals by steam, which should be attached to the furnace.

One of those triangular rooms or closets near the entry, in one or both the upper stories, could also be easily converted into a cistern, to supply water to the chambers and baths, by simply plastering them with water cement instead of common plaster, and leading the water directly from the eave-troughs inwardly, by tin tubes, into it, and then conducting the surplus water into the basement cistern just described. Perhaps each builder could contrive the details of this arrangement to his own liking better than is here done; yet that some such plan might be executed, at a few dollars extra cost, is evident—because our plan provides for the building and lathing of the WALLS of the cisterns for a mere trifle, along with those of the house, and the water lime will cost only some two dollars per barrel, to be mixed with two thirds its own bulk of sand; and once executed, their utility, thus

located within the house, and so accessible to both the kitchens and all the chambers, would be far more convenient than out-of-door cisterns.

25. THE ROOF.

Though this formed house allows the roof to be framed, boarded, and shingled, just as roofs are commonly made, yet let us see if some improvement cannot be effected in this respect, in looks and cost, as well as in durability.

The roof of the Old Colony Railroad Depot in Boston is made spherical, by bending the first board the shape required, and then nailing one after another to it, till it is made strong enough—which nailing preserves them in the arched form. The rafters are then placed, bowing side up, anchored at the bottom, and inserted and fastened into a block at the top, and braced. How admirably this arched roof would set off our octagon! It is every way adapted to this style of house. The eight corners are, of course, perfectly solid; because no one of them can give a hair's breadth without displacing all the others, which is impossible. The eight main rafters, therefore, whether straight or arched, rest on a perfectly solid basis, and the shorter ones are also solid; so that, since the BASIS of our arch is solid, and since these main or corner rafters are inserted into a solid block at the top, pressed equally from all its sides, and since the roof boards cross these rafters, so as to form an arch the other way, surely no greater solidity or strength can be required than this structure would give, even without bracing. Yet how easily are these rafters braced near their top, if this should be deemed necessary, by spiking boards across from one to the other.

It deserves remark, that this form of roof parries violent winds, and sustains heavy burdens of snow, much better than those in two great sheets. It seems to me that this form of roof is peculiarly adapted to sustain a towering steeple, especially if two sets of timbers, mutually braced together, should be made. Yet of this, carpenters are the best judges.

This form of roof can, of course, be shingled as well as the present form; yet it is peculiarly well adapted to some of those recent inventions which dispense with shingles, and

plaster with some kind of cement directly upon the roof-boards, which should, of course, be laid close together. In Fulton street, New York city, on the right hand, three or four doors below Nassau street, is a furnace store, covered with a bituminous compound, overlaid with pebble stones, which is impervious to water, and which the owner likes so well that he has recently had the same compound put upon a large foundery. It costs only two and a half cents per square foot. Many other houses are covered with the same compound, and its inventor is doing a lucrative business—an evidence that it is both cheaper and better than shingles. This second allusion to this invention is made, because the author has since SEEN and been on a roof covered with it. Its inventor's address is No. 565 Houston street, and his name is R. Beman.

That some substitute for shingles—cheaper, better, and easily put on—can and will be devised, I am fully confident. Indeed, I consider shingles but poorly adapted for roofing, and their being soon superseded by some sort of plastering compound, certain. The following recipe for roofs comes from a source entitled to some credit:

"It is frequently necessary to construct out-buildings, sheds, etc., of a cheap character, for temporary use, but which are, nevertheless, required to be well protected from the weather. The following simple and expeditious method of roofing out-houses, and other similar structures, may therefore be of service to some of our readers. The rafters are to be four inches deep and two and a half thick; the covering to be of boards three quarters of an inch thick, straight-edged, and securely nailed, to prevent warping. Over this, place a course of common sheathing paper, such as is commonly used under the copper sheathing of vessels, and make it fast by small nails. Then apply a composition made of the following ingredients, viz.: eight gallons of common tar, two of Roman cement, three pounds of tallow, and five of rosin.

"These ingredients should be well boiled, and applied when hot. Care should be taken that the composition be spread as evenly as possible, and covered before it has cooled with a stratum of sharp, finely sifted sand. On this another coat of tar is to be spread, and another coat of sand as before, after which nothing more is required to secure the possession of a tight roof for years, except an occasional dressing of tar.

Some may object to this species of roofing from the supposition that, being composed mostly of highly deflagrable materials, it would prove too combustible. But this, if it be a reasonable objection, may be easily obviated by giving the whole a coat composed of the following materials: Slack common lime in a close vessel, and when cool, pass eight quarts through a fine sieve; add to it one quart of fine salt and two gallons of

pure water. Boil and skim. Then to every four gallons of this mixture add one and a quarter pounds of rock alum, three fourths of a pound of potash, and five quarts of fine beach sand. This wash will now admit any coloring matter that may be applied with a paint brush in the same manner as oil paints. A writer, remarking upon the good qualities of this preparation for roofs, says—'It looks better than paint, will stop leaks in the roof, prevent moss from growing, and when laid upon brick work will render it impenetrable to rain or moisture.' A wash of this kind might beneficially be applied to the roofs of houses, barns, and other buildings, instead of paints."—*Maine Farmer.*

26. THE OUTSIDE FINISH OF HOUSES.

Nothing seems to be wanting in our plan but some OUTSIDE FINISH, in the form of PLASTER. Though this plan allows a covering of clapboards, or sheeting, equally with a frame house, yet, since it must be plastered outside, so as to keep the dampness from striking the boards—because then it will strike through—if we can substitute some kind of plaster which will adhere firmly, and resist frost and rain, we can cover our house very cheaply, and give it the appearance of marble, plain or clouded, or paint it to our liking.

That nature has furnished better materials, if we will discover and apply them, than boards and paint, is apparent; for, besides their expensiveness, they must, as the world fills up, become too scarce to supply the demand. Our plan is peculiarly adapted to a plaster finish, and that such cheap and durable finishes can be made, is a matter not of inference but of EXPERIMENT. The State-House at New Haven, Conn., is plastered outside, and has withstood the action of frost and rain over thirty years, and without the expense of frequent repainting. So well has this plaster finish recommended itself practically in New Haven, that all their first-class houses are now covered with it. The FEASIBILITY of an outside plaster finish is thus placed, by experiment, beyond a doubt. Indeed, that bituminous compound just described for roofing can be spread upon the outside wall just as well as on the roof, for its ADHERING property is so great, that it was with difficulty that I could detach a single pebble. Yet its dark color is objectionable. Whatever can be made to withstand frost, will adhere very firmly to our board wall, because of the superiority of its lathing.

The following recipes, clipped from the papers, are given as received, without endorsement, but not without considerable confidence in their durability.

"The Pittsburgh Chronicle says an individual has a mode of manufacturing marble which is pronounced superior to any other artificial stone or marble in use, and will supersede the use of lime mortar in the various processes of plastering, and will be extensively used for stucco work, mosaic, statuary, mantle-pieces, table slabs, atmospheric and hydraulic cement, roofing of houses, and paving of streets, etc. It will set or harden in six hours, when applied in plastering houses. It will resist the action of atmospheric heat, damp, frost, etc., and is susceptible of a high polish, and can be manufactured at a cost little exceeding ordinary lime mortar."*

"Much is said of the brilliant stucco whitewash on the east of the President's house at Washington. The following is a recipe for making it, with some additional improvements learned by experiment:

"Take half a bushel of nice, unslacked lime, slack it with boiling water, covering it during the process, to keep in the steam. Strain the liquor through a fine sieve or strainer, and add to it a peck of clean salt, previously dissolved in warm water; three pounds of ground rice, ground to a thin paste and stirred and boiled hot; half a pound of powdered Spanish whiting, and a pound of clean glue, which has been previously dissolved by first soaking it well, and then hanging it over a slow fire, in a small kettle, within a large one filled with water. Add five gallons of hot water to the whole mixture, stir it well, and let it stand a few days, covered from the dirt. It should be put on quite hot; for this purpose it can be kept in a kettle, on a portable furnace. It is said that about one pint of this mixture will cover a square yard upon the outside of a house, if properly applied.

"Brushes more or less small may be used, according to the neatness of the job required. It retains its brilliancy for many years. There is nothing of the kind that will compare with it, either for inside or outside walls. Coloring matter may be put in and made of any shade you like. Spanish brown stirred in will make a red or pink, more or less deep, according to the quantity. A delicate tinge of this is very pretty for inside walls. Finely pulverized common clay, well mixed up with Spanish brown, before it is stirred into the mixture, makes it a lilac color. Lamp-black and Spanish brown mixed together produce a reddish stone color. Lamp-black in moderate quantities makes a slate color, very suitable for the outside of buildings. Yellow ochre stirred in makes a yellow wash, but chrome goes farther, and makes a color generally esteemed prettier. In all these cases, the darkness of the shade will of course be determined by the quantity of the coloring matter used. It is difficult to make a rule, because the tastes are very different; it would be best to try experiments on a shingle, and let it dry. I have been told that green must not be mixed with lime. The lime destroys the color, and the color has an effect on the whitewash, which makes it crack and peal. When walls have been badly smoked, and you wish to have them a clean white, it is

* If any reader can give any information touching this invention, it will be thankfully received.

well to squeeze indigo plentifully through a bag into the water you use, before it is stirred into the whole mixture. If a larger quantity than five gallons should be wanted, the same proportion should be observed."

Many readers will no doubt remember that splendid mansion in Broad street, Philadelphia, near Chestnut, which is plastered and colored yellow, and has withstood the weather these ten years, to my knowledge, probably longer.

The common-sense view of this subject appears to be this: Common lime and sand plastering, being porous, imbibes moisture, the freezing and thawing of which break it loose, which can be prevented by stopping the ingress of water. This appears to be neither impossible, nor even difficult, and is doubtless the object of the glue and ground rice in the above recipe. Other recipes mention whale oil, probably for a similar purpose. Now will not a coating or sizing of arrow-root or potato starch, made thin, and put on evenly with a brush, so fill up the pores of the plastering that paint or varnish, instead of striking in at once, will dry as on boards, and thus form a coating impervious to both water and dampness? Why will not a coating made of one part tallow, two of beeswax, and four or six of rosin, like that used for grafting, put on warm with a brush, do?

Yet even if some coating of this kind should be tried, and fail, it will offer no impediment to future clapboarding.

27. INSIDE FINISH.

In New England, houses are generally finished inside by being PAPERED over the plastering. This certainly improves their looks very much, as long as the paper is kept clean, besides adding materially to their warmth; yet its great objection is, that smoke, fly-specks, etc., soon soil the paper, and render frequent renewal necessary.

This difficulty has been completely obviated by J. Lane, of East Abington, Massachusetts, who put on, with a paint brush, two coatings of arrow-root starch, made thin, and followed with a coat of VARNISH so that it can be WASHED without the water defacing the paper. This starch strikes through the paper, and fastens it to the wall, and the varnish gives a shining or glistening appearance to the room, which

struck me, on seeing it, as peculiarly agreeable. It had been often washed, yet the paper appeared as perfectly clear and new as if just put on. This is not theory, but an EXPERIMENT, worth repeating. As the starch and varnish are both transparent, the colors of the paper shine in all their original clearness and beauty for any required length of time. Such finish is as easily washed as whitewashed, and obviates the continual soiling of clothes with whitewash. It is a very great improvement.

One precaution should, however, be observed—to select colors which will not SPREAD when the starch is applied, which is easily ascertained by trying the experiment on a small piece.

The Boston inside finish of door and window casings and mop-boards, which dispenses with all mouldings, and is perfectly plain, except that the top board is wider than the others, struck me as more truly beautiful than all this gingerbread cornicing and moulding, besides being so much more easily cleaned.

The author designed to have grouped together in this work a few of the most important improvements and conveniences recently devised, as well as to add a chapter on domestic conveniences and general arrangements about house; yet subsequent reflection led him to confine himself mainly to this board wall and octagon styles and their accompaniments, in the body of the work, and, if thought best, to throw these other incidental matters into an appendix, in future editions.

The following bears too directly upon the board style of building which constitutes our theme, not to be inserted, and shows how abundant the kind of timber it requires is, and also that, if this plan were adopted, so as to create a market, how easily and how cheaply it could be supplied.

"Sufficient attention is not paid to the preservation of the forests of the United States, and it is highly probable that the next generation will suddenly find timber very scarce and high. The waste of timber is very great in all the wooded regions, and the demand promises before many

years to exceed the supply. In England, for centuries past, some of the largest fortunes have been derived from timber plantations, and the surest fortune which a man could leave to his children, has been by preparing an extensive timber plantation, which, though returning him nothing during his life-time, has been in many instances a mine of wealth to his children. Many of the distinguished nobility in that country have practiced this system for many successive generations, and to great advantage. We believe many of our citizens could in no way more surely leave a valuable inheritance to their children, than by purchasing some of the cheap lands in the country, accessible to railways and rivers, and making thereon a plantation of timber trees, which would be attended with but trifling expense.

"The waste of pine in the forests of Maine, the scarcity and high price of hard wood timber in many parts of the country, are well known. In other parts of the country less bountifully supplied, the destruction is also going on. Great Britain is cutting off all the forests in Canada and New Brunswick; most of our Western States are thinly wooded, and even Western New York now depends upon Canada for a supply of building lumber. In the peninsula of Michigan, the best pine region of the whole West, the Buffalo papers inform us the waste is almost incredible. A dozen or more of saw-mills are there erected in the midst of the government lands, and are there unmolested using up the government timber astonishingly fast. They saw nothing but the best logs, leaving all others which may be felled out to rot on the ground, and they work night and day in order to make as much as possible before any demand is made upon them by the government for stumpage. In addition to all other uses, the demand for fuel for the steamers of the West, is making sad havoc with the forests along the rivers. A careful calculation of a skillful engineer has made this demand equal to 10,220,000 cords per annum."—*Newburyport Herald.*

The author is far from claiming perfection for this plan of building. No one mind can perfect any thing; nor has the author been able to devote much time to the composition of this work. Doubtless every reader could suggest some improvement either in the location, or form, or arrangement of some of the rooms, or closets, or house appurtenances; but he does claim that this kind of wall, and this general form of houses and arrangement of rooms, are every way superior to those now in use, and strike out a plan which can be varied by each builder to suit his taste and means, besides being susceptible to improvement almost indefinitely. Is it not deserving of attention and practical trial?

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