

HOUSING

The design and construction of a house has significant effects on human health. By altering the relation between humans and insect vectors housing directly affects plague, typhus and malaria. Through sanitation it affects water-borne diseases. It also indirectly alters the spread of air-borne diseases. The effects are usually invisible to human beings. Yet they are open to control in even the simplest societies. Like water, food and clothing 'the comfort of habitation' is a factor 'of great importance for health that can be controlled, so to speak, outside of man.'¹ Just to take the matter of glass for windows, 'The window allowed sunlight to kill a lot of germs, including tubercles.'² As Cohen reminds us, 'sunlight is one of the best disinfectants known.'³ Or again, the amount of dust will alter the disease patterns. 'Schutze took samples of the dust from all manner of places in a house and its furniture, and found that there was a great decrease in bacteria after a floor or a piece of furniture had been polished.'⁴

(APPENDIX. Some effects of housing on health. a-house)

From these brief accounts we can see a few of the ways in which health is affected by housing. What was needed were well ventilated, dry, dust-free, sunlight-penetrated houses. Every aspect of the house is important; the bedding, the floor coverings, the furniture, whether there are cellars or attics, the gaps under the floorboards, the size of doors and windows. Each will affect the balance between the people who live in the house and the many types of micro-organisms, insects and rodents that co-habit with man. An obvious example is the prevailing customs concerning the keeping of pets or domesticated animals within the house or close by.

Housing in England.

The ancestors of the English had been settled hut dwellers and not nomadic tent dwellers. The geology provided a stable and earthquake free environment, with plenty of stone, clay and good timber. The population densities were relatively light for most of the period. The climate was cool and not humid. The land law saw the house and the ground upon which it was built as a distinct 'property'. The

¹ Dubos, *Adapting*, p.366

² Nikiforuk, *Fourth*, p.141

³Cohen, *Health*, p.40.

⁴ Lane-Claypon, *Hygiene*, p.71

people were in many ways unusually affluent. All of this encouraged an entirely different solution to the problem of the housing of the people from that we shall encounter in Japan. People in the West tend to think of this as 'natural', but it is as unusual as that of the Japanese. This solution is the permanent, solid, well-built house with deep foundations. It is often several storeys high, might stand for many hundreds of years and is stuffed with furniture and furnishings of many generations. This type of house found its most extreme form in England.

The substantial houses of those living in late medieval England are still to be seen in many English towns, for instance the Suffolk and Norfolk or Cotswold woollen towns. They have well built frames of timber, with good walls and floors, sometimes with cellars, as one sees in Lavenham, Norwich, Long Melford or elsewhere. Their substantial nature and comfort, which has made them last until the present, teaches us to beware of laying too much emphasis on later housing revolutions. Christopher Dyer has recently provided an excellent survey of 'English Peasant Building in the Later Middle Ages (1200-1500).⁵ He shows a number of important things. After the mid-fourteenth century 'People and animals were usually accommodated in separate buildings.'⁶ In the West Midlands the 'peasant's' houses were substantial buildings, with stone foundations, walls infilled with wattle and daub, thatched roofs. The agricultural buildings were equally substantial.⁷ The buildings 'were put up by specialist carpenters, often using a high degree of skill', the timber being bought on the market.⁸ Many of these buildings still stand. 'Dozens of well-carpentered houses, of two, three or four bays, based on cruck?? principals and erected on low plinth walls of stone, still stand in the West Midlands.'⁹ The separation of human and animals dwellings, the large size of the house, mostly of two or three bays and hence measuring 30 to 45 feet in length, and the high quality of the materials they were made of, including, stone foundations and 'professionally built using expensive timber.'¹⁰ The situation in the period 1200-1350 is less easy to ascertain, but suggests that the separation of animal and human habitations, the characteristically large house usually from 25 to 50 feet in length, with good foundations and professionally built goes back into

⁵Everyday Life, ch.8.

⁶Everyday, p.140.

⁷Everyday Life, pp.142-3.

⁸Everyday Life, pp.144-5.

⁹Everyday Life, p.148.

¹⁰Everyday Life, p.153.

the thirteenth century.¹¹ Thus he concludes that 'peasants lived in houses, not huts.' They had much the same floor area per person as nineteenth-century urban houses, and twice as much as an Indian peasant in the 1960s and three times as much as a peasant house in late medieval Provence.¹²

A survey of what was happening is given by the Essex vicar, William Harrison, in the 1570s. He notes first the change in the structure and materials of the house. He wrote that traditionally, 'The greatest part of our building in the cities and good towns of England consisteth only of timber, for as yet few of the houses of the commorality (except here and there in the West Country towns) are made of stone...'¹³ They were well made by good carpenters; 'the ancient manors and house of our gentlemen as yet, and for the most part, of strong timber, in framing whereof our carpenters have been and are worthily preferred before those of like sciences among all other nations.'¹⁴ But new houses were now being made in a different way; 'such as be lately builded are commonly either of brick or hard stone or both, their rooms large and comely...'¹⁵ The houses of the nobility 'are likewise wrought with brick and hard stone...so magnificent and stately as the basest house of a baron doth often match in our days with some houses of princes in old time.'¹⁶ These houses were kept well separate from domesticated animals as they had probably been for some time. 'The mansion houses (dwellings) of our country towns and villages...are builded in such sort generally as that they have neither dairy, stable, nor brew house annexed unto them (as in many places beyond the sea and some of the north parts of our country) but all separate from the first and one of them from another.'¹⁷

As the building materials became more solid, a combination of wood and brick or stone rather than wood and plaster, walls became load-bearing and hence the houses could be taller and have larger, better ventilated and better lit rooms. But the ventilation and lighting depended very much on two other developments. Harrison wrote that 'There are old men yet dwelling in the village where I remain which

¹¹Everyday Life, pp.154-7.

¹²Everyday Life, p.164.

¹³ Harrison, Description, p.195

¹⁴ Description, p.199

¹⁵ ibid

¹⁶ ibid

¹⁷ Harrison, Description, p.197

have noted three things to be marvelously altered in England within their sound remembrance...¹⁸ One of these was 'the multitude of chimneys lately erected, whereas in their young days there were not above two or three, if so many, in most uplandish towns of the realm (the religious houses and manor places of their lords always excepted, and per adventure some great personages), but each one made his fire against a reredos (back of an open hearth) in the hall, where he dined and dressed his meat.'¹⁹ By ridding the rooms of smoke, it is much easier to keep them clean and healthy. Chimneys also suck out stale air from rooms very effectively with the up draught and are hence an excellent form of primitive ventilation.

As important as good ventilation was good lighting, both for the way it would show up dirt and for the beneficial effect of sunlight. The two major problem in medieval English domestic architecture were that the plaster walls would not hold a large window frame easily - brick and stone overcame this objection. The second was how to let light in, but keep cold and draughts out. The previous solutions, translucent animal bone or wicker frameworks were only of limited value - letting in little light, or too much cold. The solution to this problem only emerged in the early sixteenth century with the mass production of glass for window panes. This revolutionary development is again described by Harrison.

Harrison had heard that the Saxons had glass and that the monks 'did make panels of horn instead of glass and fix them in wooden calms (frames).' Country houses 'instead of glass did use much lattice, and that made either of fine rifts (strips) of bark in checkerwise.' Yet both these methods were becoming obsolete with widespread production of cheap flat glass. He noted 'as horn in windows is now quite laid down in every place, so our lattices are also grown into less use, because glass is come to be so plentiful and within a very little so good cheap, if not better than the other.'²⁰ Pounds summarizes the changes. In the later Middle Ages 'Elite domestic buildings, in particular great halls, began to be fenestrated and glazed like churches, but below the elite threshold one cannot look for glazed windows much before the end of the Middle Ages or even the later sixteenth century.'²¹

The dramatic change came in the second half of the sixteenth century and first half of the seventeenth, again related to the use of coal. In the early sixteenth century 'French and Italian methods of manufacture were adopted, and near the beginning of the seventeenth century coal began to be used in glass furnaces. This was of great importance, because the industry had hitherto been inhibited by a

¹⁸ Harrison, *Description*, p.200

¹⁹ Harrison, *Description*, p.201

²⁰ Harrison, *Description*, p.197

²¹Pounds, *Culture*, 118

shortage of fuel.²² It is worth noting that there may then have been a reversal in the eighteenth century. Thus looked at from the perspective of the nineteenth century, Burnett finds that glass had become 'an expensive luxury, owing partly to the high costs of production and partly to the excise duty of glass and the tax on windows. The excise duty which, claimed a critic, raised the price of glass to three times its untaxed cost, was repealed in 1845. The tax on windows was halved in 1823, the tax-free number was raised from six to seven in 1824, and the tax finally abolished in 1851.²³ Combined with revolutionary new and much cheaper methods of making flat glass in the 1830s, this led to a second 'window glass' revolution.²⁴ It is difficult to estimate the effects of changes in glass use on health and hygiene, but they have probably been considerable. As Mumford points out, it is difficult to imagine the spick and span Dutch interiors without the prevalence of glass. He suggests that 'both by what it is and by what it does, glass is favourable to hygiene: the clean window, the scoured floor...'²⁵

The structural changes to the house were paralleled by new developments which would alter the interior in significant ways. One of these was in the furniture and clothing used in bedding. Harrison provides an account of what his congregation thought was the second major revolution in the standards of living. This was 'the great (although not general) amendment of lodging? I will deal with the improvements in bedding under 'clothing' in chapter 19 below. Harrison writes of the improvements in the standard of cutlery and general utensils. 'The exchange of vessel, as of treen (wooden) platters into pewter, and wooden spoons into silver or tin. For so common were all sorts of treen stuff in old time that a man should hardly find four pieces of pewter (of which one was per adventure a salt) in a good farmer's house...'²⁶ Now, however, farmers had enough money to have 'a fair garnish of pewter on his cupboard, with so much more in odd vessel going about the house, three or four feather beds, so many coverlets and carpets of tapestry, a silver salt, a bowl for wine (if not an whole nest) and a dozen of spoons to furnished up the suit (set).'²⁷

The spreading affluence was further described by Harrison. He thought that 'the furniture of our houses

²²Pounds, Culture, 119

²³Burnett, Housing (xerox), 28

²⁴Burnett, Housing, 28

²⁵ Mumford, Technics, p.128

²⁶ Harrison, Description, p.201

²⁷ Harrison, Description, p.202

also exceedeth and is grown in manner even to passing delicacy; and herein I do not speak of the nobility and gentry only but likewise of the lowest sort in most places of our South Country that have anything at all to take to.²⁸ He described how 'in nobleman's houses it is not rare to see abundance of arras, rich hangings of tapestry, silver vessel, and so much other plate as may furnish sundry cupboards, to the sum oftentimes of £1,000 or £2,000 at the least, whereby the value of this and the rest of their stuff doth grow to be almost inestimable. Likewise in the houses of knights, gentlemen, merchantmen, and some other wealthy citizens, it is not geason (uncommon) to behold generally their great provision of tapestry, Turkey work, pewter, brass, fine linen, and thereto costly cupboards of plate, worth £500 or £600 or £1,000, to be deemed by estimation.' Such people 'far exceed their elders and predecessors, and in neatness and curiosity the merchant all other...' (REF) Furthermore this wealth was spreading to almost all. Previously such costly furniture stayed in the middling and upper ranks he believed, but 'now it is descended yet lower, even unto the inferior artifices and many farmers, who...have for the most part learned also to garnish their cupboards with plate, their joint beds with tapestry and silk hangings, and their tables with carpets and fine napery...'²⁹

If we discount some of this as exaggerated, there still remains evidence of a real improvement in housing, both in the structure and the contents of the house. All this, probably had a very substantial effect on general health. In a famous letter, Erasmus had ascribed the prevalence of the plague in England to the dirty rush matting.³⁰ Only a generation later in 1560 early in the transformation which Harrison is describing, a Dutch physician, Levinus Lemnius visited England. His testament, that of a doctor from the cleanest country in Europe, is particularly significant. He wrote that 'the neate cleanlines, the exquisite finenesse, the pleasaunte and delightfull furniture in every poynt for household, wonderfully rejoysed mee; their chambers and parlours strawed over with sweete herbes refreshed mee; their nosegayes finely enter-mingled wyth sundry sortes of fragraunte floures in their bedchambers and privy roomes, with comfortable smell cheered mee and entirely delyghted all my senses.' He added that 'And this do I thinck to be the cause that Englishmen, lyving by such holesome and exquisite meate, and in so holesome and healthfull ayre be so freshe and cleane coloured.'³¹

The improvements of the Elizabethan period were consolidated through the seventeenth century. This is part of the change which has been termed the 'great rebuilding' by Hoskins (see XXX) Although later

²⁸ Harrison, Description, p.200

²⁹ Harrison, Description, p.200

³⁰ te, e.g. Furnivall, English Meals, lxvi, xxx; for Erasmus' letter and views on what should be done, see Razzell, Essays (xerox), 224

³¹ Rye, Foreigner, p.78-9

historians have pointed out that the rebuilding was more regionally diverse and spread out than Hoskins argued, his general characterization of a major improvement has not been overthrown.³² An excellent account of the house and furniture of the middling yeoman class, for instance, suggests that 'After the Civil War there was a notable increase in the scale of living among the well-to-do yeoman.'³³ The surviving solid stone farm houses of the northern counties mainly date from between 1660 and 1720, suggesting a new wave of prosperity and enlargement of houses in the upland areas. In the cities, the rebuilding of London after the great Fire of 1666, and the building of new elegant terraces in Bath and elsewhere in the early eighteenth century are further evidence of a sustained improvement in a country where per capita wealth was increasing year by year and yesterday's luxuries became today's necessities.

One improvement of the first half of the eighteenth century has been particularly stressed by Razzell. He has replaced his theory that smallpox vaccination caused the mortality fall by one which lays primary emphasis on environmental change, and particularly housing, suggesting that 'We can provisionally explore one hypothesis that fits all the known evidence; that the main fall in mortality during the early eighteenth century occurred because of the marked improvement in domestic hygiene associated with the rebuilding of English housing at that time.'³⁴ He provides evidence to show that the earthen and rush floors which had predominated until the late seventeenth century began to give way to wooden and stone floors, at least among the middle classes.³⁵

By the middle of the eighteenth century, the standard of English housing, furnishing and cleanliness impressed many. Native observers noticed the high level. Josiah Tucker, Dean of Gloucester, wrote in the later eighteenth century that 'The English, have better conveniences in their houses, and affect to have more in quantity of clean, neat furniture and a greater variety such as carpets, screens, window curtains, chamber bells, polished brass locks, fenders, etc. - things hardly known abroad among persons of such a rank - than are to be found in any other country in Europe, Holland excepted.'³⁶ Reference to Holland, reminds us that the Dutch were noted as the most cleanly and fastidious people in Europe in the seventeenth century. 'The steps in front of the house, the path leading to the house, if any, and the front hall were all to be washed every weekday early in the morning. On Wednesdays, the

³²Shammas, *Consumer* (xerox), pp.159, 163.

³³ Campbell, *English Yeoman*, p.240

³⁴Razzell, *Essays* (xerox), 203

³⁵Razzell, *Essays* (xerox), 203-4, 225-6

³⁶ Tucker, *Eighteenth*, p.318

entire house was to be gone over. Monday and Tuesday afternoons were devoted to dusting and polishing reception rooms and bedrooms. Thursday were scrubbing and scouring days, and Fridays were assigned to the unenviable job of cleaning the kitchen and cellar.³⁷

Yet by the early eighteenth century, the English treatment of the home, at least at the comparable levels, was almost as impressive. This was described by De Saussure in the 1720s. He noted in general that 'I must own that Englishmen build their houses with taste, it is not possible to make a better use of ground, or to have more comfortable houses.'³⁸ He praised the cleanliness of the tableware. 'An Englishman's table is remarkably clean, the linen is very white, the plate shines brightly, and knives and forks are changed surprisingly often, that is to say, every time a plate is removed.'³⁹ This was not confined to town people or the very wealthy. 'I have visited several farmers' homes in the country; their houses are clean and well furnished with all necessaries, and most of them possess silver spoons and mugs.'⁴⁰

Finally, he makes an interesting contrast between the English and the Dutch. 'The amount of water English people employ is inconceivable, especially for the cleansing of their houses. Though they are not slaves to cleanliness, like the Dutch, still they are very remarkable for this virtue. Not a week passes by but well-kept houses are washed twice in the seven days, and that from top to bottom; and even every morning most kitchens, staircase, and entrance are scrubbed. All furniture, and especially all kitchen utensils, are kept with the greatest cleanliness. Even the large hammers and the locks on the door are rubbed and shine brightly.'⁴¹

In 1784 the Frenchman la Rochefoucauld visited England. He made many illuminating comments on the state of English housing. He described the general structure and cleanliness. '...You find yourself first in an entrance hall which is always very clean and more like a room than one of our own vestibules which are always dirty; then you come to the dining-room, which is always large.'⁴² After that '...above

³⁷ Schama, *Embarrassment*, p.376

³⁸ De Saussure, *Foreign*, p.68

³⁹ De Saussure, *Foreign*, p.222

⁴⁰ De Saussure, *Foreign*, p.219-20

⁴¹ De Saussure, *Foreign*, p.157

⁴² Rochefoucauld, *Frenchman*, p.41.

the dining-room is the drawing-room, which is always of the same shape and is reached by a spotlessly clean staircase; the hand-rails are of mahogany in beautiful condition; the stairs, like the floors, are made of boards of fir or pine-wood, fitted together as exactly as mosaic work.⁴³ The houses were constantly being cleaned. 'People take the greatest possible pains to maintain the standard of cleanliness: you come upon mats and carpets everywhere; there is always a strip of drugget on the stairs, and not a speck of dust anywhere.'⁴⁴ Houses were washed through weekly. 'The cleanliness which pervades everything is a perpetual source of satisfaction. Houses are constantly washed inside and out, generally on Saturdays.'⁴⁵ This was done both inside and outside the house. 'Everyday Saturday, for instance, it is customary to wash the whole house from attic to basement, outside and in.'⁴⁶ He did, however, find fault in the kitchens of middle class houses: 'the worse thing that could befall you would be to go into the kitchen before dinner - the dirt is indescribable.'⁴⁷ This is a curious remark in the light of Karamzin's remarks only six years later in 1790. 'I wanted to see an English kitchen. How clean! The floor is spotless: the pans, dishes, cups - all white and shining, all in admirable order. In a huge fireplace the coal burns brightly, attracting one's gaze by its red glow. The landlady smiled very pleasantly when I said to her. "You know a French kitchen often takes away one's appetite but your kitchen produces it".'⁴⁸ Elsewhere, when he visited a country mansion, Rochefoucauld 'even went to see the kitchen which is very fine. Cleanliness reigns there and there is running water on every side.'⁴⁹

Rochefoucauld's remarks were mainly in relation to the town houses of the upper middle classes. I admired the way in which in all these little villages the houses are clean and have an appearance of cosiness in which ours in France are lacking.⁵⁰ Concluding that 'In a word there is always a marked

⁴³Rochefoucauld, Frenchman, p.41.

⁴⁴Rochefoucauld, Frenchman, p.43.

⁴⁵Rochefoucauld, Frenchman, p.42.

⁴⁶Rochefoucauld, Frenchman, p.25.

⁴⁷Rochefoucauld, Frenchman, p.43.

⁴⁸quoted in Wilson (ed.), Strange Island, pp.129-30.

⁴⁹Rochefoucauld, Frenchman, p.187.

⁵⁰Rochefoucauld, Frenchman, p.213.

superiority in the houses of the common people of England over those of the poor peasants of France, which it often pained me to observe.⁵¹ He noted of their equivalents in the countryside, the wealthy farmers, that "Their houses are always clean and well kept; their barns are in excellent condition and they are always careful to keep one small sitting-room spotlessly clean and sometimes quite elegant."⁵²

That this concern with cleanliness was not a new feature is shown by Keith Thomas. He points out that in the seventeenth century 'Books on household management emphasised that it was the woman's duty to "keep all at home neat and cleane", and that "cleanness in houses, especially in beds", was "a great preserver of health". Cleanliness is "such an ornament to a housewife", thought Gervase Markham, "that if hee want any part thereof, shee loseth both that all good names else".⁵³ Nor was this just a theory, "Most people", observed Thomas Tryon in 1682, "take care that their furnitures are daily brushed and rubbed, and their very floors washed, as though they were to eat their food on them".⁵⁴ Thomas concludes that "The amount of energy, particularly female energy, which in the early modern period went into scrubbing floors, boiling clothes, scouring pots and pans and polishing furniture is incalculable."⁵⁵

The situation, already good, improved in certain areas and certain respects for much of the eighteenth century. For instance, we are told that in the artisan classes "The floors were laid with finest clean deals, or Dutch oak boards; the rooms were all wainscotted and painted in a costly and handsome manner; marble slabs, and even chimney pieces became common..."⁵⁶ Furthermore "For artisans, stone or brick houses increasingly replaced cob, lathe and plaster dwellings (very heaven for vermin). In the 1780s Gilbert White noted that all the villagers in Selborne now had brick and stone cottages. Georgian terraces have lasted well, whereas little built previously in vernacular materials has survived."⁵⁷ The situation is complicated by counter pressures. For example, the effects of the window tax of the

⁵¹Rochefoucauld, *Frenchman*, p.158.

⁵²Rochefoucauld, *Frenchman*, p.203.

⁵³Thomas, *Cleanliness*, 73

⁵⁴Thomas, *Cleanliness*, 73

⁵⁵Thomas, *Cleanliness*, 73

⁵⁶Porter, *Eighteenth*, p.220

⁵⁷Porter, *Eighteenth*, p.220

eighteenth century was, in effect, to put a tax upon light and air as Howard and others pointed out,⁵⁸ and, as Blane noted 'Wind is the great ventilator of nature.'⁵⁹ But Blane noticed another countervailing tendency, namely the effects of coal burning. He thought it 'almost needless to mention, how much an ample supply of fuel is conducive to health, not merely for warmth and for culinary purposes, but as promoting ventilation, which is done not only by the change of air necessarily induced by the current of air up the chimney, but by enabling the poor to admit fresh air in cold weather. It is the winter season, from want of fuel, that typhous infection is most apt to arise, and also to spread.'

It may well be that these improvements are one of the reasons for the curious fact that as cities expanded, the health of the populace improved. This was certainly the view of certain eighteenth century writers. Short believed that in London 'many late stately Edifices, large clean Courts, lofty Rooms, large sash Lights etc.' were among the things which 'contribute, not a little to make the city more healthy now than in Grant's Time.'⁶⁰ Likewise at the end of the century Malthus believed that the 'better modes of clearing and building towns' and the fact that people were 'better' and their habits with respect to cleanliness 'decidedly improved', were among the factors leading to the notable decline in mortality.⁶¹

There has, of course, been a huge debate as to the state of the poor during this period of rapid industrial and urban growth. The horrors of the living conditions in many of the cities and rural slums by the middle of the nineteenth century is a powerful reminder that new inventions did not solve all the problems and that it would be dangerous to assume an ever-upward movement. It could well be argued that the living conditions of the labouring poor in Victorian Britain were worse than those which had ever existed in England.⁶² Indeed, some of the new materials which we tend to think of as improvements may have worsened conditions. Chadwick argued that, 'Wood and wattled houses, such as our forefathers built, are the driest and warmest of all; brick is inferior in both these requisites of a comfortable house; but stone, especially the unhewn stone as it is necessarily employed for cottages, is the very worst material possible for the purpose. I prefer the Irish mud cottages.'⁶³ Chadwick quoted evidence to show

⁵⁸Creighton, *Epidemics*, pp.87-8.

⁵⁹Blane, *Dissertations*, p.131.

⁶⁰ Short, *Increase*, p.20

⁶¹Malthus, *Population*, 1, p.315, 268

⁶²For one account of the horrors lurking behind the ivy and rose-covered exteriors of English rural cottages, see Arch (From Ploughtail, p.44).

⁶³ Chadwick, *Report*, p.329

that wooden cottages were cleaner and healthier than brick, and brick than stone.⁶⁴

This should make us cautious about the claims made for the effects of the growing use of brick instead of wood and plaster from the middle of the seventeenth century as made for example by Razzell.⁶⁵ Certainly there was a growth in brick-making, again related to other changes, for instance the increasing use of coal. Thus Burnett tells us 'English brick-making, which had died with the Romans, was probably reintroduced in the fifteenth century, but only developed importantly from the seventeenth century onwards, when the gradual supersession of frame building by load-bearing brickwork was made possible by the use of coal instead of timber for the firing of bricks.'⁶⁶ Another change which made brick more available in the eighteenth century was growing water transport. 'The widespread use of brick also depended on the availability of cheap bulk transport, both for the movement of coal and for the distribution of the finished product, and it was the development of water navigation in the eighteenth century and of railways in the nineteenth which fulfilled these needs.'⁶⁷ And this may, indeed, have helped lower the likelihood of certain diseases. The famous example, of course, is plague. Slack points out that 'houses built of brick separated rats from men, and in the end, in the eighteenth century, removed favourable ecological conditions for the black rat and encouraged the growth of the brown rat populations. As early as 1652 the London bricklayers themselves pointed out that the substitution of brick for timber would reduce the risk of plague.'⁶⁸ Yet it was only one among many factors and, as we have seen, brick houses may in other ways have been worse for health than their predecessors. It all depends on other factors, such as the quality of building and the degree of crowding.

There are strong grounds for arguing that there were deteriorating standards from the early nineteenth century due to crowding. 'Mr. Blick, the medical officer of the Bicester union, states that: "The residences of the poor in that part of the district are most wretched, the majority consisting of only one room below and one above, in which a family of eight or ten (upon an average, I should say five), live and sleep. In one of these rooms I have witnessed a father, mother, three grown-up sons, a daughter, and a child, lying at the same with typhus fever: but few of the adjacent residents escaped the

⁶⁴ Chadwick, Report, p.328-29

⁶⁵Razzell, Essays (xerox), 205-6

⁶⁶Burnett, Housing (xerox), 27

⁶⁷Burnett, Housing (xerox), 27

⁶⁸Slack, Plague, 322

infection.⁶⁹ The extremes were in the lodging houses, dormitories for the factories and mines. I went to work in Greenside four years. Our lodging-rooms were such as not to be fit for a swine to live in. In one house there was 16 bedsteads in the room up stairs, and 50 occupied these beds at the same time. We could not always get all in together, but we got in when we could. Often three at a time in the bed, and one at the foot. I have several times had to get out of bed, and sit up all night to make room for my little brothers, who were there as washers.⁷⁰ It would not be difficult to add many literary, accounts to this in order to show the shocking condition of the poor in the great cities.⁷¹

We are a long way from that merry England which Harrison saw coming into existence.

Housing in Japan.

Four features of Japanese ecology and society had a strong effect on Japanese housing. The first was the instability of the terrain; frequent serious earthquakes made certain kinds of buildings impossible. Secondly, the climate was mostly hot and very humid, which encouraged attention to ventilation. Thirdly, the building materials in Japan were of a certain kind - thatch, wood, bamboo, but not the quarried stone or clay-made bricks of Europe. Finally there are a set of social and historical features which we can broadly lump under the term culture - concepts of how space should be laid out, the meaning of the family, ideas of privacy and decency, gender and age relations, the attitude to nature and the garden, views on dirt and cleanliness, and the opposition of inside and outside. When we put all of these together with the geographical and other constraints we come up with something which in many respects fails to fit with the West European model of what a 'house' is.

The houses of the ordinary people at the end of the seventeenth century struck Kaempfer as very small and simple. The house of the common people are very mean sorry buildings, small, low, seldom above one story high. If there be two stories, the uppermost is so low, that it scarce deserves that name.⁷² The houses 'consist of four low walls, cover'd with a thatch'd or shingled roof.'⁷³ Although there were much more substantial houses, both then and later, the bulk of the population lived until the end of the nineteenth century in extremely small and simple houses, which Europeans regarded as shacks or

⁶⁹ Chadwick, Report, p.191

⁷⁰ Chadwick, Report, p.179

⁷¹For example, Taine, Notes, 225-26. The appalling conditions of the cellar population are described further in Burnett, Housing (xerox), 58-60

⁷² Kaempfer, History, 2, p.88

⁷³ *ibid*, 309

shanties. Morse wrote in the nineteenth century that 'It is true that you pass, now and then, large comfortable houses with their broad thatched roofs, showing evidences of wealth and abundance in the numerous **kura** and outbuildings surrounding them; but where you find one of these you pass hundreds which are barely more than shelters for their inmates...'⁷⁴ He described how '... the poor farm-labourer and fisherman, as well as their prototypes in the city, possess houses that are little better than shanties, built, as a friend forcibly express it, of "chips, paper and straw".'⁷⁵ Within them the rooms were tiny: '...the rooms being scarcely higher than steamship cabins, and so narrow that an ordinary mosquito-net could not be suspended in them.'⁷⁶

Yet even these tiny and most simple of dwellings, Morse thought, were a great deal more comfortable and spacious than the accommodation of the working classes he had left behind in Europe and America. 'But even these huts, clustered together as they oftentimes are in the larger cities, are palatial in contrast to the shattered and filthy condition of a like class of tenements in any of the cities of Christian countries.'⁷⁷ His realization that size and quality of life were not correlated arose from his detailed observation of what went on inside the houses. 'Many of the dwellings are often diminutive in size; and as one looks in at a tiny cottage containing two or three rooms at the most, the entire house hardly bigger than a good-sized room at home, and observes a family of three or four persons living quietly and in a cleanly manner in this limited space, he learns that in Japan, at least, poverty and constricted quarters are not always correlated with coarse manners, filth and crime.'⁷⁸ It is a view that is shared by a contemporary Western expert on Japanese material culture, who also points out the savings that could be made by adopting such small homes. 'Housing costs seem to have been low, but I would argue that the Japanese were able to obtain adequate, healthful housing, even paying as little as 10 percent of their incomes for rent.'⁷⁹

The size and simplicity was partly a result of the small income. Another cause was the compound of cultural and geological features which led the Japanese to regard their houses in a very different way to

⁷⁴ Morse, Homes, p.49-50

⁷⁵ Morse, Homes, p.49

⁷⁶ Hearn, Glimpses, p.343

⁷⁷ Morse, Homes, p.49

⁷⁸ Morse, Homes, p.50

⁷⁹ Hanley, Living (xerox), p.188

people in the West. The geological background of constant earthquakes and its effect on housing was described by Alcock. 'They have no architecture. They live on a volcanic soil, the surface of which is affected with a tertian ague, thus denying the first conditions of the builder, a stable foundation, and imposing a law of construction fatal to all architectural pretensions or excellence.'⁸⁰ Singer captures the essence of the floating Japanese house on its turbulent foundations thus. 'Chinese dwellings are cut into the soil, moulded from it, or joined to it in such a way that they appear to be parts of the earth's crust.'⁸¹ On the other hand 'Japanese houses attach themselves only lightly to the soil; they survive earthquakes and hurricanes by not relying too much on their slender foundations; their virtue is in their swinging elasticity.'⁸² They have to be flexible, for 'Relentlessly this archipelago is rocked by seismic shocks, invaded by storms, showered and pelted with rain, encircled by clouds and mists.'⁸³ They are built almost to float on the landscape like boats; 'they are built like a ship, or a big piece of furniture, held together internally by inter-locking beans, and only the most exceptional shock is capable of wrecking them.'⁸⁴

Yet it was more than this need to resist shocks, for there seemed to be something deeply rooted, perhaps in a nomadic tented past, which made the Japanese shape and regard their houses as a wood, bamboo and thatch materialization of their ancestors' skin tents. This was noted by Alcock. He described how '...in architecture, a tent-like house, sometimes one superimposed upon the other in two or three stories, with grotesque curves and twisted borders to the roofs, is the extent of their architectural achievements.'⁸⁵ A similar point is made by Hearn. 'I cannot now remember where I first met with the observation that the curve of the Chinese roof might preserve the memory of the nomad tent.'⁸⁶ Hearn took this beyond the shapes to the whole nature of the Japanese house, arguing that 'there is much in Japan besides primitive architectural traditions to indicate a nomadic ancestry for the race.

⁸⁰ Alcock, *Tycoon*, 2, p.279

⁸¹Singer, *Sword and Jewel*, 146

⁸²Singer, *Sword and Jewel*, 147

⁸³Singer, *Sword and Jewel*, 147

⁸⁴Maraini, *Meeting*, 75

⁸⁵ Alcock, *Tycoon*, 1, p.224

⁸⁶ Hearn, *Kokoro*, p.20

Always and everywhere there is a total absence of what we would call solidity.'⁸⁷ He captured the essence of the difference between the Japanese and Western attitudes in the following aphorism. 'Generally speaking, we construct for endurance, the Japanese for impermanency. Few things for common use are made in Japan with a view to durability.'⁸⁸ And in more poetic style he described the feel of a Japanese city thus. 'A Japanese city is still, as it was ten centuries ago, little more than a wilderness of wooden sheds - picturesque, indeed, as paper lanterns are, but scarcely less frail.'⁸⁹ Or again, 'I said in a former essay that a Japanese city is little more than a wilderness of wooden sheds, and Osaka is no exception.'⁹⁰ Later, another visitor was to describe how 'the overall impression created by a Japanese town is a settlement of huts, a fair-ground, a temporary encampment.'⁹¹

It was this simplicity, where the house became an impermanent paper lantern, that attracted architects and intellectuals to Japanese housing in the nineteenth and twentieth centuries. Frank Lloyd Wright wrote, 'At last I had found one country on earth where simplicity, as natural, is supreme.'⁹² Enright observed that 'The Japanese have never, traditionally, thought of the house as a machine for living - they have thought of it as a work of art.'⁹³ In fact, the secret of Japanese housing, as of most things made in Japan, is that the distinction assumed by Enright is not made. Houses were **both** works of art **and** machines for living in.

Another feature which struck many observers was the peculiarly low level of the houses. Like tents, they tended to be on one floor, or, at the most two, with few attics and no cellars. In terms of height, a combination of the geology and various prohibitions against tall buildings, which may have been related to the danger of fire, were combined with possibly religious or cultural reasons. This meant that 'Few buildings were more than one and a half or two stories high.'⁹⁴ This would have several effects on

⁸⁷ Hearn, *Kokoro*, p.20

⁸⁸ Hearn, *Kokoro*, p.18

⁸⁹ Hearn, *Kokoro*, p.14

⁹⁰ Hearn, *Gleanings*, p.172

⁹¹Maraini, *Meeting*, 119

⁹² Quoted in Yapp, *Travelers*, p.662

⁹³ Enright, *Dew*, p.148

⁹⁴ Hanley, *Cambs.*, p.665

health, especially when it is combined with the widespread Japanese practice of building separate, fire-resistant, 'go-downs' for the storage of grain or goods, when the family was prosperous enough. These were described by most travellers to Japan, for instance Thunberg in the eighteenth century and Oliphant in the nineteenth.⁹⁵ The absence of multiple stories and attics makes a house much easier to clean and keep free of insects and particularly rodents.

Even more important is what lies beneath the main living area. Much of the ill health in Europe arose from the cellars - whether these were used for cess-pits, for storage, or for insanitary housing for the servants and other poor. Cut off from light and air, a haven for rats and mice, they were ideal breeding grounds for disease. A peculiarity of Japanese law means that even up to the present there is a firm legal division between the surface of the earth and the ground underneath. Until very recently, it was the case that the land was owned by one person and often the house was 'pitched' like a tent on it - to be moved elsewhere, pulled down and re-built or whatever. The householder paid to lease the land, but very often did not own it. (give ref.xxx). One of the many consequences of this was that the idea of burrowing into the earth and creating a much more permanent structure with cellars, foundations etc. was out of the question. This was re-inforced by the fact that foundations would not be strong enough to withstand the earth-quakes and the cellars would cave in, crushing the inhabitants.

As a result a pattern was developed whereby the house was raised above the ground, on stilts as it were. Hanley believes that 'by the sixteenth century and seventeenth centuries, raised flooring was the standard for the well-to-do and the samurai, whereas the common folk and poor had houses with earthen floors.'⁹⁶ It may, in fact, have been a custom which dates earlier than that. Frederic, describing life in medieval Japan, writes that 'The floor was raised, sometimes by more than a metre, to provide a hygienic space between it and the ground as a protection against humidity during the rainy seasons. Up to the fifteenth century, the floors of houses were made of polished wooden boards just placed edge to edge so that they could be taken up easily to clean the ground under the house.'⁹⁷ Whatever the reasons, the houses increasingly had air blowing beneath the floor of the living area. The contrast with Europe and America was described by Morse. 'In others the wind has free play beneath; and while this exposed condition renders the house much colder and more uncomfortable in winter, the inmates are never troubled by the noisome air of the cellar, which, as we have said, too often infects our houses at home.'⁹⁸

⁹⁵Thunberg, *Travels*, iii, 281; Elgin, *Mission*, 133-4

⁹⁶ Hanley, *Cambs*, His.iv, p.666

⁹⁷ Frederic, *Daily Life*, p.105

⁹⁸ Morse, *Homes*, p.16

The way in which the 'paper lantern' was constructed had another effect which would have deeply impressed Buchan, Chadwick and others who saw good ventilation as essential to healthy living. As Hanley puts it, 'Posts hold up a traditional Japanese house, so that walls are not structurally necessary.'⁹⁹ The fact that the house was usually only one, or sometimes two, stories high, meant that this was possible. The construction, which meant for example that the house could bend with the earth's reverberations when the posts were made to fit like a human bone into a rounded cavity in a stone sunk in the ground. This technique is described as follows (XXX). For more substantial buildings such as temples, another ingenious device was developed and is described thus. 'This tongue, made of heavy beams bolted together in a mass is equal to about half the weight of the whole structure. It descends nearly to the base of the pagoda, and at the shock of an earthquake the large pendulum slowly swings, the structure sways, and settles back safely to its base.'¹⁰⁰ This opened up the potential for treating the walls as movable.

The walls were like flaps of a tent that could be lifted up leaving just the posts and roof. This was made particularly desirable by the climate; as Hanley writes, 'the Japanese climate is humid nearly year round' so 'good ventilation is essential to both comfort and health.'¹⁰¹ The possibilities are well described by Hearn. 'In a Japanese house, during the hot season, everything is thrown open to the breeze. All the **shoji** or sliding paper-screens, which serve for windows; and all the opaque paper-screen (**fusuma**) used in other seasons to separate apartments, are removed. There is nothing left between floor and roof save the frame or skeleton of the building.'¹⁰² Or as Morse noticed as he travelled through the country, 'The farmhouses bordering the road are so open that you notice the polished floors from the light that comes from behind...With the open character of the house one cannot help realizing the fresh air available all the time.'¹⁰³ Oliphant described how the 'Light wooden screens, neatly papered, and running on slides, are for the most part pushed back in the daytime, and the passer looks through the house, to where the waving shrubs of a cool-looking back-garden invite him to extend his investigations.'¹⁰⁴ As Singer writes, 'Japanese walls and windows are in fact mere screens.'¹⁰⁵ This made

⁹⁹ Hanley, *Cambs, Hist.iv*, p.666

¹⁰⁰ Scidmore, *Jinrikisha*, p.339.

¹⁰¹ Hanley, *Cambs Hist.iv*, p.668

¹⁰² Hearn, *Glimpses*, p.225

¹⁰³ Morse, *i*, p.50

¹⁰⁴ Elgin, *Mission*, 18

the use of flat glass for windows unnecessary and may help to explain the remarks of visitors. A sixteenth-century traveller, quoted by Purchas, had noted that 'Glass-windowes they have none, but great windowes of board, opening in leaves, well set out with painting, as in Holland.'¹⁰⁶ In the eighteenth century, Thunberg noted that 'There are no glass windows here; nor have I observed mother-of-pearl of Moscovy talk used for this purpose.'¹⁰⁷ He elaborates on the background to this. 'They are likewise acquainted with the art of making **Glass** and can manufacture it for any purpose, both coloured and uncoloured. But window-glass which is flat, they could not fabricate formerly. This art they have lately learned from the Europeans...'¹⁰⁸ The open nature of the house also explains the importance of screens. 'Screens of all sorts are more important in summer life than clothing, and, of necessity, are greatly relied on in the absence of garments. Screens with tiny windows in them shelter the undressed citizen and give him glimpses of the road, and screens with a variety of shelves and hooks bring a whole kitchen to the side of the hibachi on a windy day.'¹⁰⁹ It also explains the open boundary between inside and outside. 'With their open-fronted houses, they are hardly in-doors even when under their own roofs. On pleasant mornings women wash and cook, men, spin, reel, and set up the threads for the loom on the open road-side.'¹¹⁰

The sliding doors or windows were described by Thunberg. 'In each room there are two or more **windows**, which reach from the ceiling to within two feet of the floor. They consist of light frames, which may be taken out, put in, and slid behind each other at pleasure, in two grooves, made for this purpose, in the beams above and below them.'¹¹¹ He gave a more detailed account of the 'windows'. 'They are divided by slender rods into panes of a parallelogramic form, sometimes to the number of forty, and pasted over on the outside with fine white paper, which is seldom or ever oiled, and admits a great deal of light, but prevents any one from seeing through it.'¹¹² Of course there were those who complained

¹⁰⁵Singer, *Sword and Jewel*, 49

¹⁰⁶Puchas, *Pilgrims*, 153.

¹⁰⁷Thunberg, *Travels*, iii, p.279.

¹⁰⁸Thunberg, *Travels*, iv, p.59.

¹⁰⁹Scidmore, *Jinrikisha*, p.280.

¹¹⁰Scidmore, *Jinrikisha*, p.195.

¹¹¹Thunberg, *Travels*, iii, 279

¹¹²Thunberg, *Travels*, iii, 279

that it was drafty. Pompe wrote that 'It is not only the clothing that fails to give sufficient cover; the houses are all, without exception, exceedingly drafty because they are walled on all sides by sliding doors made of paper that is glued on (a frame).'¹¹³ Chamberlain narrated how 'an elderly diplomat, who, during his sojourn in a Japanese hotel, spent well-nigh his whole time in the vain endeavour to keep doors shut and chinks patched up, used to exclaim to us, "mais les Japonais adorent les courants d'air".'¹¹⁴

Yet most agreed that the large amount of ventilation was of considerable benefit to health. This was first noted by Kaempfer. He wrote 'I must not forget to mention, that it is very healthful to live in these houses, and that in this particular they are far beyond ours in Europe, because of their being built all of cedar wood, or firs, whereof there is a great plenty in the country, and because of the windows being generally contrived so, that upon opening of them, and upon removing the screens, which separate the rooms, a free passage is left for the air to strike through the whole house.'¹¹⁵ Two centuries later Morse came to the same conclusion; '...but I question whether their cold rooms in winter are not more conducive to health than are our apartments with our blistering stoves, hot furnaces or steam-heaters; and as to odors arising from the closet in certain country inns, who does not recall similar offensive features in many of our country inns at home, with the addition of slovenly yards and reeking piggeries? I question, too, whether these odours are more injurious to the health than is the stifling air from a damp and noisome cellar, which not only filters through our floors, but is often served to us hot through scorching furnaces.'¹¹⁶ As Chamberlain summarized the situation, 'the physicians who have studied Japanese dwelling-houses from the point of view of hygiene, give them a clean bill of health.'¹¹⁷

The advantages of the mixture of screens and **shoji** were felt through all the hot weather, but there were difficulties at night and in the colder weather. One solution to the sleeping problem, of which Isabella Bird disapproved, was to try to keep up bodily warmth by sleeping close together and keeping out drafts. In one area 'They seal up their houses as hermetically as they can at night and herd together

¹¹³ Wittermans, Pompe (xerox), p.41

¹¹⁴ Chamberlain, Things, p.37

¹¹⁵ Kaempfer, History, 2, p.306

¹¹⁶ Morse, Homes, p.12

¹¹⁷ Chamberlain, Things, p.37

in numbers in one sleeping-room...¹¹⁸ The problem was compounded by the absence of fuel and the dangers of setting fire to the wooden houses. The general problem was described by an early visitor, Thunberg. 'Neither **chimnies** nor stoves are known throughout the whole country; although the cold is very intense, and they are obliged to make fires in their apartments from October to March. The fires are made in copper kettles of various sizes, with broad projecting edges.'¹¹⁹ The major solution seems to have been to dress appropriately and ignore the cold. King noted that '...the solution these people had reached of their fuel problem and of how to keep warm' was 'direct and the simplest possible. Dress to make fuel for warmth of body unnecessary, and burn coarse stems of crops, such as cannot be eaten, fed to animals or otherwise made useful.'¹²⁰

In contrast to the large wood or coal fires of Europe, the Japanese only had a tiny fire box, Thunberg's 'copper kettle'. This was very economical in its use of fuel and led to intense socializing as people crowded round it, whether it was on the floor or in a sunken recess where people could warm the lower half of their bodies in a special seating place. Morse describes both the use of the **hibachi** and the general imperviousness to cold. 'The artificial heat of the house is secured from a few bits of charcoal partially buried in ashes and held in a pottery, porcelain, or bronze receptacle. The people do not seem to mind the cold as we do. It is now cold enough to wear a light overcoat, and yet the people are flying about in their thin kimonos and with bare legs, as they were in hot summer.'¹²¹ Or again, 'With a heavy frost on the ground and the ditches along the streets frozen over, the little shops are still wide open, the only source of heat being the little fire box, or **hibachi**, around which they seem to cuddle a little closer to warm their hands over the few coals burning in the ashes.'¹²² As Arnold noted, the **hibachi** is of central importance in the Japanese home. 'I do not remember that anybody has ever yet, in describing Japan, done any sort of sufficient justice to the immense and important part borne by the hibachi in the domestic life of this people.'¹²³ But it was difficult to use at night in the sleeping quarters because of the risk of fumes and fire. 'The Japanese are too wise to sleep with a large hibachi in their apartments. They know well that the deadly gas, being heavy, sinks to the bottom of the room, where their futons are

¹¹⁸ Bird, *Trcks*, p.99

¹¹⁹Thunberg, *Travels*, iii, 283

¹²⁰ King, *Farmers*, p.138

¹²¹ Morse, *Day i*, p.336

¹²² Morse, *Day ii*, p.84

¹²³ Arnold, *Seas*, p.375

spread upon the mats; and they either put the fire-box outside, or are careful to see that it has 'honourable mature charcoal' burning low in it.¹²⁴

One final aspect of the lay-out and structure of the house is important. There was a strong symbolic opposition made in Japan between the outside and inside. The way this works was not apparent to Westerners and led to some misunderstanding. As Hanley explains, Japanese houses, particularly the larger ones, were divided into a 'living' area, and a 'service' area. The service area in a large house included a privy, the stables, the cooking area. Thus the 'service' area is half-way between outside and inside. It is within the 'house' yet it is part of the outside world of dirt. Hence the high standards of cleanliness applied within the living area are not attempted here. This 'service' area was often built on the earth, the floor being packed mud. The kitchen area was in particular affected by the contact with smoke and the refuse of cooking. Morse described one such kitchen area: '...being on the street too, the kitchen is convenient for the vender of fish and vegetables, and for all the kitchen traffic, which too often with us results in the strewing of our little grass-plots with the wrapping paper of the butcher's bundles and other pleasing reminiscences of the day's dinner.'¹²⁵ (Other Morse data on kitchen?xxx) Or again, generalizing from this area, one author (xxx) writes that 'a major feature of commoners' houses in the Tokugawa period was that they were dark and dirty. The **doma** was simply a packed dirt floor; the smoke from the hearth was let out of the house through a hole or holes in the roof, but much of it became soot attached to the roof beams and walls.'¹²⁶ This is a puzzling statement in the light of what we shall encounter shortly concerning the elegance and cleanliness of the houses until we realize that the kitchen is of the 'outside'. The pure area, where one has to take off one's outside shoes, which is raised off the polluting earth, which has wooden boards and tatami, is the living area. This is where cleanliness has to be maintained and where the family sleeps, eats and socializes.

Turning to particular features of the house, and starting with the floors, it may be that originally wealthier Japanese houses had boards covered with some kind of straw. The date of the introduction of an original form of floor covering, the **tatami** rush matting which Hanley thinks 'may be one feature of Japanese culture that is truly unique'¹²⁷, is not certain. One account suggests that 'Towards the end of the fifteenth century, rectangular mattresses of thick straw covered with finely woven rush (tatami) on which the master of the house used both to sit and to sleep, were made in standard sizes (one ken by half a ken).'¹²⁸ The **tatami** area of the house was the area of purity and the real heart of the home. It is

¹²⁴ Arnold, *Seas*, p.384

¹²⁵ Morse, *Homes*, p.185-86

¹²⁶ Jansen;Rozman (eds.), *Transition*, p.453

¹²⁷ Hanley, *Cambs. History*, iv, p.667

¹²⁸ Frederic, *Daily Life*, p.105

eloquently described by Hearn. 'Soft as a hair mattress and always immaculately clean, the floor is at once the couch, the dining table, and most often the writing table.'¹²⁹ The cleanliness was also affirmed by others. 'The mats are always of an immaculate cleanliness, as is also the white or yellow wood of the floor or of the wainscoting, which are frequently washed, and whose brightness no stain ever tarnishes.'¹³⁰ Oliphant accompanying Lord Elgin described 'scrupulously clean and well-wadded matting, which is stretched upon the wooden floor...' and the 'extraordinary cleanliness of the padded mat under our feet.' He was so impressed that he noted that 'All our rooms were matted in the usual way with wadded mats, so scrupulously clean that we began by walking about in our own or Japanese socks, for fear of dirtying them...'¹³¹ The well-known Japanese custom of taking off outside shoes, described by Thunberg, would have helped to keep the tatami clean. 'The Japanese never enter their houses with their shoes on; but leave them in the entry, or place them on a bench near the door, and thus are always barefooted in their houses, so as not to dirty their neat mats.'¹³² Isabella Bird, however, was less convinced, feeling that something must lurk beneath. 'The **tatami** beneath a tolerably fair exterior, swarm with insect life, and are receptacles of dust, organic matters, etc.'¹³³ The truth probably, lies somewhere between. As compared to the flooring of almost all human societies, **tatami** and wood probably gave the Japanese a floor which was better than most, and was only perhaps exceeded by Dutch tiling or English oak flooring. Much will depend on the way in which the **tatami** is treated, how often it is shaken out and changed. As we shall see, the obsession with house cleaning in Japanese houses suggests that it was kept as clean as possible.

The cleanliness of the home and the absence of rodents, insects and places for bacteria and other micro-organisms to lurk was much encouraged by the Japanese attitude to furnishings. Hearn caught the essence of the situation when he wrote, 'There is no furniture (according to the European sense of the term) in a Japanese home, no beds, tables or chairs.'¹³⁴ After a while 'familiarity with Japanese interiors

¹²⁹ Hearn, *East*, p.150

¹³⁰ Regamey, *Art and Industry*, p.238

¹³¹ Elgin, *Mission*, 18, 54, 119

¹³² Thunberg, *Travels*, iii, 273/74

¹³³ Bird, *Tracks*, p.100

¹³⁴ Hearn, *East*, p.149

has equally disgusted me with Occidental interiors, no matter how spacious or comfortable or richly furnished.¹³⁵ Or as Morse described it, 'Absolute cleanliness and refinement, with very few objects in sight upon which the eye may rest contentedly, are the main features in household adornment which the Japanese strive after.'¹³⁶ The absence of furniture had been noted a century earlier by Thunberg. 'The furniture in this country is as simple as the stile of building. Here neither cupboards, bureaus, sophas, beds, tables, chairs, watches, looking-glasses, or any thing else of the kind are to be found in the apartments.'¹³⁷ Almost everything was done at ground level, and hence, once again like a tent, there was almost nothing above a foot from the ground - no hangings, no large pieces of furniture, few shelves.

What there was was carefully covered with a surface material that was both beautiful and made for cleanliness, namely varnish and lacquer. Kaempfer described how 'The Urusi or Varnish-Tree, is another of the noblest and most useful Trees of this Country. It affords a milky Juice, which the Japanese made use of to varnish, and as we call it, to Japan all their Household goods, dishes, and plates of Wood, and this from the Emperor down to the meanest Peasant.'¹³⁸ The general result was described by Alcock, 'Their habits of life are evidently simple in the highest degree. A bare, matted room - not over large but generally clean; a few shelves or a low **etagers** of lacquer let into some recess; a few lacquer cups and saucers, or porcelain with as many trays on stands - behold the whole furniture of a well-furnished house, from the Daimio, whose revenue is estimated at a million measures of rice, to the little shopkeeper or peasant who lives from hand to mouth.'¹³⁹ Where lacquer and varnish were not used, rubbing with an oily cloth gave the same effect. 'The floors of these galleries are polished to a wonderful smoothness and surface. They are not varnished, nor oiled, nor waxed, but every morning rubbed with a cloth wrung out of hot bath-water which contains oily matter enough to give, in time, this peculiar lustre.'¹⁴⁰

This simplicity made it much easier to keep the living area of Japanese houses clean. It is obvious that there was much effort to keep houses spotless, removing all dust and dirt. 'Feather and bamboo

¹³⁵ Hearn, *Gleanings*, p.174-75

¹³⁶ Morse, *Homes*, p.309

¹³⁷Thunberg, *Travels*, iii, 283/84

¹³⁸ Kaempfer, *History*, 1, p.177

¹³⁹ Alcock, *Tycoon*, 1, p.301

¹⁴⁰Scidmore, *Jinrikisha*, p.143.

brooms, with plenty of water and air, afford the means of cleanliness,' wrote Alcock.¹⁴¹ The high standards were described by Inouye and Bacon. 'The verandah is scrubbed first with a wet cloth and afterwards with an almost dry one to make it shine. In the sitting-room the wiping and polishing of the brazier is a long job, for the housewives of Tokyo pride themselves upon the appearance of their braziers. The wife superintends the cleaning of the rooms and also at times lends a hand.'¹⁴² Alice Bacon described the meticulous cleaning. 'This house-cleaning, even with the small amount of furniture found in a Japanese house, is an elaborate affair. Every box and closet and rubbish-hole in the house is turned out and put in order, the **tatami** are taken up and brushed and beaten, the woodwork from ceiling to floor is carefully washed, the plaster and paper walls flicked with the paper flapper that takes the place in Japan of our feather duster.'¹⁴³ Furthermore, from time to time, 'All the quilts and clothing must be sunned and aired, the kakemonos and curios belonging to the family unpacked, carefully dusted, and put back into their wrappings and boxes, and the house and garden put into perfect repair. This work, if thoroughly done, takes about a week.'¹⁴⁴

The methods were somewhat different from those in the West. For instance Morse described the polishing of the floors. 'In washing floors you do not see a woman on her knees scrubbing; instead the woman stands at the work and reaching down pushes the cloth back and forth while walking.'¹⁴⁵ Likewise the order of proceeding was different, caused by the fact that fresh wind and space could be created by opening the **shoji**. 'Many foreigners think it strange that we should dust before sweeping; but we dust the woodwork so as to make the dust fall on the mats or be blown out, as we always open the verandah sliding-doors when we dust and then sweep the mats to get rid of the dust. And finally when some of the dust has fallen again on the woodwork, we remove it with a damp cloth. When, therefore, we have finished cleaning a room, all the woodwork looks bright and speckless.'¹⁴⁶ Given the micro-organisms that lurk in dust and small particles of dirt, it is difficult to think how, short of disinfecting the whole house every day, more care could have been taken.

¹⁴¹ Alcock, *Tycoon*, 1, p.301

¹⁴² Inouye, *Home*, p.142

¹⁴³ Bacon, *Japanese Girls*, 283

¹⁴⁴ Bacon, *Japanese girls*, 283

¹⁴⁵ Morse, *i*, p.51

¹⁴⁶ Inouye, *Home*, p.142

However hard humans try, their houses tend to get dirty. The wood and bamboo expand and contract leaving new cracks for dirt to accumulate in. Damp and rot set in. The floor covering, particularly if it is made of natural fibres like rushes or straw, as was **tatami**, inevitably becomes worn out. Likewise the **futons** or bed clothes became worn and scruffy. Houses in cities, with hundreds of thousands of inhabitants living very close together, are particularly likely to accumulate dirt as they age. Yet how can a whole vast city be 'spring-cleaned'? The answer is through that most purging and cleansing, if destructive, of agents, fire.

It was noted as one of the peculiarities of Japanese cities that they seem to have suffered numerous fires and that their inhabitants almost took the conflagrations as 'natural'. For instance, in Tokyo (Yedo) 'Fires were known as the "Flowers of Yedo", being as much among the great sights of the city as the cherry blossom on the south-east bank of the River Sumida, the morning-glories of Iriya, or the chrysanthemums of Dangozaka, for which Tokyo is still noted.'¹⁴⁷ Despite the utmost care, Morse felt that 'It is no wonder that acres of the city burn over every year or two, and great destruction of property and even of lives occur from the flimsy and inflammable character of the wooden buildings...'¹⁴⁸ It was estimated, for instance, that in Tokyo in the later nineteenth century a house would be burnt down every seven years. 'He told me that they have no such institution as insurance, but the merchants always calculate to be burned out on an average once in seven years and so lay by money every year in view of this calamity,'¹⁴⁹ This figure of seven years is confirmed by Alcock. 'They calculate that the whole of this vast city is consumed in successive portions, to be rebuilt in every seven years! It is certainly very rare that a night passes without the fire-bell of the quarter ringing a fearful alarm, and rousing all the neighbourhood.'¹⁵⁰ There grew up a whole special language to describe the frequent and varied types of fire; '...there is a whole nomenclature in which every variety of fire is described by a different name - one word expresses a fire kindled by intention, another the accidental outbreak, another the fire caught from the next house, another that kindled by a falling spark and so on.'¹⁵¹

There is some dispute as to the efficiency of Japanese fire-fighting. Morse was somewhat critical of the methods (see XXX), but another visitor a little before him wrote that 'They have numerous

¹⁴⁷ Inouye, Home, p.29

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Morse, i, p.135

¹⁴⁹Morse, i, p.355

¹⁵⁰ Alcock, Tycoon, 1, p.124

¹⁵¹Fraser, Letters, 1, 315

fire-brigades, which are well organized, and re-markably efficient.¹⁵² What is certain is that the intervals grew longer as fire-fighting methods improved in the later nineteenth-century, so that Hearn believed that '...it may be broadly stated that every Japanese city is rebuilt within the time of a generation.'¹⁵³ This longer span was not a complete blessing, for as one author noted, wooden houses began to be unpleasant to live in after about thirty years. 'Formerly it was calculated that the average life of a house was about thirty years; but now the lesser frequency of fires would give them a much longer lease. This is comforting to house-owners; but it must be confessed that wooden houses more than thirty years old are not pleasant to live in.'¹⁵⁴

If we return to our metaphor of a tent, it is as if the whole population periodically stripped the tent down, and then set it up again. After a fire, 'The ground is hardly cold before the carpenters are at work, rebuilding the dwellings which have been destroyed.'¹⁵⁵ The losses were kept to a minimum because the house was so light and cheap, furniture was almost absent and those who had valuable goods in large quantities kept them in fire-proof stores made of bricks. It was a terrible purging, yet the losses of life and property that did occur may have not been an entirely wasted sacrifice, for the fires cleaned out the cities.

The effects on public health were dramatic. A massive incineration of vermin, insects and any refuse that had accumulated was achieved, along with mouldering wood, mats and bedding. It has often been pointed out that the Fire of London in 1666 was a medical turning point. The cities of Japan did not have just one great fire, but burnt down again and again. It is, of course, a circular process: the frequent fires and earth-quakes encouraged insubstantial housing, and such housing went up like tinder. Yes the effects are certainly worth our attention. The symbolic statement of this need to renew wooden buildings every few years is made by the practice whereby the great shrine at Ise has been re-built every twenty years (xxx) for the last thousand years, moving it a few yards to left or right on each occasion. Renewing and refreshing of one's house has bng been a tradition in Japan. Among other things, this helps to explain the extraordinary energy and speed with which Japanese cities were re-built after the carpet-bombing in 1945.

The combination of the various factors outlined above probably gave the Japanese the cleanest living space that has ever existed in a large agrarian civilization. All those who visited Japan were impressed by this and noted the cleanliness of the homes. Kaempfer wrote in the late seventeenth century, 'If the

¹⁵²Silver, Sketches, p.7.

¹⁵³ Hearn, Kokoro, p.20-1

¹⁵⁴ Inouye, Home, p.30

¹⁵⁵ Fraser, Letters, 1, p.319

houses of the Japanese be not so large, lofty, or so substantially built as ours, they are on the other hand greatly to be admired for their uncommon neatness and cleanliness, and curious furniture.¹⁵⁶ He gave a more detailed account later, noting the absence of furniture. 'All the houses are kept within doors clean and neat to admiration, tho' they have no tables, stools, or any other such furniture, as our European rooms are furnishe'd with. The stair-cases, rails, and all the wainscotting is varnish'd. The floors are cover'd with neat mats and carpets.'¹⁵⁷ Based on traveller's reports, Macfarlane in the middle of the nineteenth century commented that 'The interior of the Japanese houses - even among those of the poorer classes, - are said to be remarkably clean, neat, and orderly, everything being in its place, and there being a place for everything...'¹⁵⁸ Writing of Japanese houses, he said 'Most are clean inside. The floors are raised a foot above the ground, covered with mats. The wood-work is clean, as it is often scrubbed...(the Japanese)...lead all Asiatics in cleanliness of persons and dwellings. Does not an ancient stanza of theirs declare that "when the houses of a people are kept clean, be certain that the government is respected and will endure?"'¹⁵⁹ Towards the end of the century, Arnold described the 'snow-pure mattings' and 'the scrupulous cleanliness of the woodwork and of the inner shoji, prettily covered as these are with silver or gold stamped paper.'¹⁶⁰ Or as Regamey put it 'If his house is small and appears too empty, it is of an exquisite cleanliness and everything is arranged with a perfect taste.'¹⁶¹

It is Morse, however, who gives the most detailed instance of the general cleanliness. When he arrived in Japan, he was immediately struck by the 'Simplicity of dress, neatness of home, cleanliness of surroundings...' which were 'characteristic, not only of the more favoured classes, but the possession of the poorest among them.'¹⁶² He found that the 'cleanliness of the Japanese is amazing; houses are clean and wooden floors polished...'¹⁶³ Even the dirtiest of Japanese houses were far cleaner than their

¹⁵⁶ Kaempfer, *History*, 2, p.304

¹⁵⁷ Kaempfer, *History*, 3, p.4

¹⁵⁸ Macfarlane, *Japan*, p.290

¹⁵⁹ *Mikado*, p.356

¹⁶⁰ *Arnold, Seas*, p.401

¹⁶¹ *Regamey, Art and Industry*, p.240

¹⁶² *Morse, i*, p.44

¹⁶³ *Morse, i*, p.61

counterpart in the West. Of certain poor people's houses he wrote, 'Though squalid and dirty as such places appear to the Japanese, they are immaculate in comparison with the unutterable filth and misery of similar quarters in nearly all the great cities of Christendom.'¹⁶⁴ When he visited Japanese friends, he found their houses immaculate. 'Then we were led upstairs to a beautiful room having that simplicity of detail and absolute cleanliness that characterizes their house interiors.'¹⁶⁵

When he travelled around Japan, the accommodation was usually excellent. 'I cannot describe the neatness of our rooms in the hotel.'¹⁶⁶ The ceremonial tea rooms were particularly clean; almost temples to cleanliness. Of one he wrote, 'the simplicity and absolute cleanliness of the rooms were remarkable.'¹⁶⁷ When he visited a local country house near Tokyo, he noted 'We were conducted at once across a spacious courtyard to a suite of rooms in a house by itself. Such perfect cleanliness, everything sweet; the courtyard so immaculate that the indentations of our heels in the smooth, hard earth disturbed us.'¹⁶⁸ Even the small way-side tea-houses by the enormously busy main roads were usually spotless. Half-private, half-public, such places are often filled with a certain amount of refuse, like station platforms or bus shelters in the West. Morse found that 'in the tea-houses where we stop for a little rest our eyes are roaming everywhere: the rooms are clear of everything, the mats clean, the ceilings of cedar boards and all the wood-work unfilled, unoiled, unvarnished and unpainted. The whole side of the house is open to the sun and air...'¹⁶⁹ Many other visitors wrote in the same manner about the immaculate hotels, ruins and public and private buildings.¹⁷⁰

Housing and the elimination of malaria.

One example may be given of the way in which the shape and furnishing of houses in Japan may have

¹⁶⁴ Morse, *Homes*, p.6

¹⁶⁵ Morse, *ii*, p.222

¹⁶⁶ Morse, *i*, p.56

¹⁶⁷ Morse, *ii*, p.249

¹⁶⁸ Morse, *ii*, p.320

¹⁶⁹ Morse, *i*, p.67

¹⁷⁰e.g. Kaempfer, *History*, 2, 318; Bacon, *Japanese Girls*, 216; Geoffrey, *Immigrant*, 170; Maraini, *Meeting*, 189

had a dramatic effect on health by considering the most dangerous of tropical disease vectors, the mosquito.

There seem to have been plenty of mosquitoes in Japan. Willis in the mid-nineteenth century described how 'It is now very warm, but the heat is nothing compared with the annoyance of the mosquitoes. They are in such numbers and bite with such violence.'¹⁷¹ Hearn spoke of the wiliness of the mosquitoes. 'Two varieties of mosquitoes do their utmost to make life unpleasant, and these have learned the wisdom of not approaching a lamp too closely.'¹⁷² Mrs. Geoffrey described in the early twentieth century how 'a plague of mosquitoes buzzed around us for six months of the year.'¹⁷³ Scidmore described how 'from all the foliage mosquitoes swarmed by myriads...'¹⁷⁴ A novel about nineteenth-century villages described the ubiquity of mosquitoes and the attempt to keep them at bay. 'Mosquitoes swarm about their naked feet, attacking the sunburnt flesh at will.'¹⁷⁵ At night 'The mosquitoes that had been swarming beneath the eaves began to penetrate to where they sat indoors. Kanjr tossed a handful of straw onto the narrow verandah and laid some freshly cut grass on top. Then he struck a match and carefully ignited the pile. The rising smoke drove the mosquitoes away.'¹⁷⁶ Yet the oddness, as we have seen, is that while England had quite extensive malaria, Japan, full of mosquitoes had hardly any.

It is clear that the Japanese tried to keep the numbers of mosquitoes down, using various natural predators. The wells, where mosquitoes would breed, were specifically attended to. Hearn described 'the small fishes the Japanese call funa. One or two funa are kept in every well, to clear the water of larvae.'¹⁷⁷ Frogs were encouraged to devour them. A certain frog was 'credited with the power of drawing all the mosquitoes out of a room into its mouth by simply sucking its breath in.'¹⁷⁸ A particular

¹⁷¹ Cortazzi, Willis, p.27

¹⁷² Hearn, Glimpses, p.372

¹⁷³ Geoffrey, Immigrant, p.62

¹⁷⁴ Scidmore, Jinrikisha, 324

¹⁷⁵ Takashi, Soil, p.87.

¹⁷⁶ Takashi, Soil, p.96.

¹⁷⁷ Hearn, East, p.97

¹⁷⁸ Hearn, Glimpses, p.365

beetle was encouraged. 'The mosquitoes were pursued by a fearsome beetle called 'geji-geji', who is cherished by the Japanese because he eats so many mosquitoes...'¹⁷⁹ Yet the mosquitoes could not be eliminated. The Japanese then moved to a second line of defence in which they may have been the world pioneers. This was the mosquito net. The ideal mosquito net is described by Roberts as follows. If mosquitoes cannot be eradicated, 'mosquito bed nets can be used, or bedrooms (or even whole houses) mosquito-proofed. A bed net should have a mesh of at least eighteen to the inch...The best type of net is rectangular, the free edge being hemmed with a strip of cotton or other material a foot to eighteen inches wide.'¹⁸⁰

The Japanese seem to have made an ideal mosquito net. Morse described how, when he entered a room 'A huge green mosquito netting in the form of a square box was hung from the four corners of the room.'¹⁸¹ Hearn explained how the servant '...takes down the brown mosquito net, brings a hibachi with freshly kindled charcoal for my morning smoke, and trips away to get our breakfast.'¹⁸² Scidmore observed that 'At night they came to close our amados noisily, and to hang up the mosquito-nets of coarsely-woven green cotton - nets the size of the room itself, fastened by cords at the four corners of the ceiling, and exhaling the musty, mildewed odor that belongs to so many things Japanese, and is so inevitable in the rainy season.'¹⁸³ What is significant about this is the shape and size. The nets were not just over the sleeping area. They protected the whole room. In other words, because of a combination of factors - the small size of rooms, the absence of furniture, the availability of good materials for making netting, fine craft traditions and much labour to manufacture them - it was possible to develop a specially effective mosquito netting. The fact that 'the dimensions of every house in the empire conform to certain unvarying rules', for instance 'the verandas, or outer galleries of the house, are always exactly three feet wide' and inner rooms always based on a multiple of the basic shape of a tatami mat, made manufacture of mosquito netting to a standard pattern much easier.¹⁸⁴ This could be let down in the

¹⁷⁹ Geoffrey, *Immigrant*, p.63

¹⁸⁰ Roberts, *Hygiene*, e 238

¹⁸¹ Morse, *Day i*, p.57

¹⁸² Hearn, *Glimpses*, p.187

¹⁸³ Scidmore, *Jinrikisha*, 324

¹⁸⁴ Scidmore, *Jinrikisha*, p.143.

evening, as soon as mosquitoes appeared. It was permanently present and would protect people during the whole evening, not just when they slept. It is at this time that the **anopheles** mosquito bites and transmits malaria.

A good description of the nature and effectiveness of the nets is given by Mrs. Geoffrey. 'Japanese **kaya** (mosquito nets) designed for Japanese houses are more effective than bed canopies, as they are made exactly the size of the room, fastening in the four corners and giving the effect of a screened porch when in position. We found the **kaya** very satisfactory in our little Japanese summer home by the shore.'¹⁸⁵ Their shape and looks are shown in many Japanese prints, for instance those of Utamoro in c.1795, who shows 'Women Guests for the Night' inside a large mosquito net, almost tall enough to stand up in. In other words, the Japanese pitched a mosquito-proof tent within the tent of their house. The netting may well have been equally developed against biting gnats, which infested Japan. At the end of the eighteenth century Thunberg described how 'During our journey down, and in this rainy season, we were molested by gnats (**Culex irritans**) which particularly disturbed us in the night and sometimes prevented us from sleeping. We were therefore under the necessity of purchasing a kind of porous green stuff, for curtains, such as is used every where in this part of the world, for a defence against these blood sucking insects. These curtains are very wide, and are tied over the tester, and spread below over the whole bed, without having any other opening than just the bottom. They are very light and portable, and wove so open, as not to prevent the air from passing through them.'¹⁸⁶ It appears that people also may have walked around at night with their faces covered with small pieces of netting. Takashi describes how 'They too, know that a young man will arrive later that night and stand outside the door, his face wrapped in mosquito netting, waiting to be let inside.'¹⁸⁷

The question then is, how long had the Japanese had mosquito nets, and what proportion of the population used them? These are questions to which I do not yet know the answer. In relation to the former I believe that there is plenty of evidence in early novels, for instance the **Genji** of the eleventh century (and the **Pillow Book**?XXX) for the use of mosquito netting. And by the eighteenth century they seem to have been widely used. In other malarial countries, for example India or Sri Lanka, mosquito netting was beyond the reach of even the very rich. Even they tended just to use silk hangings up to the end of the nineteenth century.¹⁸⁸ In relation to the latter, it is worth noting how, in a poor late nineteenth-century peasant's house, 'The loose ends of mosquito nets fluttered in the early autumn

¹⁸⁵ Geoffrey, *Immigrant*, p.63

¹⁸⁶Thunberg, *Travels*, iii, 214

¹⁸⁷Takashi, *Soil*, pp.87-8.

¹⁸⁸ Chris Bayly, personal communication

breeze.¹⁸⁹As far as I know, the widespread use of the mosquito net was unique to Japan though it was probably known in other civilizations. For instance we are told that 'it is entertaining to find the mosquito net (**conopeum**) ridiculed by the poets Horace, Juvenal and Propertius.'¹⁹⁰

Conclusion

The English house was solid, durable, often well-made. It became more comfortable with the centuries and the various housing 'revolutions' introduced chimneys, windows, new furnishings. Thus English houses, enjoyed by a surprisingly large proportion of the population, were substantial comfortable and probably surprisingly healthful. Many yeomen and merchants houses survive to this day in villages and towns and are still comfortable and healthful. Improvements in flooring and furniture, especially after the middle of the sixteenth century, made the English house second only to the Dutch in wholesomeness. The worst period for housing was the nineteenth century, when the houses of the poor reached a nadir never before experienced.

The Japanese house was the exact opposite. It was light, insubstantial, airy, constantly rebuilt as it decayed or was burnt down, it had little height or depth. The ventilation was excellent, the furnishings minimal. The houses were for the most part kept spotlessly clean and the strict division between the impurity of the outside and the pure inside was shown, for instance, in changes in clothing and foot-wear. Thus it is difficult to think of more healthful housing. The one disadvantage was the cold in certain seasons.

Japanese housing probably had an impact on some of the viral diseases, which may have been less virulent because of the ventilation, for instance measles, influenza and tuberculosis. The pattern of housing also kept insect vectors to a minimum, lessening the number of hiding places for lice, fleas and ticks. Being built on stilts also kept vermin at bay and there were no cellars to provide a refuge for rats and mice.

Perhaps the most important feature, however, was a surprising and indirect one. The absence of furniture and the regular shapes of the rooms, based on a certain number of **tatami** mats, made it easier to fit large mosquito nets within them, suspended from the ceiling and let down at night. These may have been the key to the absence of malaria in most of Japan for the last five hundred years or more. If this is the case, this is probably, with tea, the most important of all Japanese health measures, for malaria is the major cause of sickness and death in most Asian countries.

Nothing so dramatic can be found in the history of English housing, but the relatively high quality of the houses, except for a period during the industrial revolution, was enough to keep the levels of disease

¹⁸⁹Takashi, *Soil*, p.95.

¹⁹⁰Winslow, *Conquest*, 84

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caused by insects and vermin within limits.