

The Chimney and Social Change in Medieval England

LeRoy Dresbeck



Winter: In front of the fire from Tacuinum Sanitatis, ca. 1390-1400. Nova 2644 fol.55r.

The recent debate concerning the problems of ecology has focused our attention upon the relationship between humans and their physical surroundings. For the most part, historians have been interested in such questions tangentially, ignoring the basic issue of the effect of the environment upon people. The rising interest in the history of technology is based on the realization that political and military events, the history of ideas, and changing social patterns take place within the physical world. The effects of the environment can hardly be ignored if one is to understand fully historic change. One problem which illustrates the interrelationship between human and natural spheres in history is the development and use of the chimney and fireplace in medieval England.⁰¹ Hitherto it has not been fully realized how the new heating technology affected the spectrum of society and changed the mores of medieval life.

01 See my "The Chimney and Fireplace: A Study in Technological Development Primarily in England During the Middle Ages" (unpublished Ph.D. dissertation, (University of California, Los Angeles, 1971), for the history and bibliography of the chimney.

Early medieval buildings heated by a central hearth required a high ceiling to prevent sparks from causing fires. Thus, whatever warming might come by sitting around the fire in a circle was partly offset by the upward dissipation of heat into the large, high-ceilinged room. Moreover, when such rooms had louvers at their peaks to vent smoke, they also let the heat escape—a waste of fuel, as well. With adoption of the fireplace and chimney in many homes of the twelfth century, the number of persons sitting next to the fire was reduced by nearly three quarters, thus diluting the functional capability of large rooms. The chimney fostered the small room. Though heat loss still occurred through the chimney, it was much less than the loss from the open hearth. Moreover, with a chimney the danger of fire from sparks lessened. Rooms could be built smaller and with much lower ceilings, heating the area more evenly. When precautions were taken to exclude draughts, a smaller room heated by a fireplace warmed fewer people but with a better heat distribution than the larger hall with a central hearth, where most of the heat rose toward the high ceiling, and of course, no person benefited from it.

As the room size decreased there followed a tendency to divide the functions performed in them, establishing compartments based upon tasks. For example, the earlier art theme of a man sitting by a fire warming his bare feet now shifts to show him stirring a pot hanging in a fireplace.⁰² Changing technological factors influenced a reinterpretation of an art motif which frequently emphasized activity and work. While the use of individual apartments had important social implications, such as the growth of privacy, partitioning originated in a desire for more warmth, and substantially altered views toward labor. Busy people in warm rooms developed new social attitudes.



Man sitting by a fire, stirring a pot hanging in a fireplace. London, British Museum Add. MS. 50000. Psalter, fol. lv, Princeton Index, second half of the thirteenth century.

Thirteenth century art provides us with some of the best early detail of fireplaces and chimneys, yet, oddly enough, historians discussing the chimney have neglected such sources. For example, an illumination dating from the first half of the century and deposited in the British Museum gives us one of the best representations of a complete fireplace in the Middle Ages.⁰³ The fireplace has a hood from which a flue draws away the smoke. The chimney, constructed within an interior wall, is composed of sections, each of which reduces in size as it rises. Each section also has on it a different decorative design. This illumination does not indicate whether the chimney extends through the roof or emits the smoke through the wall of the building. However, in the same manuscript we see other examples where the chimney extends well beyond the ridge of the gabled roof.⁰⁴ This manuscript likewise shows fairly wide fireplaces, while other examples from the same period indicate fireplaces that are not much wider than the chimney itself.⁰⁵ Such illustrations show much variety in the efforts to develop an efficient chimney system in the thirteenth century. The effective use of the fireplace with chimney in a small, heated apartment, together with devices to bar the cold, such as glass windows and wainscoting became more and more a function of the building itself in this period. As compared with the central hearth, the flexibility of fireplace and chimney meant that individual rooms had their own source of heat. In extremely cold periods people were no longer confined to the central hearth for warmth. When individual rooms could be heated, daily tasks could be performed without the numbing effects of cold. Consequently, the central hearth began to lose its importance within the dwelling.



Fireplace not much wider than the chimney itself. Detail from Oxford, Bodleian, Moralized Bible 270. b. fol. 194r, Princeton Index.

03 London, British Museum, Harley MS. 1526-27, II fol. 28v, Princeton Index.

04 *Ibid.*, I, fol. 18v, and I, fol. 19r

05 See, for example, Oxford, Bodleian, Moralized Bible 270. b. fol. 194r, Princeton Index.

The chimney was useful in a large variety of rooms. In the winter small rooms tended to divide the work of the staff, and to emphasize social destinations as well. The new technology widened the gap between social groups.

Since the new method of heating permitted compartmentalization, the medieval house ceased to be a residence only and became a tool, an agent for a wider scope of more productive work. In Northern Europe the heated house not only offered refuge from harsh climate, but also furnished a place where more work could be done in the wintertime. In all occupations, from government service to the production of simple items in the home, the fireplace and chimney helped to overcome the cold. Rooms, more and more often equipped with fireplace and chimney, were now reserved for various functions.

Let us now examine how the fireplace and chimney were applied in the divided house, and how the new heating technique affected the style of life, as well as the division of labor within the household. Henry III ordered a new chimney to be constructed in the great chamber at Havering in 1229.⁰⁶ In the same year the inventory of the king's chambers at Kempton and Winchester noted the existence of chimneys.⁰⁷ The "low Chamber" at Clive was equipped with a chimney in 1238.⁰⁸ At Windsor, in 1237, the chimney near the old hall in the upper bailey of the castle was repaired.⁰⁹ At Northampton a chimney and a privy chamber were added to the king's wardrobe in 1249.¹⁰

These examples indicate that in a number of instances during the thirteenth century the central hearth and braziers were being replaced by individual chimneys and fireplaces. Certainly the central hearth would have been an inconvenience in a room used for dancing. In 1385 at Clarendon, a dancing room (*camera tripadiant*) contained "a great fireplace of two hearths (*focis*)."¹¹ Still, as late as the Tudor period we find the great hall heated by the central hearth.¹² It was here that the king or lord of the manor held his court. Despite this atavistic tendency in many castles for the great hall to retain the central hearth, in many instances it was replaced by the fireplace and chimney. The adoption of this more efficient system was already characteristic of the thirteenth century.

One of the most significant developments of the chimney-fireplace as a heating unit was its increasing employment in private chambers, as opposed to the great hall. The newer heating devices had their greatest impact in the smaller rooms of the apartment. The frequent discovery of fireplaces in private chambers led many earlier writers on the development of the chimney to conclude that this was the only kind of room in which they were located.¹³ However, the documents show this to be an error. As we will see, the chimney appears in several public rooms, such as offices. Nevertheless, private rooms evidence the most specific development of the chimney. In 1239, the chimney in the king's wardrobe at Clarendon was torn down and rebuilt.¹⁴ During this same year at Winchester, the chimneys in the king's chamber above the porch of the great hall was

06 Great Britain. Public Record Office, *Calendar of Liberate Rolls* (6 vols.: London, 1916 ff.), 1, 126.

07 *Ibid.*, pp. 375, 432.

08 *Ibid.*, p. 311.

09 *Ibid.*, p. 287.

10 *Ibid.*, III, 248. Here the editors translate *chimeneam* as mantelpiece. However, the usual translation for this word is chimney, fireplace, or possibly, stove. See *caminus* in R. E. Latham, *Revised Medieval Latin Word List from British and Irish Sources* (Oxford, 1965), p. 65. The editors of the *Liberate Rolls* normally translate *chimineam* as chimney. See, for example, Vol. I, pp. 215, 315.

11 Exch. Accts. E. 473, 2, cited in L. F. Salzman *Building in England Down to 1540* (Oxford, 1967), p. 100. This was a double fireplace, the other connecting with the king's wardrobe; hence, the two hearths.

12 H. W. C. Davis, *Mediaeval England* (Oxford, 1924), p. 54. Salzman. *Building in England*, p. 219, notes that a louver over a central hearth was constructed at Hampton Court in 1535. J. Alfred Gotch, *The Growth of the English House* (London, 1909), p. 106, states that the central hearth was constructed at Richmond Palace under Henry VII, and at Deene Hall under Edward VI.

13 See, for example, the opinion of T. Hudson Turner, *Some Accounts of Domestic Architecture in England from the Conquest to the End of the Thirteenth Century* (Oxford, 1877), p. 13.

14 *Liberate Rolls*, I, 417

constructed.¹⁵ Again, in the same year, at the king's chamber at Clarendon, the chimney was raised four feet above its former height.¹⁶ Not to be outdone by her husband, the queen's wardrobe at Clarendon was also equipped with a chimney in 1237, and likewise her chamber in the Tower of London in 1238.¹⁷ A penthouse at the end of the king's hall at Brill was equipped with a chimney in 1237.¹⁸ These examples show that within six years Henry III placed a great emphasis and expended considerable sums on the construction of heated private quarters.

The advantages of the chimney and fireplace as a source of heat were linked with a desire for privacy. Heated rooms enabled one to leave the communal existence of the central hearth. A. R. Myers says that the king first acquired a chamber so that he could withdraw from the noise and publicity of the hall during Anglo-Saxon times.¹⁹ With the passage of time however, so many guests and officials went with him that a second withdrawal was necessary to a place where the king would be attended only by his servants. When this happened, the chamber became a series of state apartments: the great chamber, privy chamber, and bed chamber. Myers believes that the official subdivision of the chamber did not occur until the reign of Henry VIII;²⁰ but, in fact, this already existed at the time of Edward I, as is recorded in the *Black Book*, written between 1471 and 1477. This second withdrawal of the king occurred much earlier than Myers suggests. Already by the early thirteenth century, the great and the privy chambers are mentioned in the *Liberate Rolls*. Undoubtedly the quest for privacy was a major motivating factor in the division. However, overlooked in this is the fact that these small apartments could be heated by the use of the chimney and fireplace. This is by no means of secondary importance. By inference it appears that after expensive remodeling, the king or nobleman expected to spend more time in his private rooms, and to use the great hall more for strictly ceremonial functions.

The employment of new heating technology, providing new sources of warmth, greatly increased the trend toward privacy. In 1386, at Pembroke castle, we have the first clearly stated connection between privacy and heating

Here, "... in a chamber at the hinder end of the hall and a chamber called 'wythdrawing chambre' annexed thereto, the fireplaces (*camina*) are broken for want of keeping, damage £10."²¹ Thus, there were two private rooms off the main hall, heated by the fireplaces, when these were in working condition. It can be inferred that *camina* means chimneys here because of the necessity for smoke removal, which by this time normally was achieved by the chimney flue and pot. Such a series of rooms would indeed provide the king with a place more comfortable than the main hall. The close relationship between the idea of privacy and the use of new heating devices is perhaps best seen in the employment of the chimney in the privy or garderobe.²² The fireplace and chimney in the same room certainly provided for greater personal comfort and for this reason people bathed in front of the fireplace. In the royal apartments great efforts were made to incorporate the most efficient means of heating avail-

15 *Ibid.*, p. 432. A demise of the manor of Heybridge of about 1337 mentions "unam cameram magnam scilicet solarium cum camino et capellam in eadem camera." See Great Britain, Historical Manuscripts Commission, *Reports*, Vol. IX, pt. 1, Report and Appendix (London, 1883), p. 37. This would indicate the use of the chimney in the solar as distinct from the hall, was also taking place on the social scale lower than the king.

16 *Liberate Rolls*, I, 435

17 *Ibid.*, pp. 251, 315, 316.

18 *Ibid.*, pp. 287.

19 A. R. Myers, *The Household of Edward IV: The Black Book and the Ordinance of 1478* (Manchester, England, 1959), p. 14. For a discussion of the increased demand for privacy by the upper classes, see Lewis Mumford, *The City, in History* (New York, 1961), pp. 285, 383-384.

20 Myers, *Household of Edward IV*, p. 237n.

21 "Great Britain. Public Record Office, *Calendar of Inquisitions Miscellaneous* (5 vols.; London, 1916-1962), IV, covering 1377-1388, p. 199.

22 Ernest L. Sabine, "Latrines and Cesspools of Medieval London," *Speculum*, IX (1934), pp. 304, 313-314. Sabine cites evidence from 1324, 1342, and 1365-1366, that chimneys were built in latrines. The advantage of a latrine close to the chimney was not only its provision of warmth, but also meant that flues could be constructed within the chimney to carry away filth. Margaret Wood, *The English Mediaeval House* (London, 1965), p. 383, notes that at Magdalene College, Cambridge, the monastic students had a "garderobe next to the laver and a fireplace was provided for the four occupants of the room."

able at the time. The advantage of the chimney and fireplace in the small room brought comfort and increased the possibility for privacy. Henry III quickly seized upon this as a means of escaping the confusion of the hall or great chamber.



Month of February from *Les Tres Riches Heures de Duc de Berri* by Paul of Limburg and his brothers.

As the development of the chimney continued in the later Middle Ages, there were increasing royal expenditures to build chimneys in offices of the royal household. Often this was a reward for knights who performed service for the king.²³ In 1286, a mason, Albert de Menz, was paid for making a chimney in the chamber of Sir John de Bonvillars in Harlech castle.²⁴ The nobles in this regard were quick to imitate the king in enjoying the new technology. The poem *Piers Plowman* (c. 1381) laments the tendency of nobles to take meals in private chambers heated by chimneys:

23 *Liberate Rolls*, IV, 424: in 1257, the king's chaplains had their own fireplace at Nottingham. *Ibid.*, V, 276: the chancellor had his own fireplace. *Ibid.*, III, 199: in 1243, knights had their own fireplace at Clarendon. *Ibid.*, VI, 7, no. 57: for 1267 at Clarendon. *Ibid.*, p. 139, no. 1219: in 1270 at Merleberge castle a room fifty feet by twenty-four feet was built with a fire-place in front of the castle tower for the king's knights.

24 Howard Montagu Colvin, gen. ed., *The History of the King's Works Vol. II*, (London 1963 f.) p. 1038. In 1256, Gtuy de Lezignon had a fireplace in his private chamber. *Liberate Rolls*, IV, 289.

Woe is in the hall in all times and seasons
 Where neither lord nor lady likes to linger
 Now each rich man has a rule to eat in secret
 In a private parlour, for poor folk's comfort
 In a chamber with a chimney, perhaps, and leave the chief
 assembly
 Which was made for men to have meat and meals in:—²⁵

As with the king, the connection between private chamber and the chimney was established for the nobility. Furthermore, as we move down the social scale, chimneys can also be found in small houses, which often were not partitioned into rooms. One of the first winter landscapes painted by a European artist, in the *Book of Hours* of the Duke of Berry, shows a farmhouse with the family sitting around the fireplace, and smoke is rising from the chimney.²⁶ Here the chimney is shown coming directly out of the hooded fireplace, and it emerges at the side of a gabled roof nearly even with the ridge. This painting (*circa* 1415) seems to indicate that by this time the poor were also beginning to introduce the new heating technology into their homes.

The connection between warmth, comfort, and privacy applied to people in all levels of the economic and social scale. The ability to afford the new devices and the influence of traditionalism in building construction were certainly considerable factors in assessing the extension of the use of heating devices. Yet, the widespread adoption of the chimney indicates the central hearth was giving way to the advantages of the new system. Giraldus Cambrensis (d. 1223) mentions that the Carthusians, as was logical in their hermitic cells, had little fires in chimneys.²⁷ The Benedictines also utilized the chimney, but for heating larger units. About 1179, the Abbot of Bec, Roger, constructed a chimney for the benefit of his guests.²⁸ Between 1260 and 1290, the Abbot of St. Albans, among other things, had a chimney renovated, much to the delight of the monks.²⁹ Monastic houses, therefore, incorporated the chimney in an attempt to heat rooms other than the warming house. The friars, like the monks, also used the chimney. The poem *Pierce the Ploughman's Crede* (*circa* 1394) says that chimneys were found not only within the cloister, but also in the private rooms of the friars.³⁰

The secular clergy, in addition to the regular clergy, also found the new technology desirable. In 1238, at Winchester, behind the chapel of St. Thomas, the king built a chamber, a "fireplace (*caminum*), and a privy-chamber (*cameram privalam*) in the same" for the bishop's comfort.³¹ The use of heating technology did not end with the bishop. About 1265, the dean of St. Paul's granted the treasurer of the chapter of that church a demise which included a description of the house at Chingford, Essex. The house was equipped with a suitable hall, bath, and, to the east, a stone chimney, a privy, and other small rooms: in the western part there were storeroom and buttery.³² This must have been one of the better homes of the period, incorporating items for warmth and privacy: stone

25 "Ed. by Henry W. Wells (New York, 1945), passus X, ll. 98-104, p. 115. This passage occurs only in the B. text of the poem. See also *The Vision of William Concerning Piers the Plowman in Three Parallel Texts*, ed. by Walter IV. Skeat (Oxford, 1886), I, 292.

26 This is an illustration of the month of February from *Les Tres Riches Heures de Duc de Berry* by Paul of Limburg and his brothers. See Erwin Panofsky, *Early Netherlandish Painting* (2 vols.; Cambridge, Mass., 1958), II, fig. 89. Winter landscapes from this time on play an important role in European art.

27 "Speculum Ecclesiae," *Opera*, ed. by J. S. Brewer, Rolls Series, No. 21, Vol. IV (London, 1873), p. 250: "igniculum suum habent in caminis." Executed in 1415, the *Belles Heures of Jean, Duke of Berry*, contained a miniature of St. Bruno and the Grande Chartreuse (fol. 97v). This miniature shows the cloister surrounded by nineteen individual cells, each with a pink-tiled roof and chimney. See reproduction in James Rorimer, ed., *The Belles Heures of Jean, Duke of Berry, Prince of France* (New York, 1958), pl. 18.

28 See Victor Mortet and Paul Deschamps, *Recueil de textes relatifs à l'histoire de l'architecture* (Paris, 1929), I, 247. A fireplace, undated, was built for lay guests in the gatehouse of Abingdon Abbey. See J. C. Dickinson, *Monastic Life in Medieval England* (London, 1961), p. 13.

29 Thomas of Walsingham, *Gesta Abbatum Monasterii Sancti Albani*, ed. by Henry Thomas Riley, Rolls Series, No. 28, Vol. IV, Pts. 1, 2 (London, 1867), p. 482.

30 *Pierce the Ploughman's Crede*, ed. by Walter W. Skeat, Early English Text Society, orig. ser., No. 30 (London, 1867), on the cloister: "... And houses full noble, chambers wip chymneyes" (l. 208); and on a friar: "his chambre to holden wip chymene & chapell" (ll. 582-583).

31 *Liberate Rolls*, I, 350

32 Historical Manuscripts Commission, *Reports*, pp. 35-36.

chimney, privy, and bath form a major structural part of the building. As in the royal apartments, the tendency was to enclose living space within smaller, more readily heated areas. The advantage of this development was obvious. About the same time at St. Albans, the abbot constructed “a noble house, very long, and of stone, roofed with tiles, with three chimneys ...”³³ The use of three chimneys in one house shows that compartmentalization was occurring in buildings other than royal palaces. With the chimney the building could now be subdivided, and men were freed of their reliance on the central hearth to provide warmth. Once the chimney provided a source of heat in individual rooms, the quest for privacy could proceed apace.



Chimney with a fire with smoke escaping through the small flue. From the Queen Mary Psalter c. 1310 © British Library, Royal MS 2B, fol 72v

By the first quarter of the fourteenth century, the search for privacy and the need for heat appear to have been in vogue among the upper classes. A miniature of about 1320 shows a gentleman dressing before the fireplace.³⁴ With the introduction of heat the bedroom became one of the most cherished private rooms in the house. The effect of the introduction of the chimney on sexual mores did not go unnoticed by artists. In a Fleming Psalter of the first quarter of the fourteenth century a man and woman are shown embracing in a bed curtained to exclude drafts.³⁵ The room is cony, for at the side, external to the outer wall, a smoking fireplace and chimney extend up beyond the ridge of the roof. Lewis Mumford has commented that “for lovers in the medieval house, the winter months must have been a large wet blanket.”³⁶ Yet, the fire in the chimney fed the flames of passion. Heated rooms enhanced privacy and intimacy, and gave love-makers greater personal freedom, especially when compared with an earlier peri-

³³ Thomas of Walsingham, *Gesta Abbatum Monasterii Sancti Albani*, p. 314.

³⁴ London, British Museum, Royal MS. 2B., VII, fol. 72v, reproduced in Edith Rickert, ed., *Chaucer's World* (New York 1962), foll. p. 90. A man is shown sitting on his bed, and a servant is handing him his hose. Behind the servant there is a fire in a small hooded fireplace. The smoke is shown exhausting through a short flue above the roof line. *Ibid.*, p. 80. quotes a text of 1447, in which the duty of the chamberlain includes care of the fire and warming the lord's linen “at a clear fire, not smoky if (the weather) be cold or freezing.”

³⁵ Oxford, Bodleian, MS. Douce 6, fols. 160v-161. This calendar scene is reproduced in Lilian M. Randall, *Images in the Margins of Gothic Manuscripts* (Berkeley, 1966), pl. 404.

³⁶ *City in History*, p. 286. Mumford appears to be unduly pessimistic about love chilled by the medieval winter. He says it was not until the Baroque Period that the shift of “love making from a seasonal to a year-round occupation” took place, in great part because of heated rooms. “In a heated room. the body need not cower under a blanket: visual erethism added to the effect of tactile stimuli: the pleasure of the naked body. symbolized by Titian and Rubens and Fragonard. was part of that dilation of the senses which accompanied the more generous dietary. the freer use of wines and strong liquors, the more extravagant dresses, and perfumes of the period” (p. 384). Mumford is correct in one respect. In the scene above sheets and blankets were used, an atavistic, if not a more civilized custom.

od, when large numbers of people customarily slept in the same hall. One might postulate that the chimney influenced love making more than the troubadours did. By the late Middle Ages fireplaces had become standard equipment in many bedrooms. Mumford asked, still, if medieval houses were so frigid, why was it customary to sleep naked.³⁷ Heating devices, especially the chimney, warmed the naked as they slept with less fear of the danger of fire. The growing desire for private quarters in the late Middle Ages and the development of heating devices were contemporaneous and complementary outgrowths of a rising economy

With compartmentalization, specialized functions such as those of the various staffs were removed from the great or royal chamber and provided with their own space. In many cases, such offices were also provided with heating devices which increased the efficiency of the workers. At Abingdon abbey about 1260, a room constructed above an undercroft contained a chimney. The building itself was known as “The Checker” and may have housed the accounting office (*scaccarium*); later the room was subdivided when two treasurers were appointed.³⁸ The sedentary life of the office workers became more amenable when heating devices were built into their workrooms. In many occupations the necessity for warmth was paramount. In the chancery and secretariats of the household, the new heating technology found a ready use. Whereas, in the early Middle Ages the records indicate that monks often had to abandon writing in the wintertime due to the cold, after the chimney and fireplace were introduced, this handicap could be overcome.³⁹

The chimney achieved a structural means for controlling the environment, and public buildings, like private living quarters and working areas, also began to feature the new means of heating. In 1241 we have the interesting case where a chimney was constructed in an almonry.⁴⁰ Providing fuel for the sake of alms was an ancient custom, but the construction of a fireplace and chimney within the almonry itself meant that the poor waiting for disbursements could warm themselves directly. About 1450, in the almshouse at Eweline, the founder made provision for the poor to have separate houses or cells, each of which was to be heated with a chimney.⁴¹ Prisons, which normally must have been cold indeed, were provided with fireplaces at York, and prisoners were to be furnished fuel by provision of a will at Bury St. Edmunds.⁴² Hospitals or infirmaries had of necessity to provide warmth in caring for the sick. In 1245, the king paid for a fireplace in the infirmary (*firmitorio*) of the Friars Minor at Reading.⁴³ At Gateshead, near Newcastle-upon-Tyne, a chimney was constructed in a hospital about 1380.⁴⁴

Although the benefits of new technology were best utilized in small rooms, the chimney was used for larger gathering places as well. By the early fourteenth century entire buildings had names associated with the chimney. In 1305 at Oxford, lectures were given in a building known as

37 *Ibid.*, p. 286.

38 Gabrielle Lambrick, “Abingdon Abbey Administration,” *Journal of Ecclesiastical History*, XVII (1966), p. 176.

39 Henry III ordered the chancellor’s fireplace at Guldeford to be reconstructed. *Liberate Rolls*, IV, 342.

40 “Et in elemosinaria castri Merleberge prostuenda et alia bona ibidem cum quodam camino faciendo . . .” Henry Lewin Cannon, *The Great Roll of the Pipe For the Twenty Sixth Year of the Reign of King Henry the Third* (News Haven, 1918) p. 175. Consult also *Liberate Rolls*, II, 58. Four years later, Henry built a chimney in the almonry at Clarendon. *Liberate Rolls*, III, 67.

41 Rotha Mary Clay, *The Mediaeval Hospitals of England* (London, 1966), p. 120. The combination of heat and privacy went hand in hand, and evidently were to be applied to all social levels. Clay notes that the chimney was a new feature for these people, and produced a change in their life patterns. Evidently this was a popular transformation since other almshouses also adopted the chimney. For example, at Ludlow the charity house had thirty-three rooms with a chimney in each. A considerable variation in the

style and shape of these chimneys is also mentioned by Clay in the houses at St. Cross and St. John in Lichfield.

42 In the year 1377, “...quam in duobus caminis de plastre uno scilicet subttis in camera Gaolatoris et celio desuper in parte predicta domus huius ...” Exch., K. R. Accts. 598. 24, quoted in Salzman, *Building in England*, p. 453. In 1492 Margarete Odeham of Bury left a legacy to purchase wood for prisoners at Bury, “euery weke vij fagrotos of woode from Hulowmesse vnto Eaister yearly.” See *Wills and Inventories from the Registers of the Commissary, of Bury St. Edmund’s and the Archdeacon of Sudbury*, Camden Society Publications, 1st ser., Vol XLIX (London, 1850). p. 77. On heating in prisons consult also Ralph Pugh, *Imprisonment in Medieval England* (Cambridge, England, 1968), pp. 327, 361.

43 *Liberate Rolls*, III, 27.

44 Bishop Hatfield’s Survey ed. by William Greenwell. Surtees Society Publications, Vol. XXXII (Durham, England, 1857), p. 88.

Chimney Hall.⁴⁵ In 1309, a contract was concluded between a carpenter and the clerk for the dean of the chapter of St. Paul's cathedral for the construction of three shops, having on the first floor above "two rooms with chimneys, buttry, pantry, and kitchen..."⁴⁶ In 1370, a similar contract was signed for the construction of an industrial shopping center complex of eighteen establishments, each measuring eleven by twenty-five feet. This contract specified the construction of ten chimneys, "of which eight shall be double and shall be made above the mantles of tiles from Flanders and under the mantles of stone, earthen tiles, each chimney to be five and one-half feet in width between the jarbes."⁴⁷

For this the dean and chapter provided all the stone and lime except "the tiles of Flanders and the plaster on the side mantles of the above-mentioned chimneys."⁴⁸ It would be helpful if we knew the nature of these shops but regardless of the activities carried on in them, the public benefited from the heat provided by the chimneys. Medieval shops for the most part were store rooms or warehouses with one end open for the display of samples to the public, and where craftsmen might be seen at their work. At Southampton there is a medieval building of this nature with a hooded fireplace.⁴⁹ In addition to possible use within the shops themselves, the buying public would find a warm haven.

In 1342, a tavern in London contained two chimneys at either end of its cellar, which must have been useful in providing light as well as smokeless air, because only a few windows were constructed in the building.⁵⁰ The heating of shops, and taverns shows that new technology was applied to public buildings as well as to private houses, and also that the new technology benefited the lower classes.

In the later Middle Ages, people reacted to changing climate by adopting a new heating technology. The growing use of the chimney and fireplace was an attempt to thermally control their environment. This development saw extensive alterations in the relationships between individuals. The chimney widened the gap between the upper and lower classes by permitting major structural changes in house design. Individual rooms enhanced privacy which, in time, profoundly affected most customs but of which the new sexual mores are perhaps the most striking example. Moreover, rooms heated by the new system tended to stratify the members of large units such as the royal household by confining clerks and workers to individual rooms with chimneys. The withdrawal of these officials from the central hall to private offices created the possibility of bureaucratic divisions. But the influence of technology upon social life had even wider psychic and theological implications. Both the regular and secular clergy recognized the beneficial effects of the chimney, and it is no coincidence that this occurred at a time when religious thought moved toward a greater awareness of the natural world. While social distinctions and ideas were changing on the upper levels of society, the lower classes also were directly

45 Alfred Emden, *An Oxford Hall in Medieval Times: Being the early history of St. Edmund Hall* (Oxford, 1968), pp. 35, 47, 57. He cites a manuscript. Twyne MS. xxiii, fol. 100, for this reference. Many of the halls at Oxford derived their names from distinctive architectural features or positions. Corner Hall (Aula Angularis). Glazen Hall (Aula Vitrea), and "Chymeney halle" From the evidence cited by Emden, there appear to have been two halls called Chymney, one on Cheyne Lane. and the other on Hare-hall Lane.

46 Historical Manuscripts Commission, *Reports*, p. 20: "deus sales ove chimynees, botelerie, pantrie et quisine..."

47 *Ibid.*, p. 12.

48 *Ibid.*: "les Flandrysch tyles et plaster pour lez mantelschides des avaunt- ditz chemeneyes."

49 See P. A. Faulkner, "Medieval Undercrofts and Town Houses," *The Archaeological Journal*, CXXIII (1966), p. 131, who surmises that such a shop was used in a luxury trade, such as silk, where goods "could be displayed before exalted customers seated before the fire." Faulkner also points out that there may be lower and upper shops in the same building. Such a shopping complex as described above can be seen in a French miniature, *the Pontificale Senonense*, painted between 1395 and 1426, Paris, Bibliotheque Nationale, MS. lat. 962, fol. 264r, and is reproduced in Joan Evans, ed., *Flowering of the Middle Ages*, (London, 1966). p. 263, pl. 52. This scene shows the Bishop of Paris blessing the Lendit Fair. Six tents and seventeen permanent buildings are shown. Of the latter, five have chimneys, one of which is shown with smoke issuing from it. A French miniature of the middle of the fifteenth century also shows shops in a town scene. These are open booth-like structures on the ground level, with large counters and no windows. On the second story chimneys appear where the merchants and, perhaps, artisans lived and worked. See Walter Goetz et al., *Pro-pyläen Welt Geschichte*, Vol. IV: *Das Zeitalter der Gotik und Renaissance*, 1250-1500 (Berlin, 1932), p. 289.

50 London Bridge Estate Deeds, quoted in Rickert, *Chaucer's World*, p. In 1552, the hotel of the Chamber of Accounts in the courtyard of the Palace in Paris had a very large chimney extending above the gabled roof. This can be seen in a woodcut, *Cosmographie Universelle of Munster*, an engraving of which appears in Paul Lacroix, *France in the Middle Ages* (New York, 1963), p. 320, fig. 279.

involved in the new technology. The use of the chimney among this group was more widespread than we have heretofore recognized. Between the twelfth and fourteenth centuries the entire spectrum of life in medieval England witnessed the development of the chimney. By fostering change in the environment, the chimney altered social patterns and the realm of ideas. The willing acceptance of the benign effects of a new technology became a microcosm of late medieval life, and the concomitant alteration in the vision of the natural world had import for the future.

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AUTHOR

LeRoy Dresbeck (1933-1979) was associate professor of history at Western Washington State College (Bellingham, Washington) specialized in the study of medieval technology.