Although the development of noticeable lines on the face is usually associated with smoking, this is not always so. Although no such persons were encountered during this survey, non-smokers are occasionally encountered with lined faces suggestive of smoker's face. These people tend to be women and although their faces are lined, their complexions are usually sufficiently clear to suggest that in fact they are either non-smokers or past smokers.

Apart from being clinically important in the documentation of a patient the fact that smoking can affect the face so profoundly is important because it is so readily appreciated by patients themselves. In my experience many people notice the ravages of smoking for the first time when it is pointed out to them that they can be identified as smokers by their faces alone. Properly explained and perhaps supported by posters bearing photographic examples, the concept of smoker's face might be helpful in antismoking campaigns.

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DISH at Merton Priory: evidence for a "new" occupational disease?

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Disseminated idiopathic skeletal hyperostosis (DISH) is a disease of considerable antiquity¹; it rarely declares its presence to the clinician before the patient is aged 40 but thereafter becomes increasingly prevalent so that after the age of 70 about 10% of men and 7% of women can be found with the condition.² I present here some evidence to suggest that in times past the disease was particularly common among those following a religious life and question whether it might have been related in part to that occupation.

The clinical material that forms the basis of the study comes from Merton Priory in Surrey. This was one of the earliest of the Augustinian houses, founded in 1140; it shared in the common fate of the monasteries during the reign of Henry VIII and was dissolved and demolished in 1540. The site was used much later for industrial purposes: a calico bleaching trench was dug across it in the latter part of the eighteenth century and Liberty's used part of the site for dying material in the nineteenth. In 1868 a railway line was built across the chapter house. It was removed in 1975, and the site was excavated between 1976 and 1978; most of the area is now occupied by industrial units.

Discoveries at Merton Priory

During the excavations skeletons were recovered from within the chapter house and from the canon's cemetery to the east of the chapter house. There was a total of 35 more or less complete burials, but some of the graves contained small numbers of intrusive bones (a legacy of the many disturbances that the site had suffered), and in one case there were clearly two burials within one grave. Wherever possible the intrusive bones were matched to the appropriate skeleton, after which it became apparent that the bones from at

least seven bodies were present in addition to the 35 burials. There was evidence, therefore, for at least 42 people most of whom should have been priors, although this was certainly not the case for the one female skeleton present. She was presumably a benefactress of the priory who had wished to be buried within its confines.

Among the burials three were found with changes consistent with spinal hyperostosis (fig 1).³ Each of these skeletons also showed extraspinous lesions of the type noted by Resnick *et al* often to accompany the lesions in the spine.⁴ There were eight other burials in which extraspinous hyperostoses were present. In three of these the

FIG 1—Lateral view of fused thoracic vertebrae from Merton Priory. Hyperostoses are seen on right hand side. FIG 2—Anterior view of fused thoracic vertebrae from Merton Priory. Bodies of vertebrae are extensively fused; there are no exostoses.

vertebral column was sufficiently intact to make it reasonably certain that the spine was unaffected except for vertical spicules of bone arising from the superior margin of the laminae; in life these would have arisen from the insertion of the ligamentum flavum. In four others of these eight cases the vertebrae were either too fragmentary or too few in number to be able to draw any firm conclusions. In the remaining case three thoracic vertebrae were extensively fused, but the new bone was smooth and extended all round the anterior of the bodies, suggesting that this person may have been affected by a seronegative arthropathy rather than by DISH (fig 2). Unfortunately, neither the apophyseal joints nor the sacroiliac joints had survived so that further information that might have helped to confirm the diagnosis was lacking.

Manifestations of DISH

The extraspinal manifestations of DISH take the form of calcification and ossification into tendons and ligaments. In extreme forms the calcification may affect cartilaginous tissues and some blood vessels. The table, by Resnick *et al.*,⁴ shows the favoured sites of extraspinal calcification in DISH in a contemporary population. I

Sites of extraspinal hyperostosis in modern population and in skeletons from Merton Priory

	Modern population*		Skeletons from Merton	
	No	%	No	%
Pelvis	21	100	3	27.3
Heel	16	76.2	5	45.5
Foot	15	71.4	1	9.1
Elbow	12	57.1	4	36.4
Shoulder, humerus	8	38.1	2	18.2
Hand, wrist	8	38.1	0	0
Foreleg, ankle	6	28.6	6	54.5
Knee	6	28.6	6	54.5
Femur	3	14.3	5	45.5
Forearm	3	14.3	3	27.3
Ligamentum flavum			5	45.5
Rib			4	36.4
Clavicle			2	18.2

*Data from Resnick *et al.*⁴

have compared this distribution with that found in the skeletons from Merton Priory, and it will be seen that hyperostoses are more common in the pelvis, heel, foot, ankle, and upper limb in the modern population but more common in the knee, femur, and forearm in the skeletons at Merton. Some of these differences can be explained by the poor preservation of the distal parts of the skeletons at Merton, but the differences noted in the frequency of hyperostosis in the pelvis and femur cannot be so explained and may represent a true difference between the two series. In the Merton burials changes were seen at the ends of two clavicles and in the capsule of the costotransverse joints in four cases. In five cases the vertebrae showed calcification into the ligamentum flavum. The changes in the clavicles, ribs, and vertebrae are more easily seen in the dry bones than on x ray and thus may well have escaped notice in the modern cases.

The prevalence of DISH—that is, spinal and extraspinal hyperostosis—in the 35 burials from Merton Priory is 8.6%. This is considerably higher than the prevalence (2.8%) in a modern population² or in the large historical series (2.3%) described by Rogers and her colleagues.¹ By discarding the lone lady, and assuming that the seven incomplete skeletons were all of men and free of DISH, the prevalence at Merton can be reduced to 7.3%, but this is still more than three times greater than that found in Rogers' series.

DISH has been described in the clergy before. Two of Rogers' cases were, in fact, prominent clerics, one being Giso, Saxon bishop of Wells and the other a medieval dean from Lichfield Cathedral. Is there any connection between the aetiology of DISH and monastic life that might explain the high prevalence at Merton?

The aetiology of DISH is not known for certain, although several possibilities have been explored; there is some suggestion, however, that it is related to obesity and late onset diabetes,^{5,6} which could be an important contributory factor in the monks.

Monkish habits

When first established the monastic orders lived under an austere regime, taking one meal a day in winter and two from Easter to mid-September. There was a general prohibition against the eating of meat, but as time went on the monks developed great skill in avoiding these dietary regulations. In one thirteenth century monastery in France the monks were forbidden any meat except game that had been hunted. They overcame this prohibition by persuading hounds, smuggled into the monastery, to chase the pigs raised on the farm around the cloisters thus instantly transforming them into game. Sick monks were always allowed to eat meat so that the total complement tended to eat in the infirmary on a rota in order to supplement their diet.⁷ As one author has stated: "Gluttony was the darling vice of the monasteries,"⁸ and we remember Chaucer's monk—that fat and personable priest—in this context who liked "a fat swan best, and roasted whole." The friar in the party of travellers to Canterbury was also no stranger to the dining table. His semicope sat upon his shoulders "and the swelling fold about him, like a bell about its mould." The master friar in Piers Ploughman ate no solid meat but "costlier foods, special purees and ragouts." He "gobbled up countless different dishes—minced meat and puddings, tripes and gallantine and eggs fried in butter." Indeed, the staggering variety of the medieval monastic diet is impressive. Fish was always abundant but there were also quantities of game—capons and chickens, ducks, geese, egret and herons, pheasants, partridge and pigeons, quail, teal, and swan are all mentioned in the account books of the fourteenth century abbot of Westminster. In 1372 this same abbot gave a dinner at which beef, mutton, four small pigs, five ducks, one swan, six geese, six capon, nine fowl, two woodcock, and a milk cream cheese were served—all washed down by a plentiful supply of wine or ale. The monks at Canterbury offended one visiting scholar by the great amount of food served to them: no less than 16 dishes, all served with stimulating sauces and accompanied by beer, ale, claret, new wine, mead, and mulberry wine.⁸ Preliminary examination of the domestic "rubbish" from St Alban's Abbey confirms the rich variety of the food prepared in the kitchens. Many kinds of fish were there together with hare and rabbit, game birds, roe and red deer, suckling pigs, and young lambs; there were few old cows or mutton for these monks, a sharp contrast with the diet of those who lived outside the abbey walls.

The accumulated evidence suggests that, however noble the intentions of their founders, the medieval monks, or at least the abbots and priors, ate plentifully and well. Morris Bishop notes that the monkish diet and their lack of exercise induced corpulence and invited coronaries.⁸ Unfortunately, the palaeopathological record cannot confirm that particular diagnosis, but we do have a hint that this occupational corpulence may have induced DISH. Only further study will disclose, however, whether the link between the monastic life, obesity, presumed late onset diabetes, and DISH can truly be regarded as an occupational disease.

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