Table 36 *Details of botanical samples examined.*

context	context group	phase	extraction method	context description
6048	M9b(b)	IVc,IVcc	PF	** moist organic soil in Pit 6132
6078	M9b(b)	IVc,IVcc	PF	moist peaty clay soil with much dung
6100	M9b(b)	IVc,IVcc	PF	dungy material
6104	M9b(b)	IVc,IVcc	PF	dung with wood fragments (possibly same as 6078)
6131	M9b(b)	IVc,IVcc	WS 100 cm³	** well preserved organic debris, with straw and many woodchips; fill of Pit 6127
7125	B53 (Phase 2), North Room, Occ(7c)	Vbb	PF	clayey loam
7129	B53 (Phase 1)	Vb	PF	clayey soil with straw, fill of T7152
7168	M8a	Va,Vaa	PFR	clayey soil with much organic material
7169	M1.5b	Vaa	1. PF 2. bot	organic clayey soil
7175	M8a	Va,Vaa	PF	*fibrous material filling Pit 7183
7205	M8a	Va,Vaa	PF	clayey soil with patches of mortar, fill of T7206
7213	M8a	Va,Vaa	PF	loose silty soil with some fibrous material, filling MF7212
7218	M9a	IVc,IVcc	PF	dungy soil with some woodchips, ash patches and areas of burning
7223	M9a	IVc,IVcc	PF	charcoal and dungy soil, filling hearth H7224
7225	M9a	IVc,IVcc	PF	sand with woodchips
7234	M9a	IVc,IVcc	1. PF 2. WS 100 cm³	** dung with much straw, some peat and seeds, much moss; fill of Pit 7230
7320	B18 (Phase 1/2)	IVaa,IVb	bot	mixed clayey soil and sand with many woodchips
7323	B18 (Phase 2a)	IVb	WS 100 cm³	**dung in Pit 7314
9137	B18 (Phase 1/2)	IVaa,IVb	PF	compact dung layer
9153	B18 (Phase 1/2)	IVaa,IVb	1. PF 2. WS 100 cm³	dung with many woodchips and some ash and sand
9235	B18 (Phase 1/2)	IVaa,IVb	1. PF 2. WS 100 cm³	compact brown soil

The botanical remains

Mhairi Fraser and Catherine Smith

Methods

The plant material dealt with here comes largely from the second season of excavation at the site (1977). A total of 31 biological samples from Areas 7, 9 and 10 were examined for their plant macrofossil content. The macrofossils were extracted by J A W Lock from 1kg subsamples of soil by paraffin flotation. Plant remains were recovered from both the flot and the residue, with the exception of four samples from which only the residue was examined. Small sub-samples of 100cm^3 of soil (300cm^3 in one case) from a number of contexts were also examined by wet-sieving to ensure recovery of all remains. In addition hand-picked botanical samples were examined.

Extracted plant remains were sorted and identified by comparison with modern reference material. Nomenclature of plants follows Clapham, Tutin and Warburg (1962) for angiosperms and Smith, A (1978) for bryophytes.

Table 36 lists the samples taken, with brief notes on their archaeological contexts.

Table 36 *(continued)*

context	context group	phase	extraction method	context description
9240	P8.2b	IVb	PF	patch of peaty soil in pathway
9251	B18 (Phase 1/2)	IVaa,IVb	PFR	clay, partially burnt; lining for hearth H9244
9261	B18 (Phase 1b)	IVa,IVaa	1. PFR 2. bot	grey ash; destruction layer
9273	B18 (Phase 1/2)	IVaa,IVb	PF	organic soil filling posthole PH9270
9275	B18 (Phase 1/2)	IVaa,IVb	PF	*sandy soil with some woodchips filling Pit 9276
9277	B18 (Phase 1/2)	IVaa,IVb	PF	organic soil with lenses of ash
9279	B18 (Phase 1/2)	IVaa,IVb	PF	ash with lenses of black organic material
9280	B18 (Phase 1b)	IVa,IVaa	PF	dung, mortar and soil filling posthole PH9242
9282	B18 (Phase 1/2)	IVaa,IVb	PFR	loam and woodchips
9285	B18 (Phase 1/2)	IVaa,IVb	PF	dung with ash and woodchips
9302	B18 (Phase 1/2)	IVaa,IVb	PF	*dungy soil with woodchips, filling Pit 9301
9317	B18 (Phase 1/2)	IVaa,IVb	PF	*dung with patches of ash and sand, filling Pit 9301
9325	B18 (Phase 1/2)	IVaa,IVb	PF	ash with lens of dung

notes/key

PF	paraffin flotation	bot	botanical sample
PFR	paraffin flotation; residue only examined for plant remains	*	sample from a pit
WS	wet sieved	**	sample from a possible cess pit

Dating of the botanical samples

Dendrochronological studies of timbers from the site and studies of imported pottery have shown that most of the deposits from which the samples came date to within the period c1120 to c1370. Timber from a pit under Building 18 gave a felling date of after 1139 (no bark was present), while timber from inside the building gave a felling date range of 1172–1208 (Fascicule 1, Appendix 5). Sherds of Rouen pottery dating to around the mid 13th century were found associated with the same building.

Description of plant assemblages recovered from the contexts examined

Most of the plant material in the deposits was preserved under anaerobic conditions due to waterlogging which effectively excludes the oxygen necessary for decomposition by aerobic organisms in the soil. However the majority of cereal grains, a few legume seeds and a small number of seeds of weeds, heathland and wetland plants were carbonised.

The samples were remarkably rich in terms of number of species (see Table 37). A total of 147 taxa were recorded, including 24 bryophytes (mosses and liverworts). Of this total, however, only 26 were considered as 'plants useful to man', the great majority being weeds and plants of wet places and heathland. Of the potentially useful plants, some, such as bramble and hazel, probably grew wild nearby. The waterlogged conditions of the site were favourable to the preservation of seeds of wild plants, many of which are weedy species producing large quantities of persistent seeds. Remains of plants of economic importance such as cereal grains and flax seeds were present only in small quantities. Even fig seeds, often abundant in medieval cess pits, for example at Elgin and Aberdeen (Fraser 1981), were extremely scarce. Of the cereals, carbonised grains of oats were the most frequent while barley, wheat and rye were also present.

Cereal debris, in the form of grain fragments of wheat, oats and barley, was present in cess pits, for example, in Contexts 6131 (Pit 6127), 7234 (Pit 7230) and 7323 (Pit 7314). The paraffin-floated samples produced only tiny quantities of cereal debris indicating that such small fragments are generally not retrieved using this processing method. Eggs of the roundworm parasite, *Trichuris*, were found on wheat fragments in the sample from Context 7323 (Pit 7314; Building 18 (Phase 2a); Phase IVb). Legume seed coat fragments were present in the three contexts mentioned but the species were not determined. Large robust mosses were particularly abundant in Context 7234 (Pit 7230; M9a; Phase IVc,IVcc) and were possibly used as 'toilet paper' or for stuffing and packing, indicating that the feature may have been used as a latrine or cess pit.

Many of the samples come from layers of dung and in these, seeds of weed species are particularly frequent. It is not always simple to distinguish between human and animal dung although evidence of cereal debris will usually indicate the former. Seeds of many wild plants may have been consumed by animals and humans alike. Many of the weeds are common species of arable land and waste ground. Some of these weeds may have been growing on the site, for example, nettles and docks, while others, such as cornflower and stinking mayweed, were probably brought to the site perhaps in association with crops or in animal dung. Petals and calyces of clover species and grass grains may indicate the presence of fodder. Grass grains are generally poorly represented in the samples. Many grasses possess transient seed banks which are present only during the summer (Thomson and Grime 1979) and thus the likelihood of incorporation in the deposits is reduced. The meadow grasses (*Poa* spp), whose grains were fairly frequent in the wet-sieved samples, produce a quantity of 'seeds', a proportion of which fail to germinate directly; some of these are incorporated into a persistent seed bank (ibid). This, combined with their relative ease of identification, may account for their apparently greater frequency at the site. The commonest weed seeds recovered were pale persicaria, redshank, fat hen, sheep's sorrel, hemp-nettle, corn spurrey, chickweed and nettle. These were all very frequent in waterlogged samples from archaeological contexts and, though some may have been gathered in times of scarcity, it is likely that most have no economic significance.

Heathland plants were frequent in most of the samples, in particular, shoots of heather and achenes of tormentil. Heather probably had a variety of uses including bedding and thatching.

A great variety of wetland plants was present in the samples. Most of these probably grew close by on wet ground bordering the Tay, although some, such as bogbean and bristle club-rush, were probably brought in to the site. The river was liable to flood, as it did for example in 1209 when the castle and bridge were swept away, thus helping to produce the waterlogged conditions in which plant remains are preserved. Nuts of sedges were very frequent. Along with rushes, whose seeds were also common, sedges may have been gathered for use as floor covering, although no direct evidence of this was found on the site. A few fruits of meadowsweet were also found. The sweet-scented flowers and leaves were also formerly used for floor covering. According to Gerard (1597) 'the leaves and flowers far excell all other strowing herbes ... for the smell thereof maketh the hart merrie, delighteth the senses'.

Egg cases of the freshwater invertebrates, *Daphnia* and *Plumatella*, were common in some samples. Since the Tay is tidal as far upstream as Perth, the habitat of these creatures is more likely to have been the lade, ditches and streams flowing into the main river.

Table 37 *Summary of plant remains.*

Key to abundance

\+ 1–5 fossils
* 6–15 fossils
** 16–100 fossils
*** Over 100 fossils

Plants useful to man

species	common name	type	abundance	number of contexts in which fossil occurs
Avena sativa L.	oats	floret	**	19
		grain	***	29
		grain fragment	**	4
Hordeum vulgare L.	bere barley	rachis internode	*	2
		grain	**	15
		grain fragment	**	1
Secale cereale L.	rye	grain	*	7
Triticum aestivum s.l.	wheat	grain	*	9
		grain fragment	***	6
Cereals – unidentified		grain	+	4
Brassica campestris L.	turnip	seed	**}	
B. cf *campestris*		seed	*}	}30
Brassica sp		seed	**}	
Corylus avellana L.	hazel	nut shell	***	29
Ficus carica L.	fig	seed	*	8
Fragaria vesca L.	wild strawberry	achene	*	6
Hyoscyamus niger L.	henbane	seed	*	6
Juglans regia L.	walnut	stone (walnut)	+	1
Linum usitatissimum L.	flax	seed	**	10
Malus silvestris s.l.	apple	seed	+	2
Papaver somniferum L.	opium poppy	seed	+	2
Prunus avium (L.)	gean, wild cherry	stone	**	1
P. domestica ssp *institia* (L.) C.K.	bullace	stone	+	1

Table 37 *(continued)*

species	common name	type	abundance	number of contexts in which fossil occurs
Quercus sp	oak	acorn	+	1
Reseda luteola L.	weld, dyer's Rocket	seed	**	9
Rosa canina agg	dog rose	achene	+	3
Rubus chamaemorus L.	cloudberry	seed	+	1
Rubus fruticosus agg	bramble	seed	*	5
Rubus idaeus L.	raspberry	seed	+	1
Sambucus nigra L.	elder	seed	*	7
Sorbus aucuparia L.	rowan	seed	*	3
Vaccinium myrtillus L.	blaeberry	seed	**	8
Polytrichum commune Hedw.		moss rope	+	1

Plants of waste places and arable land

species	common name	type	abundance	number of contexts in which fossil occurs
Achillea millefolium L.	yarrow	achene	*	7
Agrostemma githago L.	corn cockle	seed	**	14
Anthemis cotula L.	stinking mayweed	achene	**	8
Avena fatua L.	wild oat	floret	*	4
Bromus mollis agg	lop-grass	grain	+	2
Capsella bursa-pastoris (L.) Medic.	shepherd's purse	seed	**	4
Cerastium fontanum Baumg.	mouse-ear chickweed	seed	**	15
Chenopodium album L.	fat hen	seed	***	32
Chrysanthemum segetum L.	corn marigold	achene	*	6
Cirsium arvense (L.) Scop.	creeping thistle	achene	+	2
Cirsium vulgare (Savi) Ten.	spear thistle	achene	+	2
Euphorbia helioscopia L.	sun spurge	seed	+	3
Galeopsis tetrahit agg	hemp-nettle	nutlet	***	29
Hypochaeris radicata L.	cat's ear	achene	+	1
Juncus bufonius L.	toad rush	seed	**	11
Lapsana communis L.	nipplewort	achene	***	24
Leontodon autumnalis L.	autumnal hawkbit	achene	**	13
Myosotis arvensis (L.) Hill	forget-me-not	nutlet	**	12
Odontites verna (Bell.) Dum.	red rattle, bartsia	seed	+	1
Papaver dubium L.	long-headed poppy	seed	*	5

Table 37 *(continued)*

species	common name	type	abundance	number of contexts in which fossil occurs
Plantago lanceolata L.	ribwort plantain	seed	+	3
P. major L.	great plantain	seed	+	1
Poa annua L.	annual meadow grass	grain	*	3
P. trivialis L.	meadow grass	grain	**	8
Polygonum aviculare L.	knotgrass	fruit	***	25
P. convolvus L.	black bindweed	fruit	**	24
P. lapathifolium L.	pale persicaria	fruit	***	32
P. persicaria L.	redshank	fruit	***	31
Prunella vulgaris L.	self heal	nutlet	***	27
Ranunculus repens L.	creeping buttercup	achene	***	31
Raphanus raphanistrum L.	wild radish	fruit segment and seed	**	16
		fruit segment	**	6
		seed	*	5
Rhinanthus sp	yellow-rattle	seed	*	1
Rumex acetosa L.	sorrel	fruit	+	1
Rumex acetosella agg	sheep's sorrel	fruit	***	29
*R.*cf *conglomeratus* Murr.	sharp dock	fruit	+	2
R. crispus L.	curled dock	fruit	+	2
Rumex sp		fruit	***	27
Scleranthus annuus L.	annual knawel	fruit	+	1
Senecio cf *vulgaris* L.	groundsel	achene	+	2
Silene sp (*Melandrium* Roehl.)	campion	seed	*	5
Sinapis arvensis L.	charlock	seed	*	5
Sonchus asper (L.) Hill	prickly sow-thistle	achene	*	8
S. oleraceus L.	sow-thistle	achene	*	5
Spergula arvensis L.	corn spurrey	seed	***	32
Stachys cf *sylvatica* L.	hedge woundwort	nutlet	+	1
Stellaria media (L.) Vill.	chickweed	seed	***	30
Thlaspi arvense L.	field pennycress	seed	*	7
Torilis japonica (Houtt.) D.C.	upright hedge-parsley	fruit	*	7
Trifolium pratense L.	red clover	calyx	+	1
T. repens L.	white clover	petal	**	2

Table 37 *(continued)*

species	common name	type	abundance	number of contexts in which fossil occurs
Tripleurospermum inodorum L. Schultz-Bip.	scentless mayweed	achene	*	6
Urtica dioica L.	stinging nettle	achene	***	23
U. urens L.	small nettle	achene	**	12
Vicia cf *cracca* L.	tufted vetch	seed	+	1
Vicia sp		seed	+	3
Viola sp Subgenus *Melanium*	pansy	seed	**	17
Compositae		achene	+	2
Graminae		achene	+	2
Labiatae		nutlet	+	1
Umbelliferae		nutlet	+	4
undetermined seeds			**	18

Heathland plants

species	common name	type	abundance	number of contexts in which fossil occurs
Calluna vulgaris (L.) Hull	heather	flower/ fruit	***	24
		seed	**	11
		shoot	***	21
		leaf	**	7
Erica cinerea L.	bell heather	seed	**	13
Erica tetralix L.	bog heather, cross-leaved heath	seed	+	3
		leaf	***	14
Eriophorum vaginatum L.	cotton grass	leaf base spindle	+	2
Galium saxatile L.	heath bedstraw	fruit	+	1
Juncus squarrosus L.	heath rush	seed	**	12
Luzula multiflora (Retz.) Lej.	woodrush	seed	+	3
Myrica gale L.	bog myrtle	fruit	+	3
		leaf frag	+	1
Potentilla erecta (L.) Rausch	tormentil	achene	***	22
Pteridium aquilinum (L.) Kuhn	bracken	frond frag	**	5
Selaginella selaginoides (L.) Link	lesser clubmoss	megaspore	+	2

Table 37 *(continued)*

species	common name	type	abundance	number of contexts in which fossil occurs
Viola sp. subgenus *Viola*	violet	seed	+	2

Trees

species	common name	type	abundance	number of contexts in which fossil occurs
Betula pubescens Ehrh.	birch	fruit	*	7
Salix sp	willow	fruit	*	11

Plants of wet habitats

species	common name	type	abundance	number of contexts in which fossil occurs
Ajuga reptans L.	bugle	nutlet	+	1
Bidens tripartita L.	bur-marigold	achene	+	1
Caltha palustris L.	kingcup	seed	*	7
Carex spp *distigmatae*	sedge	nut	***	30
Carex spp *tristigmatae*	sedge	nut	***	28
Eleocharis palustris (L.) Roem & Schult.	common spike-rush	nut	**	16
Epilobium parviflorum Schreb.	willowherb	seed	+	1
Filipendula ulmaria (L.) Maxim	meadowsweet	fruit	**	5
Galium palustre L.	marsh bedstraw	fruit	*	6
Glyceria fluitans (L.) R.Br.	floating sweet-grass	grain	+	1
Hydrocotyle vulgaris L.	marsh pennywort	fruit	+	2
Iris pseudocorus L.	yellow flag	seed	+	2
Isolepis setacea (L.) R. Br.	bristle club-rush	nut	**	4
Juncus articularis L.	jointed rush	seed	**	7
Juncus effusus L.	soft rush	seed	***	9
Juncus sp		seed	+	1
Lychnis flos-cuculi L.	ragged robin	seed	*	8
Lycopus europaeus L.	gipsy-wort	nutlet	*8	14
Menyanthes trifoliata L.	bogbean	seed	*	5
Montia fontana L. ssp. *fontana*	blinks	seed	*	5
Pedicularis palustris L.	red-rattle	seed	**	11
Potamogeton polygonifolius Pourr.	bog pondweed	fruit	+	2
Potentilla palustris (L.) Scop.	marsh cinquefoil	achene	*8	12

Table 37 *(continued)*

species	common name	type	abundance	number of contexts in which fossil occurs
Ranunculus flammula L.	lesser spearwort	achene	**	18
R. sceleratus L.	celery-leaved crowfoot	achene	+	3
Ranunculus sp subgenus *Batrachium*	water crowfoot	achene	+	1
Senecio cf *aquaticus* Hill	marsh ragwort	achene	*	5
Viola palustris L.	marsh violet	seed	+	3

Bryophytes

species	common name	type	abundance	number of contexts in which fossil occurs
Antitrichia curtipendula (Hedw.) Brid.			***	2
Aulacomnium palustre (Hedw.) Schwaegr.			+	3
Brachythecium rutabulum cf *Bryum* sp			+	1
Ceratodon purpureus (Hedw.) Brid.			+	1
Dicranum scoparium Hedw.			*	2
Eurhynchium praelongum (Hedw.) Br. Eur.			*	5
Hylocomium brevirostre (Brid.) Br. Eur.			**	1
H. splendens (Hedw.) Br. Eur.			***	15
Hypnum cupressiforme Hedw.			**	16
Isothecium myosuroides Brid.			+	3
Mnium hornum Hedw.			*	3
Neckera complanta (Hedw.) Hub.			+	1
Plagiomnium affine (Funck) Kop.			+	2
Pleurozium schreberi (Brid.) Lindb.			*	3
Polytrichum commune Hedw.			***	1
Polytrichum formosum Hedw.			*	4
Pseudoscleropodium purum (Hedw.) Fleisch			+	2
Rhytidiadelphus loreus (Hedw.) Warnst			***	3
Sphagnum palustre L.			**	7
Sphagnum sp		operculum	+	1
		shoot	+	3

Table 37 *(continued)*

species	common name	type	abundance	number of contexts in which fossil occurs
Thuidium tamariscinum (Hedw.) Br. Eur.			**	4
Ulota crispa (Hedw.) Brid.			+	2
Liverwort cf *Plagiochila asplenioides* (L.) Dum.			+	1

From the evidence recovered, the major crops grown were oats and bere while wheat was probably grown only in small quantities. Oats and bere provided the staples of porridge, bread and ale for the greater part of the medieval population, while wheat was presumably available to an upper class minority at least. Vegetables would seem to have been scarce. The legume seed coat fragments recovered may possibly have come from cultivated species while the carbonised legume seeds were referred to wild vetch species. Large-seeded legumes in general do not preserve well. They are unlikely to be carbonised since they do not require parching. Peas and beans were actually imported to Scotland in the 13th century along with corn and salt (Duncan 1975a, 498, 506). It was possibly still necessary to import them until at least the 16th century. 'Pess' (peas) are mentioned among other foodstuffs in an entry in the Perth Guildry Book for the year 1556, although their point of origin is not specified (Stavert 1993, 236). The *Brassica* seeds recovered may indicate cultivation of green vegetables. Fruit, both wild and cultivated, was seasonally available to supplement the diet and, for those who could afford it, the luxury of dried figs and walnuts.

Notes on some species of interest

Cereals

*Oats (*Avena sativa*), barley (*Hordeum vulgare*), rye (*Secale cereale*), wheat (*Triticum aestivum *s l)*

Many of the cereal remains consisted of carbonised grains and florets (see Table 38). Uncarbonised grain fragments of wheat, oats and barley were also present in certain samples, as well as rachis segments of barley.

The majority of oat florets came from *Avena sativa*, the common white oat. Florets of the wild oat, *A. fatua*, are easily distinguished from other species of oat likely to be encountered by their distinctive suckermouth base. It is possible, however, that some of the carbonised grains identified as *A. sativa* may be *A. fatua*. In addition to behaving as a weed, *A. fatua* may have been grown in mixed crops. Thus, Anderson (1794) in his description of the agriculture of Aberdeenshire, mentions that the wild oat is so abundant there as often to constitute nearly half of the bere crop. In addition the size of the grains makes them difficult to separate from bere by winnowing.

The preserved evidence suggests that the main cereal crop was the common white oat *A. sativa*. It is surprising that no evidence of *A. strigosa* (grey or bristle oat) was recovered. However, although some small grains referable to *A. strigosa* have been found at other sites within the medieval burgh of Perth, at Canal Street III, Meal Vennel, King Edward Street and Blackfriars House (Fairweather 1992; Fairweather 1996a, 795, Robinson 1995; Boyd nd) this species is notably absent from Kirk Close, Canal Street II and South Methven Street in Perth (Robinson 1987a, 205). Nevertheless, *A. strigosa* has been found in St Andrews at 134 Market Street, 106–110 South Street and the Byre Theatre site, Abbey Street (Boyd 1988, 105; Holden, 2000, 131; Hastie and Holden 2001, 77) and in Dundee at 23-35 Panmure Street/72–8 Murraygate (Hastie and Holden 2000, 63). It was also thought to be present at 77–79 High Street, Arbroath (Holden 1999, 67). Although the bristle oat was not as common at Perth High Street as *A. sativa*, this does not seem to be the case in other burghs such as St Andrews, where it is considered to be the more plentiful of the two species. Its apparent poor recovery rate here may therefore be due to problems of preservation. However, Dickson (1996, 29) has suggested that bristle oats found in the 15th-century fill of the Paisley Abbey drain may have been used to feed horses, since the Cluniac monks were wealthy enough to afford imported wheat.

Table 38 *Numbers of carbonised cereal grains and florets, by species.*

species	number of carbonised grains	number of carbonised florets
Avena sativa	159	38
A. fatua		6
Hordeum vulgare	29	
Secale cereale	10	
Triticum aestivum s.l.	8	

In later centuries the bristle oat was the species commonly cultivated, particularly on poorer acid soils. In recent times *A. strigosa* is a more frequent weed in fields of *A. sativa* than is *A. fatua*, which is restricted to better soils (Findlay 1956).

The barley grains were hulled, and rachis segments (from the axis of the spike) indicated that the lax-eared variety, bere (*Hordeum vulgare tetrastichum*) was grown. Bere barley was also common in the plant assemblages from other medieval sites in Perth, for example at Kirk Close, South Methven Street and Canal Street II, where the remains occurred as frequently as those of oats (Robinson 1987a, 205), as well as at King Edward Street, Mill Street and Canal Street III (Robinson 1995; Fairweather 1996b, 727). In the burgh of St Andrews, bere was present at 134 Market Street, 106–110 South Street and the Byre Theatre site in Abbey Street (Robinson and Boyd 1997, 138; Holden 2000, 131; Hastie and Holden 2001, 77).

Much of the barley crop may have been brewed into ale; Duncan (1975a, 350–1) has suggested that perhaps as much as a third of the grain grown in Scotland each year in medieval times was used for this purpose.

Ten carbonised grains were identified as rye. According to Duncan (1975a, 323) rye is scarcely mentioned in the medieval rentals but was grown on a small scale in central Scotland in the early 14th century. The physical evidence of rye grains from 12th-century Perth is therefore of great interest. Further evidence for the presence of rye in medieval Perth comes from a latrine deposit at Kirk Close where its remains (testa fragments) were far more abundant than those of oats or barley (Robinson 1987a, 200–1). It was also recorded at King Edward Street (Robinson 1995). Sites in medieval St Andrews and Dundee have also yielded evidence of rye (Hastie and Holden 2001, 77; Hastie and Holden 2000, 63). At 77–79 High Street, Arbroath, the quantity of rye grains compared with hulled barley and bristle oat was particularly notable (Holden 1999, 66). That rye continued to be grown in Scotland in the post-medieval period is suggested by an entry of 1551 in the Perth Guildry Book, which mentions 'ry', although as the origin of the consignments is not mentioned, it is possible that it may refer to imported grain from outwith Scotland (Stavert 1993, 236).

In the 18th century oats and rye were sometimes sown together on poor land in the north of Scotland and ground to make a coarse meal. However by the end of that century rye had gone out of cultivation (Handley 1953). Its decline may have been exacerbated because of its excess demands on the soil, as was the case in the Western Isles in the 18th century (Dodgshon 1993, 682).

Wheat was cultivated on more fertile land than that required for oats, barley and rye and in particular was grown for the king's needs. For example, around the year 1170, William I commanded 'Archibald and Hugh, sons of Swain of Forgan, to render to Scone Abbey every year eight chalders of wheat, being the teind of the king's wheat at Longforgan' (*RRS*, i, no 16). Duncan (1975a, 322) states that in the royal accounts for the 1260s the sheriff of Perth received rents in oatmeal, bere and oats, but bought in wheat for the King's service.

During the 12th and 13th centuries grain was imported to Scotland, principally to the ports of Berwick and Perth. Scottish cereal production was probably insufficient to supply the needs of an increasing population, much of the land being totally unproductive and waterlogged. Even in the early 18th century the now extremely fertile Carse of Gowrie was 'in many places over-run with rushes, disfigured by pools of water. . .and the whole people subject to ague' (Donaldson 1794). Thus when in the 16th century the Perth Guildry Book refers to 'quete' at the harbour of Perth, it may be imported grain that is meant (Stavert 1993, 236).

Further evidence for the consumption of wheat in the medieval period has been found in latrine fills at Queen Street in medieval Aberdeen (Fraser and Dickson 1982, 240) and at Kirk Close, Perth, although there are well known difficulties in distinguishing between testa fragments of wheat and rye (Robinson 1987a, 200, 205). In medieval St Andrews wheat has been identified at 134 Market Street (Boyd 1988, 101), 106–110 South Street (Holden 2000, 131) and the Byre Theatre site, Abbey Street (Hastie and Holden 2001, 77). Wheat was also present in samples from 77–79 High Street, Arbroath (Holden 1999, 66).

Vegetables, fruits and nuts

Brassica species (turnip, etc)

Almost 150 seeds and numerous fragments were recovered. A few seeds were present in most samples; seeds were not concentrated in any particular sample. The better preserved seeds were referred to *Brassica campestris*. The seeds vary in size (1.30–1.99mm) and have marked surface reticulation. They may belong to the wild subspecies *eu-campestris*, wild turnip or wild navew. Significant numbers of *Brassica* seeds referable to turnip-rape or turnip have been recovered from Kirk Close, Perth but were comparably much less common at South Methven Street, Canal Street II and Mill Street (Robinson 1987a, 206; Robinson nd). There are no records of cultivation of *Brassica* species in Scotland in medieval times although 'kail' of an unspecified variety was grown from at least the 15th century (Fenton 1976). A statute of the 'dene of gilde and merchandis' of Perth dating to 1551 does indeed mention 'caill' as one of the foodstuffs or 'siclike small gudis' which could only be sold on a mercat day but there is no clue as to what kind is meant (Stavert 1993, 208). At the present day, Scots speakers tend to use the term 'kail' to refer either to curly kale, cabbage (*Brassica oleracea*) or indeed any broth or soup made from them, thus adding to the confusion.

*Fig (*Ficus carica*), walnut (*Juglans regia*)*

Nine fig seeds were recovered from a total of eight contexts. Two half walnut shells were recovered from Building 18 (Context 7320, Phase IVaa,IVb). Fig seeds have also been found in a 16th- to17th-century cess pit fill at Mill Street in Perth (Robinson 1995, 992), and in a medieval latrine fill at the Byre Theatre site in St Andrews which also contained grape pips and a variety of fruit stones (Hastie and Holden 2001, 79). The 15th-century drain fill of Paisley Abbey contained fig pips, the fruit probably having been consumed for medicinal reasons (Dickson 1996, 29). Figs found in medieval Scottish contexts are thus almost inevitably associated with sewage (Dickson 2000, 226).

Both figs and walnuts must have been imported to medieval Perth. During the 13th century wine was imported to Scotland from the north of France and Bordeaux (Duncan 1975a, 508) and also from the Wash ports (Carus-Wilson 1963). It is probable that the cargoes included other luxury goods such as dried figs and walnuts. Both figs and walnuts are native to the Middle East and eastern Mediterranean region. Figs were an important source of sugar in medieval times, sugar itself only being imported to Scotland from the late 15th century onwards (Fenton 1976).

*Apple (*Malus sylvestris *s l)*

Two apple pips were recovered, one from Midden 8a (Context 7168, Phase Va,Vaa) and one from Building 18 (Context 9279, Phase IVaa,IVb). The dimensions of the pips are as follows: 7.4mm by 5.0mm, 7.2mm by 4.3mm. In both cases the pointed end of the pip was damaged so the original lengths will have been greater. They are both larger than pips recovered from medieval Elgin which were all under 7mm in length (Fraser 1981). They probably belong to the cultivated rather than the wild (crab) variety which was local and uncommon in Perthshire in the 19th century (White 1898, 139). Apple pips, possibly from cultivated fruit, were also recovered from a latrine fill at the Byre Theatre site, St Andrews (Hastie and Holden 2001, 78) and from the drain fill at Paisley Abbey, where it is presumed the apples originated from the abbey orchard (Dickson 1996, 29).

*Bullace (*Prunus domestica *ssp* institia*), gean or wild cherry (*P. avium*), blackthorn or sloe (*P. spinosa*)*

One stone of bullace and 13 stones of gean (wild cherry) were recovered from Context 7234, a fill of Pit 7230 in Midden 9a (Phase IVc,IVcc). One sloe stone was recovered from Building B18 (Context 9153, Phase IVaa, IVb). By contrast, large numbers of *Prunus* stones were found at medieval Elgin (Fraser 1981). A few bullace stones were recovered from the drain fill of Paisley Abbey (Dickson 1996, 29), while bullace, cherry and sloe stones were also found in the latrine fill at the Byre Theatre site, St Andrews (Hastie and Holden 2001, 77–9).

Gean and blackthorn are frequent trees and shrubs in woods and are still found in lowland Perthshire. The single bullace stone is large (20mm by 13.5mm) in comparison to the Elgin stones but its shape resembles stones of ssp *institia* rather than spp *domestica*, the cultivated plum. Bullace trees were probably grown in medieval times for their fruit. Today they are still occasionally planted and can be found growing naturalised.

*Cloudberry (*Rubus chamaemorus*)*

Half a seed of cloudberry was found in the paraffin-floated sample from Context 9235, a compact brown soil from Building 18 (Phase IVaa,IVb). Three hundred cm^3 of untreated soil from the same context was wet-sieved but no further seeds were found. The recovered seed was pale brown and 4.1mm long.

Cloudberry is a native species, more or less confined to the drier aspects of wet, acidic, peat bog in upland Britain. It is characteristic of high-level blanket bogs in which *Calluna vulgaris* and *Eriophorum vaginatum* are co-dominant. In the eastern Highlands it is found between altitudes of 300m and 1100m (Taylor 1971). Matthews (1955) classifies it as arctic–subarctic in distribution. Setting of seed is erratic and localised in Britain, presumably being influenced by grazing, burning and climatic events. The plant is strictly dioecious and Raven and Walters (1956) suggest that a greater frequency of male plants may be partly responsible for poor fruiting.

Wild forms of *Rubus chamaemorus* and other *Rubus* species are popular foods in Scandinavia, especially for making liquors (Jennings 1976). Gerard (1597) tells us that 'the fruit quencheth thirst, cooleth the stomacke, and alaieth inflammation being eaten as whortes are, or the decoction made and drunk'.

There appear to be no records of seeds of cloudberry in the British fossil record. Tallantire (1979) records it from archaeological deposits from medieval Trondheim in Norway. To account for the Perth seed we must either assume that cloudberries were deliberately brought to the site by man or else the seed reached the site in bird or mammal dung, perhaps goat droppings, since goats were frequently grazed in upland areas.

*Bramble (*Rubus fruticosus*), raspberry (*R. idaeus*), strawberry (*Fragaria vesca*), rose (*Rosa canina*), rowan (*Sorbus aucuparia*), elder (*Sambucus nigra*), blaeberry (*Vaccinium myrtillus*)*

The fruits of these plants no doubt helped to add variety to the diet when available. Only small numbers of seeds or achenes of each were found, however. Much larger quantities, especially of *Rubus* seeds, were found at medieval Aberdeen and Elgin (Fraser 1981). Bramble, strawberry and bilberry seeds were also recovered from a latrine fill at the Byre Theatre site, St Andrews (Hastie and Holden 2001, 78–9). Seeds from bramble or raspberry were also present in a post-medieval cess-pit fill at Mill Street, Perth (Robinson 1995, 992).

Bramble, raspberry, rowan and blaeberry were also all present in the drain fill at Paisley Abbey (Dickson 1996, 29).

Medicinally, blaeberries were valued in the Highlands as a remedy for ailments such as dysentery and kidney stones, while rowan berries were used to treat whooping cough (Beith 2004, 205–6, 237).

Trees

*Hazel (*Corylus avellana*), oak (*Quercus sp*)*

Hazel nutshell fragments were abundant in many samples. Half shells were frequent as well as occasional whole nuts. Many of the hand-picked botanical samples consisted of finds of hazelnuts. Only one or two pieces showed signs of gnawing by animals, most of the fragments presumably resulting from being broken by man. Hazel shrubs are common in woods and scrub and the nuts were a major item in the diet of mesolithic man (Dimbleby 1978, 34). The kernels can be ground into flour for baking and probably continued to be a convenient food in medieval times. Nutshell fragments are common at many medieval urban sites in Britain including Aberdeen, Elgin and St Andrews as well as the Paisley Abbey drain (Fraser 1981; Hastie and Holden 2001, 77; Dickson 1996, 29).

One whole acorn was recovered from Context 9261, a destruction layer in Building 18 (Phase IVa, IVaa).

Crop contaminants

*Corn Cockle (*Agrostemma githago*), stinking mayweed (*Anthemis cotula*), cornflower (*Centaurea cyanus*), corn marigold (*Chrysanthemum segetum*)*

These weeds of cultivated land have all decreased markedly in recent years due mainly to changes in agricultural practice. Whole seeds and fragments of corn cockle were frequent in the samples. Fragments were abundant along with cereal debris in the latrine pit sample from Building 18 (Context 7323, Phase IVb). As the seeds are poisonous, presumably this bread was rather unpalatable to the consumers. Corn cockle is very frequent in plant assemblages recorded at medieval sites.

Achenes of stinking mayweed were abundant in the sample from Context 9137 in Building 18 (Phase IVaa, IVb), a compact dung layer. This weed of arable land was rare, or overlooked, in Perthshire by the 19th century (White 1898). Achenes have been found elsewhere in Perth, at Mill Street (Robinson 1995, 990). Stinking mayweed has also been noted at medieval Aberdeen (Fraser 1981).

Medicinal and dye plants

*Henbane (*Hyoscyamus niger*)*

A total of seven seeds of henbane were recovered from six samples. Like its close relation, deadly nightshade, a large number of seeds of which were found at medieval Elgin (Fraser 1981), the plant is poisonous and narcotic. It contains the alkaloids hyoscyamine and scopolamine (Claphamet al 1962). However, early physicians found it a plant more easily handled than deadly nightshade (Grigson 1975, 315). Gerard (1597) tells us that 'henbane causeth drowsiness and mitigateth all kinds of paine. It is good against hot and sharpe distillations of the eies and other parts'. In Denmark, seeds were placed into hollow teeth as a local anaesthetic (Jensen 1979).

Henbane is native in southern England but occurs as a casual in Scotland. It has been found elsewhere in Perth, where it formed part of the medieval flora growing along the ladeside at Mill Street (Robinson 1995, 991). There are fossil records from Roman and Anglo-Saxon York (Greig 1976; Godwin and Bachem 1959) and medieval Beverley (Hall and Kenward 1980). Seeds of *Hyoscyamus* have remarkable longevity; seeds capable of germinating were found at habitation sites from the 14th century in Denmark (Ødynm 1965).

*Opium poppy (*Papaver somniferum*)*

Four seeds of opium poppy were recovered, three of which came from Context 9235 in Building 18 (Phase IVaa,IVb). The narcotic properties of this plant have long been used to alleviate pain. The poppy seed was probably imported and the plant grown for the opium which is obtained from the latex of the capsule. Seeds have been found at other medieval sites including Aberdeen and in the Paisley Abbey drain fill, as well as the Roman fort of Bearsden (Dickson et al 1979; Dickson, C 1996, 27).

*Bog myrtle (*Myrica gale*)*

Five fruits and a single leaf fragment of bog myrtle were found. This is a plant with numerous uses such as flavouring ale or beer, for use as brooms, repelling insects and as a yellow dye. Several leaf fragments and a single fruit were recovered from medieval Aberdeen (Fraser and Dickson 1982, 243). Further finds from the 45–75 Gallowgate site in Aberdeen have associated this plant with dyeing (Kenward and Hall 2001, 284, 287).

*Bogbean (*Menyanthes trifoliata*)*

Seven seeds of bogbean, a plant common in loch margins and bogs, were recovered. It has strong medicinal properties, being used for colic and internal upsets until recent times in the Highlands of Scotland

(Grant 1961, 313; Beith 2004, 206–7) and according to Tait (1947) was considered to be a specific for jaundice in Shetland. Bogbean remains have also been recovered from the Paisley Abbey drain fill (Dickson 1996, 27)

*Gipsywort (*Lycopus europaeus*), bur-marigold (*Bidens tripartita*), yellow flag (*Iris pseudacorus*)*

Nutlets of gipsywort were frequent in the samples. They have also been found at the medieval site of King Edward Street in Perth (Robinson 1995). White (1898, 239) in his *Flora of Perthshire*, however, lists the plant as being very local and rare, inhabiting wet places such as the shores of the Tay near Errol and at Perth Harbour. The plant yields a fast black dye and its use as a dye-plant was noted on Colonsay in the Hebrides (Grigson 1975, 343).

One achene of bur-marigold was found. A brilliant orange dye may be extracted from this plant. According to White (1898, 185) bur-marigold was rare and often sporadic in Perthshire in the 19th century.

Two seeds of yellow flag were found in the paraffin-floated samples while a number of the relatively large seeds were present in hand-picked botanical samples. Surprisingly there appear to be no other recorded instances of this plant from medieval contexts in Scotland. In the Highlands the roots of the plant have been used to yield a greyish-blue or black dye (Grant 1961, 230) and medicinally, a snuff made from the roots was used to alleviate colds (Beith 2004, 217–18).

Mosses

Mosses were present in varying amounts in the majority of samples. Most are common species of heathland and woodland and must have been brought in from surrounding areas. It is probable that mosses were deliberately gathered for use in a number of ways, for example as insulating materials, packing, bedding and for their absorbent qualities as 'toilet paper' or wound packing. Similar finds of moss toilet paper have been noted in latrine or cess pit fills at Kirk Close, Perth and the Byre Theatre, St Andrews (Robinson 1987a, 208; Hastie and Holden 2001, 79).

Large masses of robust mosses, in particular *Polytrichum commune* and *Hylocomium splendens*, were found in a number of hand-picked botanical samples. A piece of plaited rope (diameter 30mm) of *Polytrichum commune* was recovered from Midden 9a (Context 9016). A number of moss plaits were found at Kirk Close, Perth the main moss component consisting of *Polytrichum*, with small amounts from other species such as *Hypnum cupressiforme*, *Thuidium tamariscinum* and *Pleurozium schreberi* included (Ford and Robinson 1987, 153-4). Small *Polytrichum* ropes have also been found at medieval sites such as Durham (Donaldson 1979).

Large quantities of the robust pleurocarpous moss *Antitrichia curtipendula* were found in samples from Building 53 (Context 7129, Phase Vb) and Pit 7230 in Midden 9a (Context 7234, Phase IVc,IVcc). This moss is one of the commonest subfossils in British Pleistocene deposits (Dickson 1973). Today it is a local plant, forming mats on boulders or around tree bases in the west of Britain (Watson 1968).