

# Utilization of mushrooms in Pirkanmaa

MAIJA RANTALA, LEENA SALMI, TIINA SARKAPALO and LEENA VISALA

RANTALA, M., SALMI, L., SARKAPALO, T. & VISALA, L. 1978: Utilization of mushrooms in Pirkanmaa. - Karstenia 18 (suppl.).

The study was carried out in 1976-1977, and covered four samples from Tampere as well small reference samples from Joensuu-Hämeenlinna and from Sudbury, Canada.

The purpose of the study was to find out which species of mushrooms were used for human consumption and what mushroom dishes were the most popular. In addition the aim was to discover the possible correlation between the preference for mushrooms among different age-groups or the sexes.

M. Rantala, L. Salmi, T. Sarkapalo & L. Visala, Tammerkoski School, Rautatiekatu 3-5, SF- 33100 Tampere 10, Finland.

## Introduction

From the viewpoint of mushroom utilization, Pirkanmaa belongs to Western Finland, where mushrooms have been eaten popularly for no more than a few decades. The use of mushrooms first became common in the localities where schools had attracted more civilized people.

Along with the information spread on mushrooms, the use of mushrooms has gradually increased, particularly during the wars. The increase of the information activities at the beginning of the 1970's greatly increased the interest in mushrooms among the people in Pirkanmaa. Still, mushroom dishes are extremely seldom served by e.g. school kitchens. Only one such dish was served in the comprehensive schools of Tampere in 1977.

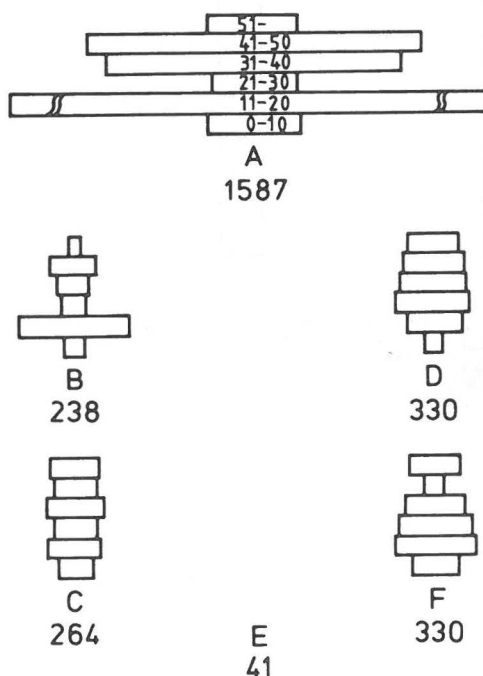
The purpose of the present investigation was to elucidate the current habits of mushroom utilization in Pirkanmaa, of which quite little is known at the moment. The intention was to find out which edible mushrooms are used for food, which mushroom dishes are most popular, and what are the attitudes towards mushroom dishes in the different age and sex groups.

## Material and methods

The investigation, which was carried out in 1976-1977, covered four samples from Pirkanmaa (groups A, B, C, D) and a small reference sample from some other parts of Finland (group E) and from Canada (group F). Individual subjects and the households represented by them were studied. The inquiry was made by means of questionnaires.

The samples, their sizes and age structures are presented in Fig. 1. Group A was the biggest of them. It was nearly a random sample, for it included every second class of the Tammerkoski School. The age

Fig. 1. Sizes and ages of the groups examined. Under the age-pyramids are indicated the numbers of individuals in the samples. A-D = Pirkanmaa; E = Joensuu & Hämeenlinna, consisting of adults only, not other members of their households; F = Sudbury and its surroundings, Canada.



pyramid shows that the sample was skewed towards the age groups represented by the pupils and their parents (11-20 and 31-50 years). Group B (Pirkanmaa Trade School) resembled group A with the exception that the respondents represented an even more limited age group (16-20). Group C was a highly selected sample, for the questionnaire was sent to 120 active members of the Tampere Mushroom Society. Eighty-eight of these replied, giving a response percentage of 73.3%. Group D consisted of the questionnaires filled in at the public exhibition Sapuska -76 arranged by the Junior Chamber of Commerce at Tampere, where they were distributed in a special mushroom department. This sample was at least somewhat selected, for the subjects interested in mushrooms were naturally more willing to answer than the others.

Group E (the Mushroom Societies of Joensuu and Hämeenlinna), the sample of other Finland, was also highly selected, corresponding to group C. Group F, the sample from Canada, was obtained from Sudbury and its surroundings, which area roughly corresponds to Tampere and its surroundings in size, population and nature. The questionnaire was given to ten randomly selected subjects to be distributed to their friends. Any friend or neighbour was qualified to answer, regardless of whether his or her household used mushrooms. The sample is thus of the random type. Sudbury is located lower south than Finland, but its climate and vegetation, including the species of mushrooms, resemble those of Finland on many points. The households in the Sudbury sample represent many different nations with different traditions and customs of using mushrooms (Fig. 2).

### Results and discussion

#### Utilization of different mushroom species

Fig. 3 shows that 16% of the households surveyed in group A in Pirkanmaa and only 6% of those in the Sudbury group (F) did not use mushrooms at all. So in Pirkanmaa 84% of households use mushrooms. Rautavaara

Fig. 2. Different nationalities represented by the 96 households in the Sudbury sample. One unit in this figure means one household. In the case two or three nationalities are represented in the same family, each of them has 1/2 or 1/3 unit.

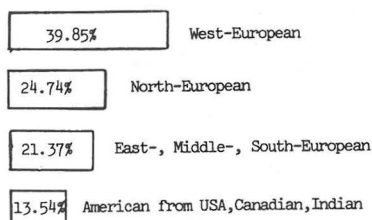
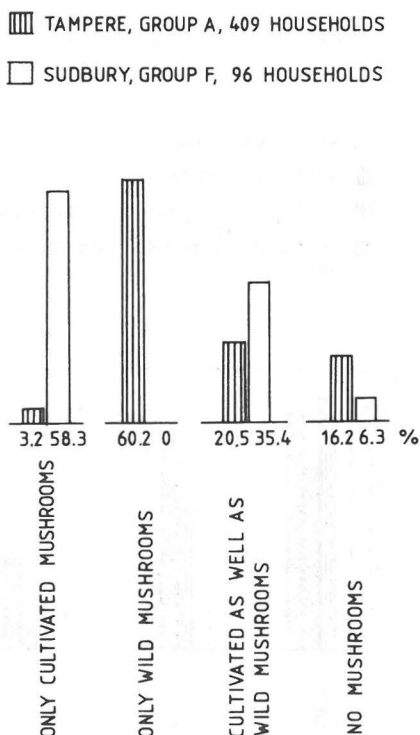


Fig. 3. Proportions of wild and cultivated mushrooms used in the households in Tampere and Sudbury.

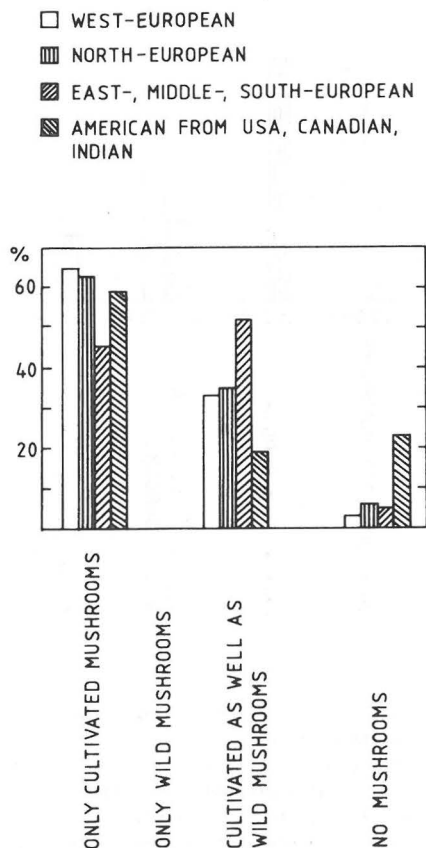


(1947, p. 140) presents a map showing how mushrooms were used in the different provinces of Finland in 1944-1945. The proportion of households using mushrooms was 30% in Satakunta and 70% in Häme, which two provinces are represented by Pirkanmaa. It can thus be considered that Pirkanmaa represented the average of these two or about 50%. So, it seems that the number of households utilizing mushrooms has increased by 30% over about 30 years.

More than half of the Pirkanmaa group A ate only wild mushrooms, while non of the Sudbury people did so. More than half of the Canadians and only 3% of the Pirkanmaa people used only cultivated mushrooms (Fig. 3). Fig. 4 shows how people of different national origin differ in their attitude towards the utilization of wild and cultivated mushrooms. It seems that people of Eastern, Southern and Central European origin collect relatively most wild mushrooms at Sudbury. Next in order are the Scandinavians, most of whom in the sample of the present study were Finns.

The majority of the mushrooms used for food in Pirkanmaa are wild, commercial mushrooms, while those used in Sudbury are cultivated mushrooms. Both in Pirkanmaa and Hämeenlinna-Joensuu groups all the 30 species of so-called commercial mushrooms, and mostly

Fig. 4. Proportions of wild and cultivated mushrooms in the households in Sudbury. The representation of the different nationalities was obtained as follows: household = 1 unit; for example, a Finnish-English family gives 1/2 units to the West-Europeans and 1/2 units to the North-Europeans.



only those, are collected (Table 1). The most popular wild mushroom in Pirkanmaa is *Cantharellus cibarius*, which is a traditional favorite in Western Finland. *Lactarius trivialis* is the second. In the reference group E *Lactarius trivialis* - the traditional favorite in Eastern Finland - is the most popular. *Gyromitra esculenta* is the second. The proportion of *Lactarii* is generally great in the Finnish material.

The number of non-commercial mushrooms used per household in Finland is in general very low, being less than one in Pirkanmaa groups A and B, and in the reference group E (Table 2). The exception to this is group C for which this value is 1.5. The most common non-commercial mushrooms in Pirkanmaa are *Agaricus* coll. and *Comphidius clutinosus*.

The amount of commercial mushrooms collected

per household varies greatly in different groups in Pirkanmaa. If we assume that the groups A and B are the most representative of Pirkanmaa in general and take only these two into account, we get an average of 4.5 commercial mushroom species. The corresponding values of the selected samples C, D and E are much higher: 18.5, 8.2 and 12.8, respectively (Table 1).

In Sudbury, where every one of our commercial mushroom species are growing, only a few are collected (Table 1). The amount of commercial mushrooms collected per household is only 0.4. The most collected species in Sudbury are *Morchella* coll. and *Coprinus comatus*, both being commercial mushrooms in Finland. But one fourth of the species collected in Sudbury are different from our commercial mushrooms.

Fig. 5 shows that the guidebooks and cookbooks available at Pirkanmaa mention *Cantharellus cibarius* from 1863 onwards. Many other of the traditional mushroom species of old guidebooks are similarly still popular. The literature on mushrooms shows that many other species only came into use around the first or the second world war. It seems that the later the species appears in the guidebooks, the less it is used even today (e.g. *Naematoloma capnoides* which was not adopted into use until the 1950's). It seems also evident that the species which grow late in autumn are collected less commonly than the others (*Lepista nebularis* and *Tricholoma* species). The springtime *Morchella* described as a delicious species in the Finnish guidebooks as early as 1863. Its small use in Pirkanmaa is due to the poor crop.

*Cantharellus tubaeformis* is generally considered very delicious in many tasting tests in Finland, for instance in that made in the Tammerkoski School. Despite that, it is used fairly seldom in households in Pirkanmaa. The reasons for that may include its late growth and the fact that it is difficult to notice in the forest. It is not among the traditionally recommended species, either.

According to Rautavaara (1947, p. 144) only a few species of the most important edible mushrooms were used in the rural localities of Satakunta and Northern Häme in 1944-1945. The following mushrooms, for example, were not collected at all: *Agaricus* coll., *Clavaria* coll., *Coprinus comatus*, *Macrolepiota procera* and *Russula* coll. According to the present study the mushroom diet of families has become considerably more versatile over three decades.

#### Utilization of different mushroom dishes

Table 3 shows the preference for mushrooms in the different age groups of the Pirkanmaa samples A, B and C, and of the Sudbury sample. There is a distinct line between the youngest and the older age groups in all cases. According to the findings 65.2% of the Pirkanmaa subjects aged over 20 like mushrooms, while only 28.5% of the subjects under 20 do so. In Sudbury the line at the age of 20 seems even more distinct, the corresponding values being 89.3 and 57.5%. Table

Table 1. Use of so-called commercial mushroom species in Pirkanmaa, Joensuu &amp; Hämeenlinna and Sudbury

Species	Finland							Canada group F 96
	Households of Pirkanmaa					Other group E 41	Finn groups total 693	
	Groups				Total 652			
	A 409	B 44	C 88	D 111				
<i>Suillus luteus</i>	105	4	74	44	227	24	251	-
<i>Suillus bovinus</i>	19	-	35	9	63	7	70	-
<i>Suillus variegatus</i>	53	6	44	25	128	11	139	-
<i>Boletus edulis</i> coll.	194	13	69	52	328	27	355	2
<i>Leccinum versipelle</i> coll.	40	-	67	25	132	17	149	1
<i>Lactarius trivialis</i>	203	15	88	74	380	34	414	5
<i>Lactarius rufus</i>	203	16	75	66	360	29	389	1
<i>Lactarius necator</i>	98	7	75	56	236	27	263	5
<i>Lactarius torminosus</i>	198	17	83	80	378	32	410	-
<i>Lactarius deliciosus</i> coll.	120	10	73	57	260	24	284	2
<i>Russula decolorans</i>	70	3	42	24	139	15	154	-
<i>Russula paludosa</i>	46	4	30	19	99	12	111	-
<i>Armillariella mellea</i>	25	1	55	26	107	15	122	-
<i>Kuehneromyces mutabilis</i>	56	3	54	25	138	20	158	5
<i>Naematoloma capnoides</i>	9	-	17	8	34	7	41	-
<i>Macrolepiota procera</i>	31	2	55	27	115	17	132	-
<i>Macrolepiota rhacodes</i>								
<i>Tricholoma flavovirens</i>	9	3	22	6	40	4	44	-
<i>Lepista nuda</i>	6	1	28	9	44	5	49	-
<i>Lepista personata</i>								
<i>Lepista nebularis</i>	4	1	26	2	33	-	33	-
<i>Hygrophorus camarophyllus</i>	4	1	26	6	37	8	45	-
<i>Rozites caperata</i>	13	-	53	13	79	22	101	-
<i>Coprinus comatus</i>	11	-	36	18	65	8	73	8
<i>Cantharellus cibarius</i>	223	18	86	54	381	32	413	2
<i>Cantharellus tubaeformis</i>	22	3	62	16	103	12	115	-
<i>Craterellus cornucopioides</i>	18	-	55	15	88	19	107	-
<i>Hydnum repandum</i>	74	4	80	39	197	21	218	-
<i>Hydnum rufescens</i>								
<i>Albatrellus ovinus</i>	137	8	71	52	268	23	291	-
<i>Ramaria flava</i>	80	5	42	16	143	13	156	-
<i>Gyromitra esculenta</i>	144	15	75	47	281	33	314	-
<i>Morchella</i> coll.	11	-	32	3	46	6	56	9
Total	2226	160	1630	913	4929	524	5453	41
Species/households	5.44	3.64	18.52	8.23	7.56	12.78	7.87	0.43

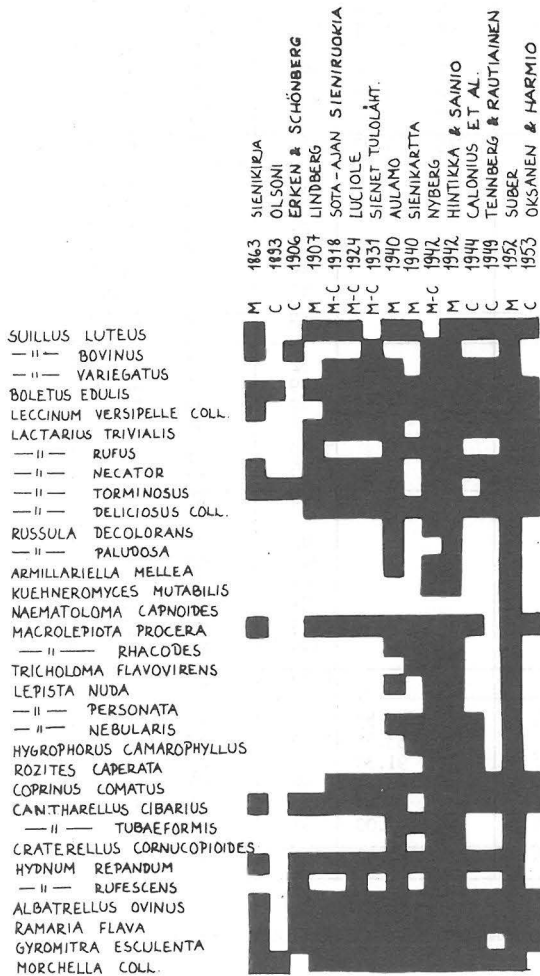
Table 2. Use of other edible mushroom species in Pirkanmaa, Joensuu &amp; Hämeenlinna and Sudbury

Species	P i r k a n m a a					Joensuu- Hämeen- linna E 41	Sud- bury F 96	Finn groups total 693
	Groups				Total 652			
	A 409	B 44	C 88	D 111				
<i>Agaricus</i> coll.	11	-	28	4	43	3	1	46
<i>Aleuria aurantia</i>	-	-	1	-	1	-	-	1
<i>Amanita rubescens</i>	-	-	3	-	3	-	-	3
<i>Amanita vaginata</i>	1	-	8	-	9	1	-	10
<i>Amanita</i> sp.	-	-	-	-	-	-	1	-
<i>Boletus piperatus</i>	-	-	-	1	1	-	-	1
<i>Bovista</i> & <i>Calvatia</i> coll.	1	-	5	-	6	-	1	6
<i>Camarophyllus pratensis</i>	-	-	2	1	3	-	-	3
<i>Cantharellus lutescens</i>	-	-	-	-	-	1	-	1
<i>Clitocybe</i> some other sp.	-	-	-	-	-	-	-	-
<i>Clitopilus prunulus</i>	-	-	1	-	1	1	-	2
<i>Coprinus atramentarius</i>	1	-	3	-	4	-	-	4
<i>Cortinarius armillatus</i>	-	-	2	-	2	-	-	2
<i>Cortinarius triumphans</i>	-	-	2	-	2	1	-	3
<i>Flammulina velutipes</i>	-	-	1	-	1	-	-	1
<i>Gomphidius glutinosus</i>	2	-	12	1	15	-	-	15
<i>Gyromitra</i> some other sp.	-	-	1	-	1	-	-	1
<i>Hydrocype punicea</i>	1	-	1	-	2	-	-	2
<i>Hydrophorus</i> Karsteeni	-	-	2	-	2	-	-	2
<i>Laccaria laccata</i>	-	-	1	-	1	-	-	1
<i>Lactarius</i> some other sp.	4	-	3	3	10	2	-	12
<i>Leccinum scabrum</i>	4	-	5	-	9	-	-	9
<i>Lycoperdon</i> coll.	2	-	7	-	9	1	-	10
<i>Lyophyllum</i> coll.	-	-	3	-	3	-	-	3
<i>Marasmius oreades</i>	-	-	4	-	4	-	1	4
<i>Marasmius scorodonius</i>	-	-	2	-	2	-	-	2
<i>Pholiota squarrosa</i>	-	-	-	-	-	-	-	-
<i>Pleurotus ostreatus</i>	-	-	1	-	1	-	-	1
<i>Ramaria</i> some other sp.	-	-	-	-	-	-	-	-
<i>Russula aeruginea</i>	1	-	8	2	11	1	-	12
<i>Russula flava</i>	-	-	7	-	7	1	-	8
<i>Russula vesca</i>	-	-	1	-	1	-	-	1
<i>Russula vinosa</i>	-	-	2	-	2	-	-	2
<i>Russula xerampelina</i>	-	-	4	-	4	-	-	4
<i>Russula</i> sp.	5	-	5	1	11	1	-	12
<i>Sarcodon imbricatum</i>	1	-	5	-	6	-	-	6
<i>Suillus</i> some other sp.	-	-	3	-	3	1	-	4
Name of species unknown	-	-	-	-	-	-	10	-
Total	34	0	133	13	180	14	14	194
Non-commercial mushr./househ. Comm. & non-comm.	0.08	0.00	1.51	0.12	0.28	0.34	0.15	0.28
species total	2260	160	1763	926	5109	538	55	5647
Comm. & non-comm./household	5.53	3.64	20.03	8.34	7.84	13.12	0.57	8.15

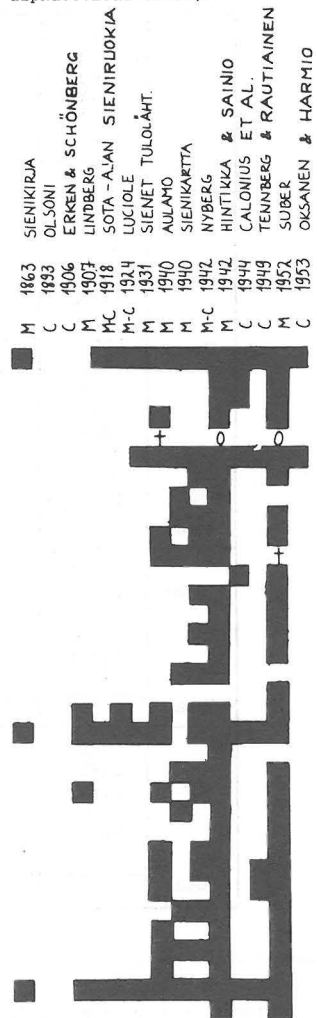
Fig. 5. Edible mushrooms recommended in the guide-books and cookbooks found in some private homes at Tampere. The books have been written in 1863-1953.

A: Commercial mushroom species (in the systematic order).

B: Other mushroom species (according to the genera in the alphabetical order).



AGARICUS COLL.  
 ALEURIA AURANTIA  
 AMANITA RUBESCENS  
 — " — VAGINATA  
 BOLETUS TPERATUS  
 BOVISTA & CALVATIA COLL.  
 CAMAROPHYLLUS PRATENSIS  
 CANTHARELLUS LUTESCENS  
 CLITOCYBE SOME OTHER SP.  
 CLITOPILUS PRUNULUS  
 COPRINUS ATRAMENTARIUS  
 CORTINARIUS ARMILLATUS  
 — " — TRIUMPHANS  
 FLAMMULINA VELUTIPES  
 GOMPHIDIUS GLUTINOSUS  
 GYROMITRA SOME OTHER SP.  
 HYGROPHORUS KARSTENII  
 LACCARIA LACCATA  
 LACTARIUS SOME OTHER SP.  
 LECCINUM SCABRUM  
 LENTINUS CONNATUM  
 LYCOPERDON COLL.  
 MARASMIUS OREADES  
 PHOLIOTA SQUARROSA  
 PLEUROTUS OSTREATUS  
 RAMARIA SOME OTHER SP.  
 RUSSULA AERUGINEA  
 — " — FLAVA  
 — " — VESCA  
 — " — VINOSA  
 — " — XERAMPELINA  
 — " — SP.  
 SARCODON IMPRICATUM  
 SUILLUS SOME OTHER SP.



3 also shows that the preference for mushrooms in Sudbury is much more common in all the age groups than in Pirkanmaa.

Preference for mushroom dishes in the two sex groups was elucidated in group A and in reference group F (Table 3). The results show that men like mushrooms less than women in Pirkanmaa, regardless of the age group. There is no corresponding difference in the Sudbury material F.

Fig. 6 shows the mushroom dishes which the pupils of Tammerkoski School have eaten either at home or elsewhere and the dishes which they consider their favorites. According to these figures the most common mushroom dish in Pirkanmaa is sauce. Young people like especially fried or baked mushrooms e.g. pizza. The mushroom diet of Finnish people is less versatile than that eaten in Sudbury. There is no notable difference in the preference for different mushroom dishes be-

Table 3. Preference for mushroom dishes in the different age groups of the groups A, B, C and F

Group	Age	Females			Males			Females & males		
		Total abs.	Who like very much mushrooms abs.	%	Total abs.	Who like very much mushrooms abs.	%	Total abs.	Who like very much mushrooms abs.	%
A	0-10	39	9	23.08	52	6	11.54	91	15	11.49
	11-20	447	149	33.33	238	50	21.01	685	199	29.05
	21-30	50	26	52.00	36	13	36.11	86	39	45.35
	31-40	176	127	72.16	121	70	57.85	297	197	66.33
	41-50	168	138	82.14	166	102	61.45	334	240	71.86
	51-	41	31	75.61	54	34	62.96	94	65	69.15
Total		921	480	52.12	667	275	41.23	1587	755	47.57
B	0-10							19	6	31.58
	11-20							108	28	25.93
	21-30							24	7	29.17
	31-40							31	20	64.52
	41-50							46	30	65.22
	51-							10	7	70.00
Total								238	98	41.18
C	0-10							32	11	34.37
	11-20							49	21	42.86
	21-30							42	30	71.43
	31-40							53	25	47.17
	41-50							43	32	74.42
	51-							45	28	62.22
Total								264	147	55.68
A+B+C	0-10							142	32	22.54
	11-20							842	248	29.45
	21-30							152	76	50.00
	31-40							381	242	63.52
	41-50							423	302	71.40
	51-							149	100	67.11
Total								2089	1000	47.87
F	0-10	24	15	62.50	23	11	47.83	47	26	55.32
	11-20	41	26	63.42	39	21	53.85	80	47	58.75
	21-30	24	21	87.50	46	42	91.30	70	63	90.00
	31-40	32	26	81.25	30	28	93.33	62	54	87.10
	41-50	10	10	100.00	11	9	81.82	21	19	90.48
	51-	28	25	89.29	25	23	92.00	53	48	90.57
Total		159	123	77.36	174	134	77.01	333	257	77.18

tween the two sex groups (Fig. 7). On the basis of what the Canadians inform of mushroom dishes they use to prepare, it seems that in Sudbury there are no remarkable differences between different nationalities in the favorite dishes.

#### References

- Aulamo, O. 1940: Sientenkeruuopas. - 46 pp. Porvoo.
- Calonius, S., Lindqvist, E-M. & Tennberg, R. 1944: Tyttöjen keittokirja.-5. ed. 256 pp. Helsinki.
- Erken & Schönberg, H. 1906: Keittokirja säästävääsiä perheenemäntiä varten vähävaraissa kodeissa. 2 ed.- 103 pp. Helsinki.
- Hintikka, T.J. & Sainio, A. 1942: Sienikirja ruokasienien kerääjille. - 178 pp. Helsinki.
- Lindberg, H. 1907: Suomen tärkeimmät ruokasienet. - 12 pp. Helsinki.
- Luciole 1924: 33 sieniruokalajia. - 35 pp. Porvoo. WSOY.
- Nyberg, W. 1942: Sienet ja sieniherkut. - 32 pp. Helsinki.
- Oksanen, A. & Harmio, L. 1953: Maija keittää. - 353 pp. Jyväskylä.
- Olsoni, A. 1893: Keittokirja yksinkertaista ruuanlaittoa varten kodissa ja koulussa. (Orig. Swedish script. Lagerstedt, L.). - 265 pp. Porvoo.
- Rautavaara, T. 1947: Suomen sienisato. - 534 pp. Helsinki.
- Sienikartta selityksineen. 1940:- 20 pp. Helsinki.

Fig. 6. Mushroom dishes which the pupils of the Tammerkoski School have eaten either at home or elsewhere and the dishes which they consider their favorites.

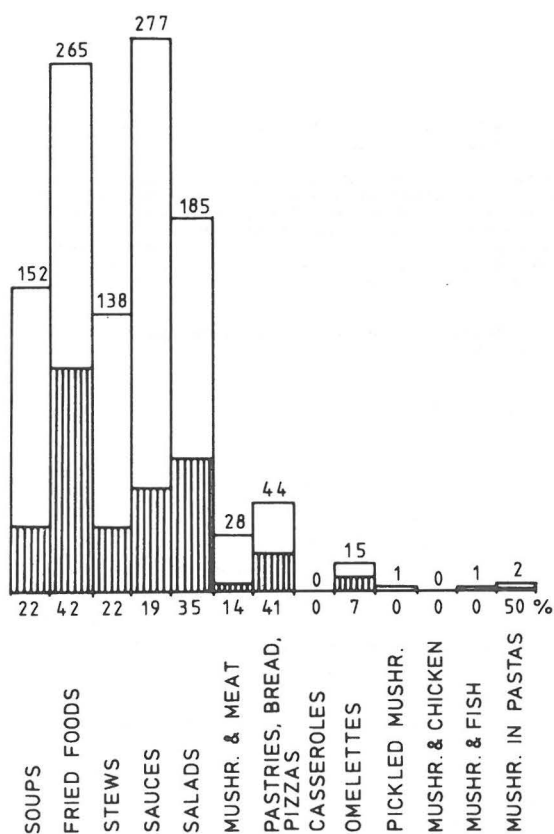
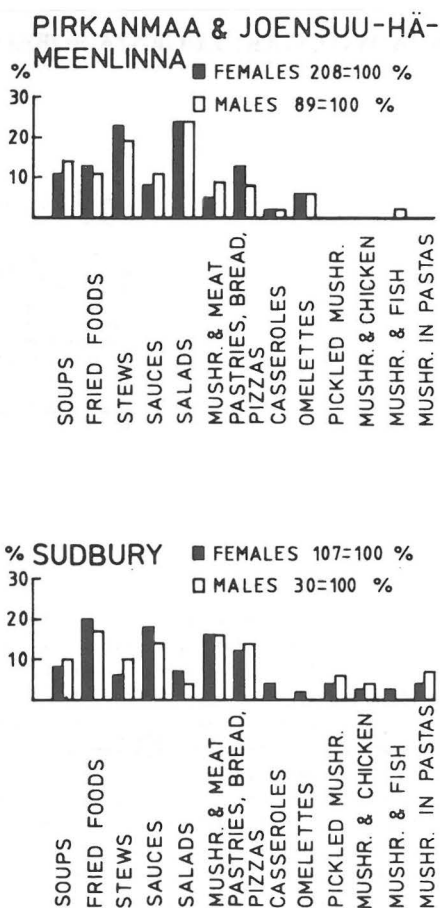


Fig. 7. Favorite mushroom dishes in the two sex groups in Finland (Pirkanmaa, Joensuu & Hämeenlinna) and in Canada (Sudbury).



Sienikirja eli Sieni-Kallen osviitta tuntemaan ja käyttämään sieniä. (Script. E.K.). 1863: - 15 pp. Turku. Keisarillisen Suomen Talousseura.

Sienet tulolähteenä. 1931: Käytännöllinen opas sienien keräämistä ja kauppakuntoon saattamista varten. - 20 pp. Helsinki. Suomen vientiyhdistyksen julkaisuja No 8.

Sota-ajan sieniruokia. 1918: Neuvoja sienien kokoa-

miseen ja säilyttämiseen sekä sienileivän ja sieniruokien valmistamiseen. 2 ed. - 24 pp. Helsinki. Otava.

Suber, N. 1952: Sienimetsästä. Kerääjän ja käyttäjän sienioas. - Helsinki.

Tennberg, R. & Rautiainen, R. 1949: Kotiruoka. Keittokirja kotia ja koulua varten. 19 ed.-522 pp. Helsinki.