Aphids caught in Moericke-trays on 5 localities in Denmark in 1956.

By Ole Heie
(Skive Seminarium, Skive).

Introduction.

During several years on the initiative of the State Experimental Station for Plant Diseases and Pests a number of yellow Moericke-trays measuring 49 × 32 cm containing a 1 ‰ solution of nicotine (fig. 1) have been stationed about 25 cm above ground level on various places in Denmark with the purpose of mapping out the geographic occurrences of *Myzus persicae* Sulz. and other noxious insects and finding the seasons of their main flight. From April to October the trays were emptied once a week. The flying insects attracted by the yellow colour and killed by the nicotine were filtered out of the solution and kept in alcohol (70 %). At the

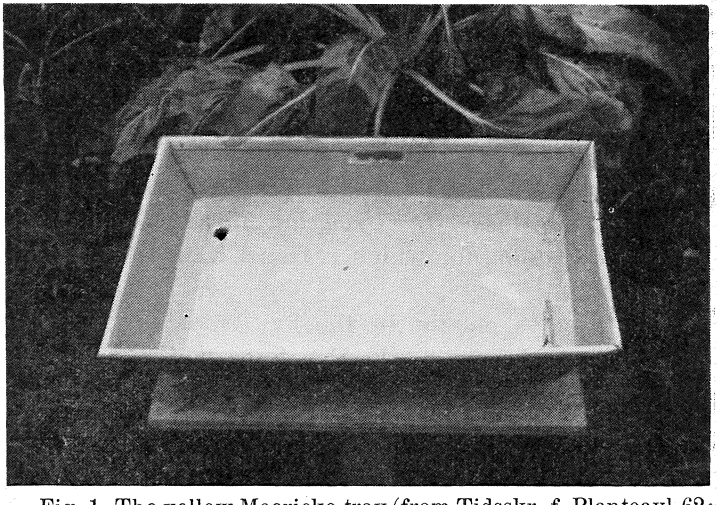

Fig. 1. The yellow Moericke-tray (from Tidsskr. f. Planteavl 62; M. Dahl fot.).

Zoological Department of the State Experimental Station for Plant Diseases and Pests the aphids were sorted out and sent to the writer, who counted the specimens of *Myzus persicae* and the total sum of aphids in the weekly samples (Heie 1959).

During the work with these aphid catches a desire for being acquainted with which species they were made up of grew up, but as the fulfilment of this wish required mounting and determination of hundreds of thousands single aphids, the writer preferred to confine himself to an analysis, based on the weekly captures from one summer only (1956), of only five localities. These localities were chosen in such a way that different main regions of the country were represented, viz. central Sealand (Ørslev at Ringsted), Funen (Årslev), northern Jutland (Tylstrup in Vendsyssel), western Jutland (Borris at Skjern), and southern Jutland (Jyndevad just off the frontier between Germany and Denmark). The mounting and determination work was then limited to 5684 winged aphids. The aphids were mounted in the way given by Hille Ris Lambers (1950) and examined microscopically. The determination work was based on keys from the available literature (see the references on p. 358) and on a collection of aphid slides collected by the writer mainly in the years 1956—58. Dr. Hille Ris Lambers most kindly determined single specimens of the species *Dactynotus achilleae, D. (Uromelan) taraxaci,* and *Microlophium carnosum,* for which reason I want to thank him very much.

The species caught in the five trays are listed in the tables 1—5 and 8. On the dates which are given above the columns in these tables (and below the columns and curves in fig. 4—10) the trays were emptied. The date of e. g. $^{20}/_{7}$ is placed above the number of aphids caught during the week $^{13}/_{7}$—$^{20}/_{7}$. During the first weeks, from $^{20}/_{4}$ until $^{25}/_{5}$, no aphids were caught.

This work has been supported by the Danish foundation: Statens almindelige Videnskabsfond.

The localities.

All localities lay 5—50 m above sea-level, and all the trays were placed in beet fields. Some particulars concerning the placing of each tray are given below:

Ørslev:
The tray was placed in a beet field. The town (Ørslev) was at a distance of 50—100 m north west of the tray, surrounded with gardens. To the south and to the east wide fields with potatoes etc. and a few quicksets with Salix etc. stretched out, nearest building situated at a distance of 1 km, nearest hardwood forest at a distance of 2—3 km.

Årslev:
The tray stood in a beet field at the north-west corner of a little potato plot. The ground round the tray was very plane, covered with fields of barley, oats etc. Nearest gardens and buildings lay at a distance of 200 m south-east of the tray. Westward, gardens and buildings lay at a distance of 1 km. Nearest forest 2½ km away, the town (Årslev) nearly 2 km to the south-east.

Tylstrup:
The tray stood in a beet field containing some potato plots 50—100 m south of the buildings of the Tylstrup Experimental Station. A barley field lay westward. Both fields were surrounded with high hedges with Sorbus and Ulmus. The hedges stood at distances of about 20, 100 and 400 m from the tray in eastward, westward and southward direction respectively. Behind the western hedge a swede field was situated. Many high trees and many species of plants grew round the buildings. There was no forest in the neighbourhood, but extensive bog areas at a distance of few kilometres.

Borris:
The tray was placed in a beet field at a potato plot more than 400 m north of the buildings and garden of the Borris Experimental Station. Barley, oats, rye, wheat, and peas grew in the surrounding fields. Quicksets stood at a distance of 50—100 m westward and eastward. No buildings stood nearer than 400—500 m from the tray. In the region many quicksets, meadows (at the river Skjernå), coniferous plantations, and moor areas are situated, but the greater part of the region is agricultural country. An extensive moor area was at a distance of 5 km southeast of the tray.

Table 1.

Ørslev	25/5	1/6	8/6	17/6	22/6	29/6	6/7	13/7	20/7	27/7	3/8	10/8	17/8	24/8	31/8	7/9	14/9	21/9	28/9	5/10	Total
APHIDIDAE																					
Macrosiphoniella artemisiae Fonsc.	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
M. tanacetaria Kalt.	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Dactynotus cirsii L.	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
D. sonchi L.	—	—	—	—	—	—	—	—	1	3	3	1	—	—	—	—	—	—	—	—	8
D. tussilaginis Walk.	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
D. (Uromelan) jaceae L. complex	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	2
D. (U.) taraxaci Kalt.	—	—	—	—	—	—	—	1	3	—	—	—	—	—	—	—	—	—	—	—	4
Macrosiphum euphorbiae Ths.	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
M. (Sitobion) avenae Fabr.	—	—	—	—	—	—	—	—	4	4	2	9	6	—	—	1	—	—	—	—	26
Acyrthosiphon loti Theob.	—	—	—	—	—	1	3	—	1	—	—	1	—	—	—	—	—	—	—	—	6
A. malvae Mosl. s. lat.	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	2
A. pisum Harris	—	—	—	—	—	—	4	1	5	12	8	2	1	—	—	—	—	—	—	—	33
Unidentified *Acyrthosiphon* ssp.	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Metopolophium dirhodum Walk.	—	—	—	—	—	—	—	1	21	18	3	1	—	—	—	—	—	—	—	—	44
Microlophium carnosum Buckt.	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
Megoura viciae Buckt.	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
Hyperomyzus lactucae L.	—	—	1	2	13	—	2	25	107	35	28	17	9	—	—	—	—	—	—	—	239
H. pallidus H. R. L.	—	—	—	—	—	—	—	2	11	6	15	18	12	—	—	—	—	—	—	—	64
Nasonovia ribis-nigri Mosl.	—	—	—	—	—	—	—	2	1	1	—	—	—	—	—	—	—	—	—	—	4
Cryptomyzus galeopsidis Kalt.	—	—	—	—	1	—	—	2	13	9	12	36	14	2	2	—	—	—	—	—	91
C. ribis L.	—	—	—	—	—	—	—	—	2	—	—	—	1	—	—	—	—	—	—	—	3
Pleotrichophorus glandulosus Kalt.	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
Capitophorus elaeagni d. Gu.	—	—	—	—	—	—	—	—	2	—	3	—	—	—	—	—	—	—	—	—	5
C. hippophaës Walk.	—	—	—	—	—	—	—	—	5	8	13	20	8	5	—	—	—	—	—	—	59
C. horni Börner	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	2
C. similis v. d. G.	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
Unidentified *Capitophorus* spp.	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	2
Myzus cerasi Fabr.	—	—	—	—	—	—	1	3	3	8	2	2	—	—	—	—	—	—	—	—	19
M. persicae Sulz.	—	—	—	—	—	—	—	1	3	5	8	19	8	—	1	—	—	—	—	—	45
Phorodon humuli Schrk.	—	—	—	—	—	—	—	3	12	9	2	—	1	—	—	—	—	—	—	—	27
Cavariella aegopodii Scop.	—	—	1	—	—	1	2	1	—	3	1	—	2	—	—	—	—	—	—	—	11
C. pastinacae L.	—	—	—	—	3	—	—	1	2	1	1	—	—	—	—	—	—	—	—	—	8
C. theobaldi Gill. & Bragg	—	1	2	—	1	—	1	—	2	1	2	—	—	—	—	—	—	—	—	—	10

Brachycolus sp.	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Hayhurstia atriplicis L.	—	—	—	—	—	—	—	—	1	—	4	10	2	1	—	—	—	—	—	—	18
Lipaphis erysimi Kalt.	—	—	—	—	—	—	—	—	22	6	—	1	1	—	—	—	—	—	—	—	30
Brevicoryne brassicae L.	—	—	—	—	—	—	—	—	—	3	—	2	4	1	—	—	—	—	—	—	10
Brachycaudus cardui L.	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2
B. helichrysi Kalt.	—	—	—	—	2	—	—	1	2	—	1	—	2	—	—	—	—	—	—	—	8
Dysaphis spp.	—	—	—	—	1	—	2	6	4	3	1	2	—	—	—	—	—	—	—	—	19
Anuraphis farfarae Koch	—	—	—	1	—	—	2	—	3	—	—	—	—	—	—	—	—	—	—	—	6
Aphis corniella H. R. L.	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2
A. fabae Scop. complex	—	—	—	—	—	1	2	3	23	29	70	504	232	6	4	3	—	—	—	—	877
A. idaei v. d. G.	—	—	—	—	—	—	—	4	4	—	—	1	—	—	—	—	—	—	—	—	9
A. sambuci L.	—	—	—	—	1	—	—	2	—	15	4	1	—	—	—	—	—	—	—	—	23
Unidentified *Aphis* spp.	—	1	—	—	2	1	3	11	14	2	4	16	10	1	—	1	—	—	—	—	66
Rhopalosiphum padi L. *R. oxyacanthae* Schrk.	—	—	—	—	—	12	33	6	48	15	4	—	—	—	—	—	—	—	—	—	118
Hyalopterus pruni Geoffr.	—	—	—	—	—	—	1	—	—	2	—	—	2	—	—	—	—	—	—	—	5
Unidentified or unidentifiable specimens.	—	—	—	—	—	—	3	3	4	5	2	1	1	2	—	—	—	—	—	—	21
CHAITOPHORIDAE																					
Unidentified specimens	—	—	—	—	1	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	3
CALLAPHIDIDAE																					
Kallistaphis basalis Stroyan	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Drepanosiphum platanoides Schrk.	—	—	—	—	—	—	1	—	—	—	1	1	—	—	—	—	—	—	—	—	3
Tuberculoides annulatus Hartig	—	—	—	—	—	—	—	2	1	—	—	—	—	—	—	—	—	—	—	—	3
Eucallipterus tiliae L.	—	—	—	—	—	1	—	—	2	3	—	—	—	—	—	—	—	—	—	—	6
Therioaphis luteola Börner	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
T. trifolii Monell	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
Unidentified specimens	—	—	1	—	1	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	4
LACHNIDAE																					
Protrama ranunculi d. Gu.	—	—	—	—	—	—	—	2	—	1	1	1	1	—	—	—	—	—	—	—	6
THELAXIDAE																					
Anoecia sp.	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	2
PEMPHIGIDAE																					
Schizoneura ulmi L.	—	—	—	—	19	8	37	—	3	—	—	—	—	—	—	—	—	—	—	—	67
Unidentified specimens	—	—	—	—	—	—	1	5	7	4	—	1	—	—	—	—	—	—	—	—	18
Total	0	2	5	3	45	26	103	89	338	221	203	672	320	18	7	5	0	0	0	0	2057

Table 2.

Årslev	25/5	1/6	8/6	15/6	22/6	29/6	6/7	13/7	20/7	27/7	3/8	10/8	17/8	24/8	31/8	7/9	14/9	21/9	28/9	5/10	Total
APHIDIDAE																					
Dactynotus sonchi L.	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
D. tussilaginis Walk.	—	—	—	—	—	—	—	—	1	1	2	2	1	—	—	—	—	—	—	—	7
D. (Uromelan) taraxaci Kalt.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1
Macrosiphum (Sitobion) avenae Fabr.	—	—	—	—	—	—	—	—	3	5	4	4	3	1	1	—	—	—	—	—	21
Acyrthosiphon loti Theob.	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2
A. pisum Harris	—	—	—	—	—	—	—	—	4	5	2	—	—	1	—	1	—	—	—	—	13
Unidentified *Acyrthosiphon* sp.	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
Metopolophium dirhodum Walk.	—	—	—	—	—	—	—	2	8	—	—	—	—	—	—	—	—	—	—	—	10
Aulacorthum solani Kalt.	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	2
Microlophium evansi Theob.	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
Amphorophora rubi Kalt.	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Hyperomyzus lactucae L.	—	—	—	—	1	1	—	—	12	2	4	1	3	—	—	—	—	—	—	—	24
H. pallidus H. R. L.	—	—	—	—	—	—	—	—	16	4	—	2	—	—	—	—	—	—	—	—	22
Nasonovia ribis-nigri Mosl.	—	—	1	—	—	—	—	1	5	—	1	—	—	—	—	—	—	—	—	—	8
Cryptomyzus galeopsidis Kalt.	—	1	—	—	2	1	—	1	6	4	12	28	43	12	2	2	—	—	—	—	114
C. ribis L.	—	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	2
Capitophorus hippophaës Walk.	—	—	—	—	—	—	—	—	—	1	2	2	2	2	1	1	—	1	—	—	12
C. similis v. d. G.	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	2
Unidentified *Capitophorus* sp.	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Myzus cerasi Fabr.	—	—	—	—	—	—	—	—	4	1	—	—	1	—	—	—	1	—	—	—	7
M. persicae Sulz.	—	—	—	1	—	—	—	1	6	1	17	16	8	4	3	1	—	—	1	—	59
Phorodon humuli Schrk.	—	—	—	—	—	—	—	—	—	—	4	2	4	—	—	—	—	—	—	—	10
Ovatus sp.	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Cavariella aegopodii Scop.	—	—	1	—	1	—	—	1	5	—	—	—	—	—	—	—	—	—	—	—	8
C. archangelicae Scop.	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
Hayhurstia atriplicis L.	—	—	—	—	—	—	—	—	2	1	5	29	85	3	—	2	—	—	—	—	127
Lipaphis erysimi Kalt.	—	—	—	—	—	—	—	—	3	1	1	1	4	—	1	1	1	—	—	—	13
Brevicoryne brassicae L.	—	—	—	—	—	—	—	1	—	—	1	—	3	3	—	—	—	—	—	—	8
Brachycaudus helichrysi Kalt.	—	—	—	—	—	—	1	—	2	—	—	2	—	—	—	1	—	—	—	—	6
Dysaphis spp.	—	—	—	—	—	—	1	1	4	2	—	—	—	1	1	1	—	—	—	—	11

Anuraphis farfarae Koch	–	–	–	–	1	–	–	1	2	1	–	–	–	–	–	–	–	–	–	–	5
Aphis fabae Scop. complex	–	–	–	–	–	–	1	–	16	15	148	227	175	62	9	1	1	1	–	–	656
A. idaei v. d. G.	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
A. sambuci L.	–	–	–	–	–	–	–	–	2	–	–	–	1	–	–	–	–	–	–	–	3
Unidentified *Aphis* spp.	–	–	–	–	1	1	–	1	3	4	4	6	6	2	–	1	–	–	–	–	29
Toxopterina vandergooti Börner	–	–	1	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	3
Rhopalosiphum padi L. *R. oxyacanthae* Schrk.	–	–	–	–	–	–	1	2	49	10	3	2	2	–	–	–	–	2	–	–	71
Hyalopterus pruni Geoffr.	–	–	–	–	–	–	–	1	6	–	1	–	1	–	–	–	–	–	–	–	9
Unidentified or unidentifiable specimens	–	–	–	–	1	–	–	–	4	1	–	1	2	1	–	–	1	–	–	–	11
CHAITOPHORIDAE																					
Periphyllus testudinacea Fern.	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3
CALLAPHIDIDAE																					
Euceraphis punctipennis Zett.	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Kallistaphis basalis Stroyan	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Drepanosiphum platanoides Schrk.	–	–	–	1	–	–	–	–	1	–	1	–	1	–	–	–	–	–	–	–	4
Myzocallis coryli Goetze	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Tuberculoides annulatus Hartig	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	2
Therioaphis luteola Börner	–	–	–	–	–	–	–	–	1	–	1	2	–	–	–	–	–	–	–	–	4
Unidentified specimen	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
LACHNIDAE																					
Protrama ranunculi d. Gu.	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	2
Cinara sp.	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
THELAXIDAE																					
Anoecia sp.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	2
PEMPHIGIDAE																					
Schizoneura ulmi L.	–	–	–	–	3	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4
Unidentified specimens	–	–	–	–	–	–	–	3	14	2	3	1	1	–	–	–	1	–	–	–	25
Total	0	9	4	4	12	4	5	17	181	66	219	331	349	94	20	14	5	4	1	0	1339

Table 3.

Tylstrup.	25/5	1/6	8/6	15/6	22/6	29/6	6/7	13/7	20/7	27/7	3/8	10/8	17/8	24/8	31/8	7/9	14/9	21/9	28/9	5/10	Total
APHIDIDAE																					
Dactynotus achilleae Koch	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	2
D. cirsii L.	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
D. tussilaginis Walk.	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
Macrosiphum (Sitobion) avenae Fabr.	–	–	–	–	–	–	–	1	–	2	4	3	2	–	–	–	–	–	–	–	12
Acyrthosiphon pisum Harris	–	–	–	–	–	–	–	–	2	1	–	4	1	–	1	–	–	–	–	–	9
Unidentified *Acyrthosiphon* sp.	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
Metopolophium dirhodum Walk.	–	–	–	–	–	–	1	1	2	1	–	–	–	–	–	–	–	–	–	–	5
Microlophium evansi Theob.	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Amphorophora rubi Kalt.	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1
Hyperomyzus lactucae L.	–	–	–	–	–	1	1	–	11	5	3	2	2	–	–	–	–	–	–	–	25
H. pallidus H. R. L.	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	2
Cryptomyzus galeopsidis Kalt.	–	–	–	1	–	–	–	1	3	–	–	1	2	–	–	–	–	–	–	–	8
Capitophorus hippophaës Walk.	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–	–	–	–	–	–	3
Myzus cerasi Fabr.	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
M. persicae Sulz.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	3	–	–	–	6
Phorodon humuli Schrk.	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	2
Ovatus sp.	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Liosomaphis berberidis Kalt.	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Cavariella aegopodii Scop.	–	–	–	–	–	–	–	–	1	–	–	–	1	–	1	–	–	–	1	–	4
Hayhurstia atriplicis L.	–	–	–	1	–	–	4	23	35	24	16	17	25	3	–	–	–	–	–	–	148
Lipaphis erysimi Kalt.	–	–	–	1	–	–	–	–	1	1	1	1	1	–	–	1	–	–	–	–	7
Brachycaudus helichrysi Kalt.	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
B. (Appelia) tragopogonis Kalt.	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Dysaphis sp.	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1

Aphis fabae Scop. complex	–	–	–	–	–	–	1	2	1	–	–	–	11	25	94	44	6	–	–	–	184
A. sambuci L.	–	–	–	–	–	–	–	–	1	–	–	–	1	1	–	–	–	–	–	–	3
Unidentified *Aphis* spp.	–	–	–	–	2	2	7	7	4	2	2	2	6	31	32	73	4	1	–	–	175
Rhopalosiphum padi L. } *R. oxyacanthae* Schrk. }	–	–	–	1	–	–	11	–	3	2	1	–	1	–	1	1	8	7	2	5	43
Hyalopterus pruni Geoffr.	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Pterocomma salicis L.	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified or unidentifiable specimens	–	–	–	–	–	–	–	1	–	2	–	–	–	–	1	2	–	–	–	–	6
CHAITOPHORIDAE																					
Periphyllus testudinacea Fern.	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
CALLAPHIDIDAE																					
Euceraphis punctipennis Zett.	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Drepanosiphum platanoides Schrk.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Therioaphis trifolii Monell	–	–	–	–	–	–	1	–	–	2	–	–	–	–	–	–	–	–	–	–	3
LACHNIDAE																					
Protrama ranunculi d. Gu.	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
THELAXIDAE																					
Anoecia sp.	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	2
PEMPHIGIDAE																					
Schizoneura ulmi L.	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	2
Unidentified specimens	–	–	–	–	–	–	–	2	2	1	1	1	–	–	1	–	–	1	–	–	9
Total	0	1	0	5	5	4	30	40	70	46	29	35	55	63	133	122	22	9	4	5	678

Table 4.

Borris.	25/5	1/6	8/6	15/6	22/6	29/6	6/7	13/7	20/7	27/7	3/8	10/8	17/8	24/8	31/8	7/9	14/9	21/9	28/9	4/10	Total
APHIDIDAE																					
Macrosiphoniella millefolii De Geer	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	2
Dactynotus achilleae Koch	–	–	–	–	–	–	–	–	1	1	1	–	–	–	–	–	–	–	–	–	3
D. sonchi L.	–	–	–	–	–	–	2	1	–	1	1	–	–	–	–	–	–	–	1	–	6
D. tussilaginis Walk.	–	–	–	–	–	–	1	–	–	1	–	1	3	–	–	–	–	–	–	–	6
D. (Uromelan) taraxaci Kalt.	–	–	–	–	–	–	–	2	–	2	–	–	–	–	–	–	–	–	–	–	4
Dactynotus sp.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Macrosiphum (Sitobion) avenae Fabr.	–	–	–	–	–	–	1	1	–	–	2	–	–	1	1	–	–	–	–	–	6
M. (S.) fragariae Walk.	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1
Acyrthosiphon pisum Harris	–	–	–	–	–	–	2	–	4	1	–	–	–	–	–	1	–	–	–	–	8
Metopolophium dirhodum Walk.	–	–	–	–	–	–	–	1	5	3	1	–	–	1	–	–	–	–	–	–	11
Aulacorthum solani Kalt.	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
Microlophium carnosum Buckt.	–	–	–	–	–	–	–	2	5	3	–	–	–	–	2	1	1	–	1	–	15
Hyperomyzus lactucae L.	–	–	–	–	–	–	1	1	17	8	1	1	1	–	2	1	–	1	1	–	35
H. pallidus H. R. L.	–	–	–	–	–	–	–	–	1	1	2	1	–	1	–	–	–	–	–	–	6
H. (Hyperomyzella) rhinanthi Schout.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2	–	2	–	6
Nasonovia ribis-nigri Mosl.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Rhopalosiphoninus tulipaellus Theob.	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
Rhopalomyzus (Judenkoa) lonicerae Sieb.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Cryptomyzus galeopsidis Kalt.	–	–	–	–	–	–	2	1	1	1	3	5	5	7	5	3	–	–	–	–	33
C. ribis L.	–	–	–	–	–	4	4	–	3	1	1	1	–	–	–	1	–	–	–	–	15
Capitophorus hippophaës Walk.	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	2	–	–	–	–	4
Ericaphis latifrons Börner	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Myzus cerasi Fabr.	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	2
M. persicae Sulz.	–	–	–	–	–	–	–	–	2	2	–	–	2	–	4	2	–	2	1	–	15
Phorodon humuli Schrk.	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	2
Ovatus sp.	–	–	–	1	–	1	–	1	1	2	–	–	–	–	–	–	–	–	–	–	6
Cavariella archangelicae Scop.	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	2
C. pastinacae L.	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	2
C. theobaldi Gill. & Bragg	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Brachycolus sp.	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1

Hayhurstia atriplicis L.	—	—	—	—	—	—	6	6	28	20	25	31	3	1	—	—	—	—	—	—	120
Lipaphis erysimi Kalt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2
Brevicoryne brassicae L.	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
Brachycaudus helichrysi Kalt.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
B. (Appelia) tragopogonis Kalt	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Dysaphis spp.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	3
Ceruraphis eriophori Walk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	4
Aphis fabae Scop complex	—	—	—	—	—	1	1	2	—	3	6	7	20	44	45	52	—	2	1	—	184
A. sambuci L.	—	—	—	—	—	—	1	1	18	4	1	—	—	—	—	—	—	—	—	—	25
Unidentified *Aphis* spp.	—	—	1	1	—	—	3	2	4	3	2	2	1	—	7	24	6	2	—	—	58
Rhopalosiphum padi L. *R. oxyacanthae* Schrk.	—	—	—	1	—	—	1	—	10	1	—	—	—	—	—	2	7	24	13	1	60
Hyalopterus pruni Geoffr.	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Unidentified or unidentifiable spicimens	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	4	—	5
CALLAPHIDIDAE																					
Euceraphis punctipennis Zett.	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Drepanosiphum acerinum Walk	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
D. platanoides Schrk.	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
Myzocallis myricae Kalt	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
Tuberculoides annulatus Hartig	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
LACHNIDAE																					
Protrama ranunculi d. Gu.	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
Cinara sp.	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
THELAXIDAE																					
Anoecia sp.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Unidentified specimen	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1
PEMPHIGIDAE																					
Schizoneura ulmi L.	—	—	—	—	—	—	3	3	6	1	—	—	—	—	—	—	—	—	—	—	13
Unidentified specimens	—	—	—	—	—	—	—	—	2	2	—	1	—	3	—	—	—	1	—	—	9
Total	0	0	3	4	—	6	36	27	113	65	49	52	35	59	69	93	16	35	33	2	697

Table 5.

Jyndevad	25/5	1/6	8/6	15/6	22/6	29/6	6/7	13/7	20/7	27/7	3/8	10/8	16/8	24/8	31/8	7/9	14/9	21/9	28/9	5/10	Total
APHIDIDAE																					
Dactynotus achilleae Koch	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	2
D. cichorii Koch	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
D. hypochoeridis H. R. L.	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1
Dactynotus sp.	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Macrosiphum (Sitobion) avenae Fabr.	–	–	–	–	–	–	–	1	2	1	2	–	–	–	–	–	–	–	–	–	6
Acyrthosiphon pisum Harris	–	–	–	–	–	–	1	1	5	1	5	–	–	–	–	–	–	–	–	–	13
Metopolophium dirhodum Walk.	–	–	–	–	–	1	–	–	7	–	–	–	–	–	–	–	–	–	–	–	8
Aulacorthum solani Kalt.	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
Amphorophora rubi Kalt.	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Hyperomyzus lactucae L.	–	1	5	3	–	5	–	3	7	3	15	1	–	–	–	–	2	–	–	–	45
H. pallidus H. R. L.	–	–	–	–	–	–	–	–	–	2	1	1	–	–	–	–	–	–	–	–	4
Nasonovia ribis-nigri Mosl.	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
Cryptomyzus galeopsidis Kalt.	–	–	–	1	–	–	–	1	3	20	–	16	4	2	–	–	–	–	–	–	47
C. ribis L.	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	1	–	–	–	3
Pleotrichophorus glandulosus Kalt.	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Capitophorus elaeagni d. Gu.	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
C. hippophaës Walk.	–	–	–	–	–	–	–	–	3	–	1	2	–	–	–	2	–	–	–	–	8
C. similis v. d. G.	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Myzus cerasi Fabr.	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
M. persicae Sulz.	–	2	–	–	–	–	–	3	1	3	5	4	2	2	1	–	–	1	–	–	24
Phorodon humuli Schrk.	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	2
Ovatus sp.	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	2	–	–	4
Liosomaphis berberidis Kalt.	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Cavariella aegopodii Scop.	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	2
C. pastinacae L.	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Hayhurstia atriplicis L.	–	–	–	–	2	4	5	27	32	5	23	51	4	8	2	1	–	–	–	–	164
Lipaphis erysimi Kalt.	–	–	–	–	1	–	1	2	1	–	1	–	–	–	–	–	–	–	–	–	6
Brevicoryne brassicae L.	–	–	–	–	–	–	–	–	–	1	–	11	4	77	13	5	1	–	–	–	112

Brachycaudus helichrysi Kalt.	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	1	—	—	3
Dysaphis sp.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	3	2	—	6
Aphis fabae Scop. complex	—	—	—	—	—	1	—	3	6	13	20	34	10	10	2	2	7	4	—	—	112
A. sambuci L.	—	—	—	—	—	—	—	4	—	—	2	—	—	—	—	—	—	—	—	—	6
Unidentified *Aphis* spp.	—	—	3	—	1	4	4	4	4	—	2	10	—	—	—	7	5	—	1	—	45
Toxopterina vandergooti Börner	—	—	—	—	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Rhopalosiphum padi L. *R. oxyacanthae* Schrk.	—	—	9	—	—	—	1	4	47	—	5	1	1	—	—	7	63	62	3	—	203
Hyalopterus pruni Geoffr.	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2
Unidentified or unidentifiable specimens	—	—	1	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	3
CALLAPHIDIDAE																					
Symydobius oblongus v. Heyd.	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Euceraphis punctipennis Zett.	—	5	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7
Drepanosiphum platanoides Schrk.	—	—	—	—	—	2	—	9	—	—	1	—	—	—	—	—	—	—	—	—	12
Tuberculoides annulatus Hartig	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	2
Therioaphis luteola Börner	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
T. trifolii Monell	—	—	—	—	3	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	4
Unidentified specimens	—	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
LACHNIDAE																					
Protrama ranunculi d. Gu.	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
Cinara sp.	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	2
THELAXIDAE																					
Anoecia sp.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2	—	3
PEMPHIGIDAE																					
Schizoneura ulmi L.	—	—	—	—	2	19	2	5	1	—	—	—	—	—	—	—	—	—	—	—	29
Unidentified specimens	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	1	—	—	3
Total	0	11	23	4	14	41	17	72	129	49	86	137	25	99	18	25	80	75	8	0	913

Jyndevad:
The tray stood in a little potato plot, which was placed in a beet field 50—100 m south of the buildings and garden of the Jyndevad Experimental Station. No buildings within a distance of less than 1—2 kilometres from the tray in the directions of south, west, and east, but cultivated areas with swedes ets. Quicksets stood in the neighbourhood, coniferous plantations at a greater distance.

The aphid fauna of a locality depends on the composition and the condition of the vegetation. Therefore soil and climate are important factors. In a broad outline one can make a distinction between East Denmark (the islands and eastern Jutland) and West Denmark (northern and western Jutland). The soil is clayey in the greater part of East Denmark and sandy in the greater part of West Denmark. There is a climatic difference, too, because West Denmark is nearer to the ocean.

Two localities, Ørslev and Årslev, in East Denmark on moraine clay from the last glacial period, have fertile soil with barley and beets as dominant crops and with several wheat fields, with several hardwood forests, without moors.

The other three localities are situated in West Denmark. Borris stands on soil consisting of moraine from the last but one glacial period, partly clay, partly sand, north-west of a district with river sand from the last glacial period. The soil at Jyndevad is river sand from the same period. Tylstrup stands on marine sand. In the sandy districts the dominant cultivated plants are swedes, potatoes, and rye (though beets, barley, and wheat are common crops, too). Grass, oats, and leguminous crops are very common at all five localities. Coniferous plantations and moors are widely distributed in western Jutland. The aphids *Ericaphis latifrons* and *Myzocallis myricae* feeding on plants in moors (viz. *Empetrum nigrum* and *Myrica gale* respectively) were caught in the tray at Borris only.

In accordance with the abovementioned distribution of cultivated plants, *Aphis fabae,* feeding especially on

beets, was more numerous in the trays in East Denmark than in West Denmark, whereas *Brevicoryne brassicae* was most common at Jyndevad, probably coming from a swede field in the nighbourhood (fig. 2).

Among species more common in the trays placed on the fertile land of East Denmark than in those placed

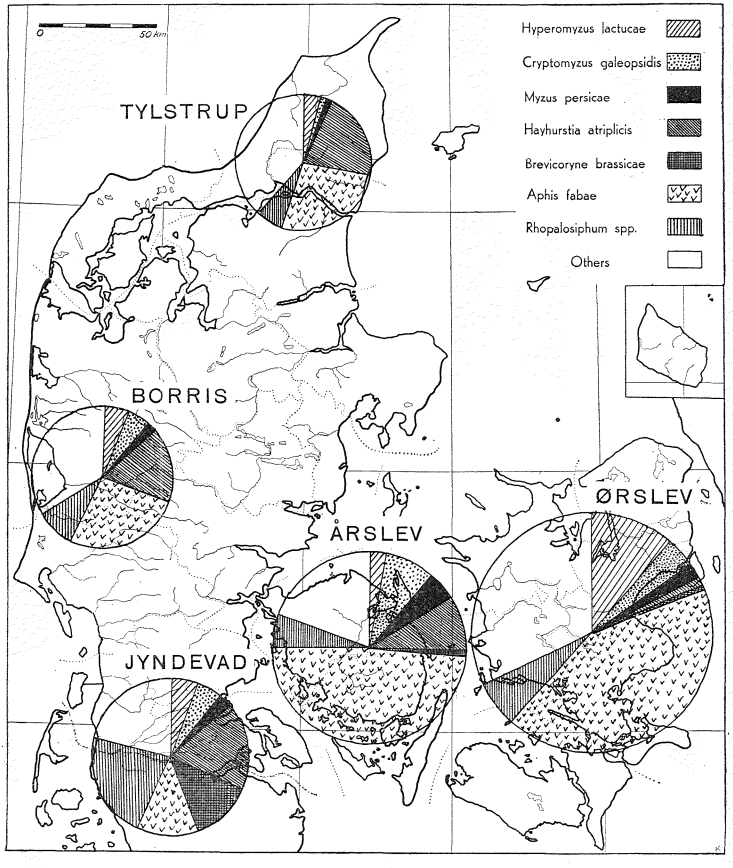

Fig. 2. Total catches of aphids in yellow trays at five localities, from April to October, 1956.

The area of the circles and the sectors are in ratio to the number of aphids.

in the more infertile West Denmark *Sitobion avenae, Acyrthosiphon loti, A. pisum, Cryptomyzus galeopsidis, Capitophorus hippophaës, Myzus cerasi, M. persicae, Phorodon humuli, Cavariella aegopodii, Lipaphis erysimi, Brachycaudus helichrysi, Dysaphis* spp., and *Anuraphis farfarae,* some of them coming from cultivated plants, others from the wild flora, can be mentioned. Among species more common in all three trays in the West than in the two trays in the East only *Dactynotus achilleae* and perhaps *Ovatus* spp. and *Hayhurstia atriplicis* (also common at Årslev, fig. 10) can be mentioned.

Perhaps this geographical distribution of aphid species is no rule, but existed only in 1956. The relation between the total numbers of aphids flown into trays at the five localities was not the same every year (fig. 3). The succession in 1956 was: Ørslev (2057), Årslev (1339), Jyndevad (913), Borris (697), and Tylstrup (678); in 1955: Borris (3847), Årslev (2943), Ørslev (1730), Tylstrup (1364), and Jyndevad (806); in 1954: Ørslev (5467), Årslev (3698), Borris (753), Jyndevad (656), and Tylstrup (589). In 1953 no tray was placed at Ørslev. The other four trays contained only about 300 aphids each (Tylstrup 312, Årslev 299, Jyndevad 277, Borris 271).

It will be seen that the distribution in 1954 resembled that of 1956, whereas 1955 greatly diverged. The figures show that it is impossible to draw extensive conclusions for other years from the results of a single year, but it is also impossible to draw extensive conclusions for a whole region from the result from a single tray. In 1955, when Borris in western Jutland caught more aphids (3847) than twice the number caught at Ørslev on Sealand (1730), many more aphids were caught in some other trays on Sealand, e. g. 16618 at Virumgård and 5967 at Trollesminde. The distribution on the various weeks during the summer was not the same in different years either (Heie 1959), and presumably the composition of species

is subject to considerable fluctuations, too. The writer knows from experience that some aphids being very common in Denmark one year may be rare the next year.

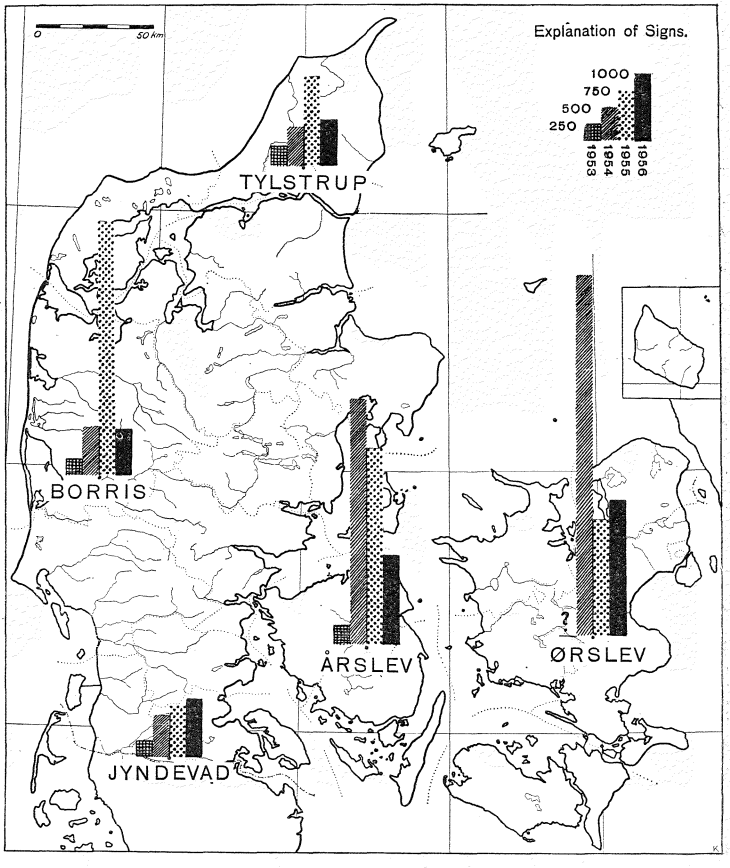

Fig. 3. Total catches of aphids at the same five localities in different years (1953—56).

The composition of the catches.

The species most common in the trays is *Aphis fabae* (perhaps mixed with some related species forming the *Aphis fabae* complex). Only at Jyndevad this species is

not no. 1. The fact that the trays were placed in beet fields may partly explain the great total number of this species caught in the five trays (2014). The next one is *Hayhurstia atriplicis* (577), which is more common than *Aphis fabae* in the tray of Jyndevad (fig. 2). Other common species are *Hyperomyzus lactucae* (368), *Cryptomyzus galeopsidis* (293), *Rhopalosiphum padi* and *R. oxyacanthae (insertum)* (495), *Myzus persicae* (149), *Brevicoryne brassicae* (131), and *Schizoneura ulmi* (115). Among unidentified *Aphis* spp. (372) probably several specimens are *Aphis nasturtii* Kalt., the common aphid on potatoes. Some of the specimens identified as *Hyperomyzus pallidus* (98) are perhaps *H. lampsanae* Börner.

The species most common in the trays need not be the most common in the nature. The production of alate individuals is for instance variable with different species. It is remarkable that common Danish aphid species as *Macrosiphum rosae* L., *Metopeurum fuscoviride* Stroyan, *Myzus ascalonicus* Donc., and *Phyllaphis fagi* L. are completely lacking, and that the potato aphids *Macrosiphum euphorbiae* Ths. and *Aulacorthum solani* Kalt. are relatively rare in the trays.

Hyalopterus pruni Geoffr. is sparsely represented in proportion to the enormous colonies so often seen on plum-trees and on Phragmites communis. The number of alate individuals of *Macrosiphum (Sitobion) avenae* Fabr. and *Acyrthosiphon pisum* Harris in the trays seems rather small compared with the big attacs by these noxious species on respectively pea and cereals in the summer of 1956. Appearing from the number of apterous *Sitobion avenae* drowned in the trays (table 8, p. 356) numerous individuals occurred on grasses in beet fields at Årslev and Tylstrup, too.

It is an important fact that some species are more strongly attracted by yellow colours than others (Eastop 1955, 1957). Among species selected by the yellow trays

Eastop found *Macrosiphum euphorbiae, Brevicoryne brassicae, Brachycaudus helichrysi,* and *Myzus persicae.* Grass-feeding species and the pea aphid *Acyrthosiphon pisum* were only weakly attracted as compared with most dicotyledon-feeding species. Moericke (1955) showed that the grass-feeding *Hyalopterus pruni* preferred greyish-green to yellow.

Suction traps (Johnson 1950, Johnson & Eastop 1951), therefore, are preferred to yellow Moericke-trays when analysis of the aphid contents of a distinct air volume shall be made.

A comparison made with the analysis done by Johnson & Eastorp (1951) shows some agreement in spite of the geographical distance, working within another year (1947) and another catching method (the suction trap), many dominant species being the same: *Aphis* spp. (including *A. fabae*), *Brevicoryne brassicae, Rhopalosiphum padi* and *R. oxyacanthae (insertum), Metopolophium dirhodum, Myzus persicae,* and *Hyperomyzus lactucae,* whereas *Macrosiphum rosae* and *M. euphorbiae* being sparsely represented, *Aulacorthum solani* and *Metopeurum fuscoviride* being lacking. Several grass-feeding species are more numerous showing the deficiency of the yellow tray method: *Metopolophium dirhodum, Anoecia corni, Hyalopterus pruni, Sitobion avenae,* and *S. fragariae. Hayhurstia atriplicis* is caught more rarely, whereas some aphids from deciduous trees more commonly: *Drepanosiphum platanoides* and *Eucallipterus tiliae.* Several specimens of *Pemphigus bursarius* and *Macrosiphum cholodkovskyi* are recorded by Johnson & Eastop, but not by the writer, who in return found *Lipaphis erysimi, Hyperomyzus pallidus, Microlophium carnosum,* and *Dactynotus tussilaginis,* not recorded by Johnson & Eastop.

In western Germany (at Elsdorf, Birkhof, and Osterath) Martini (1953) caught numerous aphids in Moericke-trays measuring 34×52 cm as early as in May and June.

In June, 1952, the dominant species were *Aphis fabae* and *Hyperomyzus lactucae,* but in 1951 only few specimens of the latter were caught.

Influence by climatic factors.

Table 6 shows average monthly temperatures for the five localities in 1956. As no meteorological measure-

Table 6.

Average monthly temperatures (°C.).

1956.	April	May	June	July	August	September	October
Ørslev	3,5	10,6	13,6	15,9	13,3	12,8	8,1
Årslev	4,0	11,8	13,3	16,3	13,2	12,9	8,1
Tylstrup	4,2	10,6	13,3	16,3	13,0	12,4	7,3
Borris	4,5	11,0	12,8	16,2	13,0	13,1	7,9
Jyndevad	4,8	11,5	13,2	16,8	13,3	13,4	8,2

Table 7.

Precipitation (in mm).

1956.	April	May	June	July	August	September	October
Ørslev	19	24	60	51	110	55	75
Årslev	19	11	49	44	95	28	49
Tylstrup	15	25	64	37	105	62	37
Borris	20	29	57	45	128	66	67
Jyndevad	10	19	39	31	147	41	65

ments are made at Ørslev, the figures have been taken for Tureby a few kilometres away. It will be seen that Jyndevad had an early spring owing to its more southern latitude. In accordance with this fact flying aphids arrived at this tray in relatively great numbers earlier than at the other trays, viz. $^{25}/_{5}$—$^{8}/_{6}$ (fig. 8). Perhaps the little precipitation (table 7) compared with the other localities had an effect, too.

The spring migration of *Metopolophium dirhodum, Hyperomyzus lactucae,* and *Rhopalosiphum* sp. took place at Jyndevad at first, and among the non-migrating species *Lipaphis erysimi* and *Hayhurstia atriplicis* had an earlier

maximum of their summer flight pointing to an acceleration of the production of alate forms here.

At Borris and Tylstrup in return the flight of some aphids was behind time, e. g. *Capitophorus hippophaes, Aphis fabae,* and *Schizoneura ulmi,* perhaps owing to the more oceanic climate (later spring with greater precipitation).

On figs. 4—8 some meteorological data (maximum temperature and precipitation per week) are given, because the capture of a tray is under a double influence of the weather. The weather of preceding weeks acts on the breeding of the aphids and the developing of winged

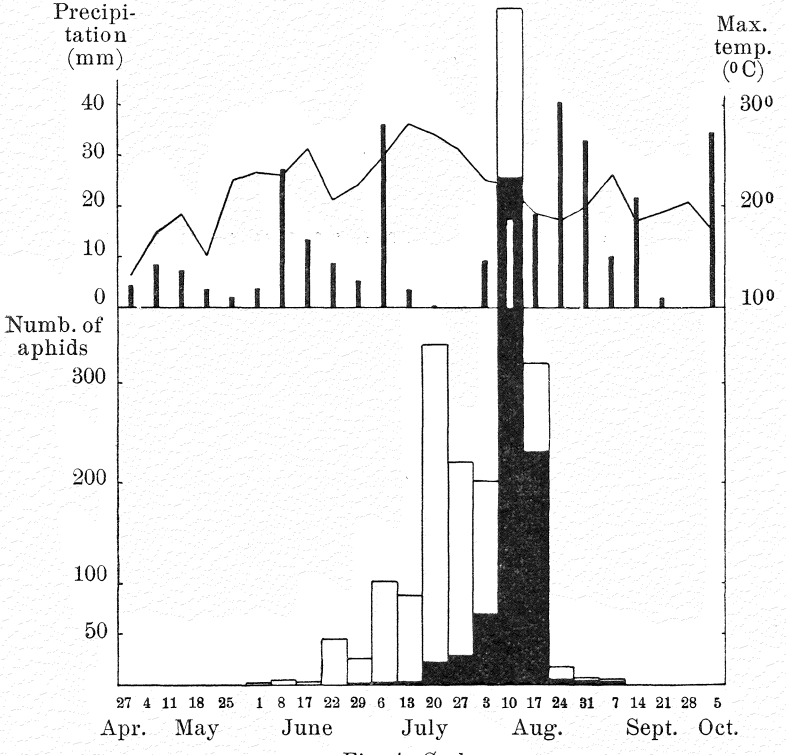

Fig. 4. Ørslev.
(For legend see p. 351).

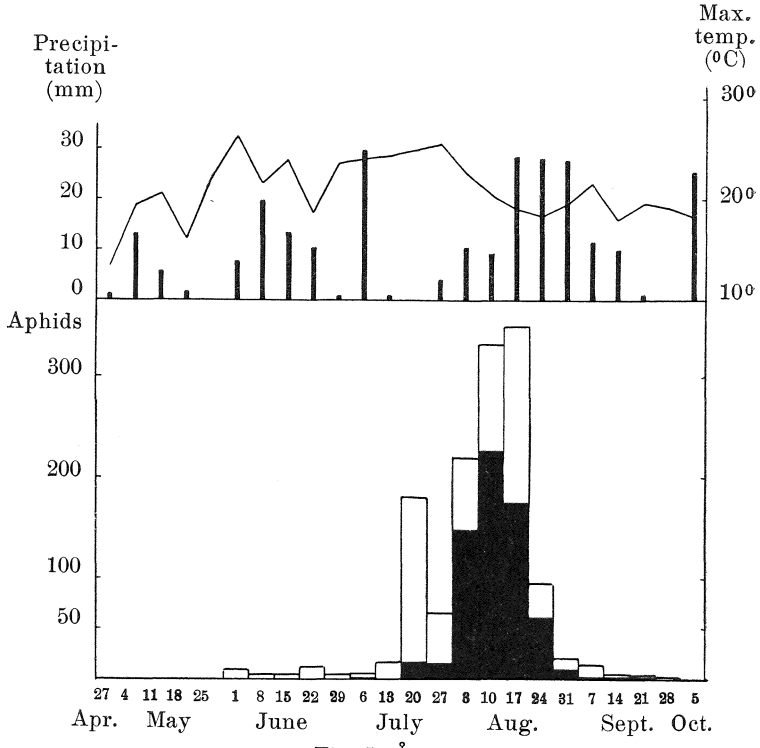

Fig. 5. Årslev.

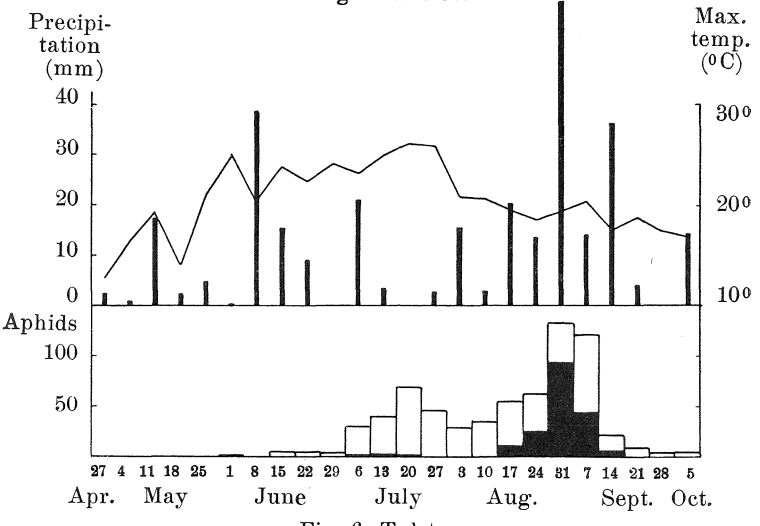

Fig. 6. Tylstrup.

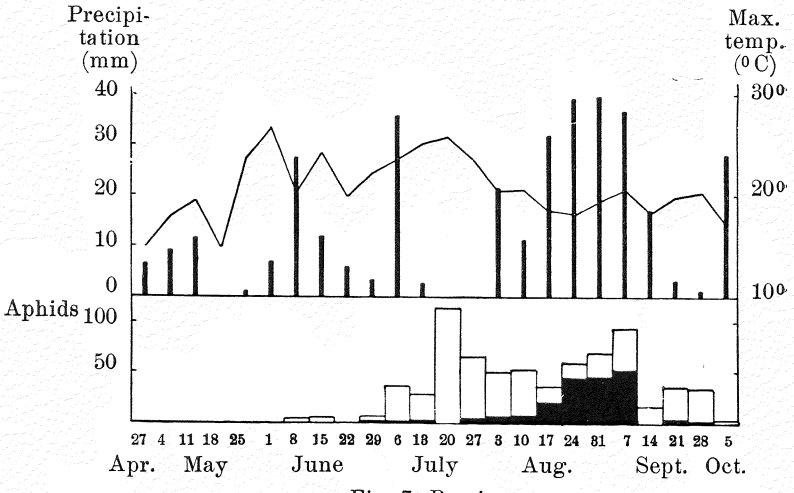

Fig. 7. Borris.

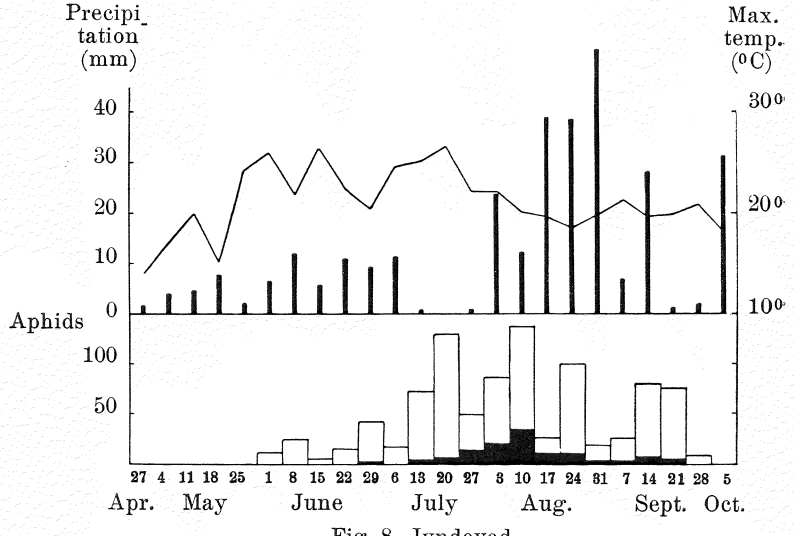

Fig. 8. Jyndevad.

Fig. 4—8. Weekly catches of total aphids (broad white columns) and those of *Aphis fabae* Scop. (broad black columns) compared with maximum temperatures in °C. (the curve) and precipitation in mm (narrow black columns) of the weeks from April to October, 1956.

individuals, and the weather of a week during which the catching by means of the yellow tray takes place, has influence on the size of the capture through its influence on flight and landing of the insects.

The precipitation at Ørslev is measured at Haslev, the maximum temperature at Ørslev is that of Søndersted, at Årslev that of Odense, at Borris that of Studsgård, and at Jyndevad that of Tønder.

In the warm and dry weeks $^{13}/_{7}$—$^{20}/_{7}$ and $^{20}/_{7}$—$^{27}/_{7}$ great numbers of aphids flew to the trays, especially at Ørslev where the maximum temperature of the preceding week was rather high (28,1 °C.). But the greatest number of aphids caught appeared in weeks with some precipitation, at Tylstrup even in a week with maximum precipitation ($^{24}/_{8}$—$^{31}/_{8}$: 62,7 mm).

For *Aphis fabae* (broad black columns in figs. 4—8) the influence by weather seems still smaller than for the total sum of aphids. The decrease of the number about the middle of August (at Ørslev, Årslev, and Jyndevad) is owing to the great precipitation in August, perhaps.

Flight period of different species.

Obviously three flight periods can be noticed in the case of *Hyperomyzus lactucae* (fig. 9), which is a migratory species with Ribes (especially R. nigrum) as winter host and Sonchus as summer host, viz. 1) the spring migration from Ribes to Sonchus in June (evident at Ørslev and Jyndevad, demonstrable at Årslev, too) till the first week of July (Tylstrup), 2) the flight between summer hosts (July and August), and 3) the autumnal migration from Sonchus to Ribes in September (demonstrable only at Borris and Jyndevad). Males were not found, probably because their migration took place after the first week of October, when the trays were emptied for the last time.

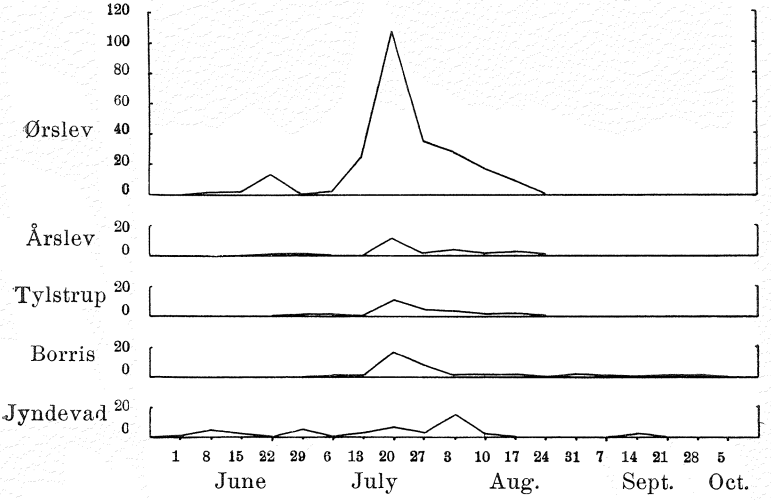

Fig. 9. Weekly catches of *Hyperomyzus lactucae* L. at five localities, from June to October, 1956.

The spring migration of *Schizoneura ulmi* from Ulmus to roots of Ribes takes place from the middle of June until first part of July, 2—3 weeks later in western and northern Jutland than on the islands and in southern Jutland. The greatest weekly capture is obtained at Ørslev in the first week of July. The autumn flight from Ribes to Ulmus has not been registered.

Of some other migratory species single spring migrants, but only few or none of the autumnal migrants are caught by the trays, e. g. *Metopolophium dirhodum* from Rosa, *Nasonovia ribis-nigri* from Ribes, and *Cavariella* spp. from Salix. Most of the migratory species are represented only or nearly only by alate individuals, developed on summer hosts, flying to other summer hosts, e. g. *Aphis fabae* (fig. 4—8). *Phorodon humuli* has only been caught from the beginning of July until the middle of August, especially at Ørslev. Nevertheless all or some of the individuals that flew into this tray may possibly have arrived from Prunus, the winter host, so that they

represented the spring migration. In 1957, the following year, this species of aphid was seen on sloe as late as on July 6, but at that date migration had been lasting for some time, as apterous adults simultaneously occurring on hops. Perhaps the spring migration and the summer flight may have been mixed in the case of other species too, e. g. *Cryptomyzus galeopsidis* and *Aphis fabae.*

Only few autumnal migrants of different species are taken by this method, probably because the returning of aphids to their winter hosts mainly goes on after the trays having been withdrawn. At Ørslev the autumn migration is not registered at all. Among migratory species specimens of which are caught in autumn are *Rhopalosiphum* spp., *Anoecia* sp., *Capitophorus hippophaes, Cavariella aegopodii, Hyperomyzus rhinanthi, Nasonovia ribisnigri,* and *Ovatus* sp. Winged males did not fly into the two trays on the islands and only few specimens into the Jutland trays. Males of *Cryptomyzus galeopsidis* are oddly enough caught already in summer (Borris $^{13}/_{7}$—$^{20}/_{7}$: 1 specimen, Jyndevad $^{3}/_{8}$—$^{10}/_{8}$: 1 specimen). In this connexion it ought to be mentioned that the writer once (in 1957) observed oviparous females of this aphid species on Ribes rubrum in the middle of the summer, July 28, at Skive (subspecies *citrinus* H. R. L. living on Ribes rubrum all the year; Hille Ris Lambers found the sexuales in September (Hille Ris Lambers 1953, p. 101)). The other males appeared in the autumn: *Nasonovia ribisnigri* (Borris $^{21}/_{9}$—$^{28}/_{9}$: 1 specimen), *Hyperomyzus rhinanthi* (Borris $^{21}/_{9}$—$^{28}/_{9}$: 2 specimens), *Rhopalosiphum* spp. (Tylstrup $^{21}/_{9}$—$^{28}/_{9}$: 1, $^{28}/_{9}$—$^{5}/_{10}$: 1; Borris $^{21}/_{9}$—$^{28}/_{9}$: 1; Jyndevad $^{7}/_{9}$—$^{14}/_{9}$: 1, $^{21}/_{9}$—$^{28}/_{9}$: 1), *Aphis* sp. (Tylstrup $^{31}/_{8}$—$^{7}/_{9}$: 1, $^{14}/_{9}$—$^{21}/_{9}$: 1; Jyndevad $^{21}/_{9}$—$^{28}/_{9}$: 1), and unidentified *Aphididae* (Borris $^{21}/_{9}$—$^{28}/_{9}$: 3).

The non-migrating species have been caught mainly in July and August, some of them appearing rather late, e. g. *Brevicoryne brassicae,* arriving from the middle of

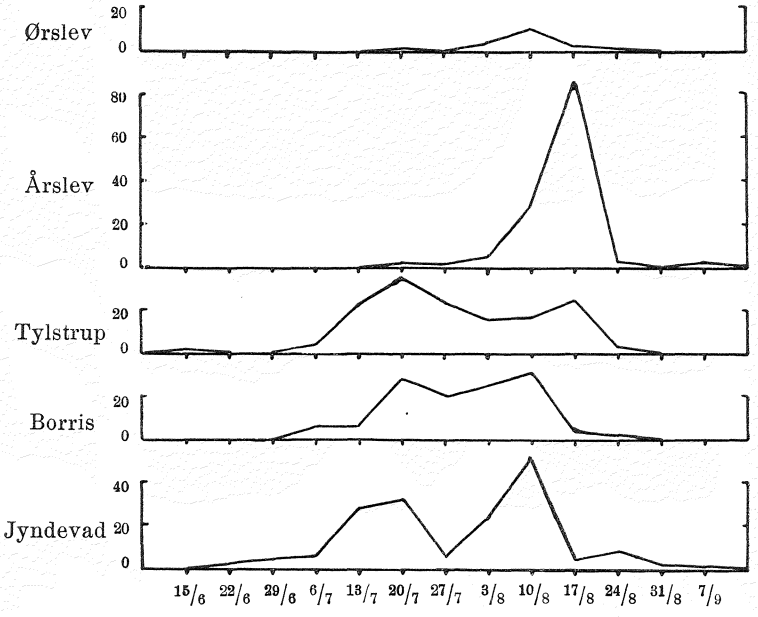

Fig. 10. Weekly catches of *Hayhurstia atriplicis* L. at five localities, from June to September, 1956.

July until the middle of September, the curve of this species topping at Jyndevad about August 20. *Sitobion avenae* and *Acyrthosiphon pisum* appeared about July 1. The dominant non-migrating species is *Hayhurstia atriplicis* (fig. 10), which is common on Chenopodium album, a widely distributed weed in beet and potato fields. Winged specimens of this species arrived from the middle of June (Tylstrup), the curve topping about August 10, at all five localities, at the Jutland localities about the middle of July, too (while the weather was warm and dry; both the same topping periods are found in the cases of *Cryptomyzus galeopsidis* as well as of total aphids (figs. 4—8)).

Table 8.

Apterous aphids in the five trays.

	13/7	20/7	27/7	3/8	10/8	17/8	24/8	31/8	7/9	14/9	21/9	28/9	Total
ØRSLEV													
Metopolophium dirhodum	–	–	1	–	–	–	–	–	–	–	–	–	1
Nasonovia ribis-nigri	–	–	1	–	–	–	–	–	–	–	–	–	1
Myzus persicae	–	–	–	–	–	2	–	–	–	–	–	–	2
Lipaphis erysimi	–	–	–	–	–	1	–	–	–	–	–	–	1
Aphis fabae	–	–	1	–	4	6	–	1	–	–	–	–	12
Rhopalosiphum padi	–	–	2	–	–	–	–	–	–	–	–	–	2
Unidentified specimens	1	–	2	–	–	–	–	–	–	–	–	–	3
ÅRSLEV													
Macrosiphum (Sitobion) avenae	–	–	2	3	1	–	1	1	–	–	–	–	8
Aulacorthum solani	–	–	–	–	–	–	–	2	–	–	–	–	2
Hyperomyzus lactucae	–	–	1	–	–	–	–	–	–	–	–	–	1
Myzus persicae	–	–	–	2	2	1	1	–	–	–	–	–	6
Hayhurstia atriplicis	–	–	–	–	–	1	3	–	1	–	–	–	5
Lipaphis erysimi	–	–	–	1	–	1	–	–	–	–	–	–	2
Aphis fabae	–	–	–	1	1	2	–	–	–	–	–	–	4
Rhopalosiphum padi	–	–	–	4	7	5	–	–	–	–	–	–	16
Unidentified specimens	–	–	–	2	4	1	–	–	–	–	–	–	7
TYLSTRUP													
Macrosiphum (Sitobion) avenae	–	1	17	4	4	–	–	–	–	–	–	–	26
Metopolophium dirhodum	1	1	1	–	–	–	–	–	–	–	–	–	3
Hayhurstia atriplicis	1	–	–	1	1	–	–	–	–	–	–	–	3
Aphis fabae	–	–	–	–	–	–	–	–	–	–	1	–	1
Rhopalosiphum padi	–	1	–	–	–	–	–	–	–	–	–	–	1
BORRIS													
Dactynotus tussilaginis	–	–	–	–	–	–	–	–	–	–	1	–	1
Aulacorthum solani	–	–	–	–	–	–	–	1	–	–	–	–	1
Myzus persicae	–	–	–	–	–	–	–	1	–	–	–	–	1
Lipaphis erysimi	–	–	–	–	–	–	1	–	–	–	–	–	1
Brachycaudus helichrysi	–	–	–	–	1	–	–	–	–	–	–	–	1
Aphis fabae	–	–	–	–	–	1	1	1	–	–	–	–	3
Rhopalosiphum padi	–	–	–	–	–	–	1	–	–	1	–	1	3
Unidentified specimens	–	–	–	–	–	–	–	–	1	–	–	1	2
JYNDEVAD													
Aulacorthum solani	–	–	–	–	–	–	–	–	–	–	2	–	2
Myzus persicae	–	–	–	1	2	–	–	1	1	2	–	–	7
Hayhurstia atriplicis	1	–	–	–	–	1	1	3	2	–	1	–	9

Apterous aphids in the trays.

Apterous aphids found in the samples did not seek out the tray for the sake of its yellow colour, of course (table 8). They may accidentally have fallen into the trays from neighbouring plants, viz. beets (*Aphis fabae, Myzus persicae*), potatoes (*Myzus persicae, Aulacorthum solani*), and weeds: Chenopodium album (*Hayhurstia atriplicis, Aphis fabae*), Cruciferae (*Lipaphis erysimi*), Compositae (*Dactynotus tussilaginis, Hyperomyzus lactucae, Nasonovia ribis-nigri, Brachycaudus helichrysi*), and grasses (*Sitobion avenae, Metopolophium dirhodum, Rhopalosiphum padi*).

No apterous aphid fell into any tray until the week from July 6—13. There was little similarity between the different trays. No aphid species was to be found in all five trays.

A single specimen of *Hayhurstia atriplicis* was an oviparous female (Jyndevad: $^{14}/_{9}$—$^{21}/_{9}$). The others were viviparous females. Several of them were larvae.

Faunistic supplement.

Some of the species mentioned here are known in Denmark from yellow trays only, viz. *Microlophium carnosum* (Buckton 1876), *Capitophorus elaeagni* (d. Guerc. 1894), and *Therioaphis trifolii* (Monell 1882).

The following species have not yet been recorded as Danish in any zoological publication as far as the writer knows though several of them being very common:

Sitobion fragariae (Walker 1848), *Acyrthosiphon loti* (Theob. 1912), *Acyrthosiphon malvae* (Mosley 1841) s. lat., *Metopolophium dirhodum* (Walker 1848), *Microlophium carnosum* (Buckt. 1876), *Microlophium evansi* (Theob. 1923), *Amphorophora rubi* (Kalt. 1843), *Megoura viciae* Buckt. 1876, *Hyperomyzus pallidus* H. R. L. 1935, *Hyperomyzus (Hyperomyzella) rhinanthi* (Schout. 1903), *Nasonovia ribis-nigri* (Mosley 1841), *Rhopalomyzus lonicerae* (Sieb. 1839), *Cryptomyzus galeopsidis* (Kalt. 1843), *Pleotrichophorus glandulosus* (Kalt. 1846), *Capitophorus elaeagni* (d. Guerc. 1894), *Capitophorus hippophaes* (Walker 1852), *Capitophorus horni* Börner 1931, *Capitophorus*

similis v. d. Goot 1915, *Ericaphis latifrons* (Börner 1942), *Liosomaphis berberidis* (Kalt. 1843), *Cavariella archangelicae* (Scop. 1763), *Cavariella pastinacae* (L. 1758), *Cavariella theobaldi* (Gill. & Bragg 1918), *Lipaphis erysimi* (Kalt. 1843), *Anuraphis farfarae* (Koch 1854), *Ceruraphis eriophori* (Walker 1848), *Aphis corniella* (H. R. L. 1935), *Aphis idaei* v. d. Goot 1912, *Toxopterina vandergooti* (Börner 1939), *Pterocomma salicis* (L. 1758), *Periphyllus testudinacea* (Fernie 1852), *Symydobius oblongus* (v. Heyd. 1837), *Euceraphis punctipennis* (Zett. 1828), *Kallistaphis basalis* Stroyan 1957, *Drepanosiphum acerinum* (Walker 1848), *Drepanosiphum platanoides* (Schrk. 1801), *Myzocallis coryli* (Goetze 1778), *Myzocallis myricae* (Kalt. 1843), *Tuberculoides annulatus* (Hartig 1841), *Therioaphis luteola* (Börner 1949), *Therioaphis trifolii* (Monell 1882), and *Protrama ranunculi* (d. Guerc. 1909).

All slides are kept in the author's collection.

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Månedsoversigt over vejrforholdene 1956 udsendt af Meteorologisk Institut.

Anmeldelse.

Ingrid Sparing: **Die Larven der Hydrachnellae, ihre parasitische Entwicklung und ihre Systematik.** Parasitol. Schriftenreihe Heft 10, Jena (Gustav Fischer) 1959, 168 pag. 13.85 DM.

For en 30-40 Aar siden kom Systematik i Miskredit over hele Verden, og vi var herhjemme undtagelsesvis meget hurtige til at følge denne Modestrømning. Efter 2. Verdenskrig er Systematik kommet paa Mode igen, hvad der forhaabentlig ogsaa vil slaa igennem herhjemme; de almene Videnskaber kan ikke arbejde med navnløse Dyr. En af dem, der i nyeste Tid har haft Forstaaelse heraf, er Prof. H. J. Stammer i Erlangen, der specielt interesserer sig for Parasiter; men Parasiter maa jo ses i Sammenhæng, og følgelig arbejdes der paa Stammers Institut med talrige forskellige Dyregruppers Systematik. Og ogsaa Sansen for at finde Publikationsmuligheder for disse Arbejder, har Stammer haft; flere Publikationsserier er startet af ham i de senere Aar.

I en af disse har Ingrid Sparing nu givet en Oversigt over Vandmide-Larverne baseret paa meget omfattende selvstændige Undersøgelser. Opstillingen er den klassiske: historisk Indledning, morfologisk Oversigt, Bestemmelsestabeller først til Familie, senere til Slægt og Art, Beskrivelse af de enkelte Arter, desværre med for faa og lidt vel groft-skematiske Figurer, og tilsidst nogle almindelige Betragtninger. Disse omfatter dels en Gennemgang af Vandmidernes Udvikling med Hensyntagen ogsaa til Hvilestadierne, dels en Gruppering af Udviklingsmaaderne i 4 forskellige Typer, der hænger sammen med mere eller mindre omfattende Parasitisme, dels endelig nogle Ord om Vandmidernes Fylogeni, hvor man glæder sig over igen at kunne betragte dem som en Enhed; den moderne Tendens til at splitte alle Grupper ad havde allerede godt fat i Vandmiderne.

Maatte nogen inspireres til at tage Studiet af de danske Vandmider op og fortsætte Lundblads fortræffelige Arbejder fra 20'erne!

S. L. Tuxen