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HEALTH ORGANISATION

MALARIA COMMISSION

The Secretariat of the Malaria Commission submits herewith a contribution received in connection with the problem of the bionomics of anophelines and their geographical distribution recommended for investigation by the Reporting Committee at its meeting in October 1937.

ANOPHELISM IN HUNGARY

by

Professor F. Lörincz.

The freshwater varieties (typicus and messeae) of A. maculipennis are found in endemic regions in Hungary. (See map showing the geographical distribution of varieties of A. maculipennis).

The results of surveys show that the anopheles are encountered in stables and other hiding places in at least the same proportion as in dwellings. These varieties distinctly prefer to feed on domestic animals. (See Rivista di Malariologia. Anno XIV.1937.Section 1, No. 6 pp.465-479). The endemic regions occupy about a quarter of the post-war territory of Hungary. The number of inhabitants living in these regions is less than one-fourth of the total population.

It is a somewhat difficult task to characterise the anopheles breeding places in endemic regions. There undoubtedly exists a connection between malaria and the extensive artificial fish breeding lakes in the infected territories in the south-west. In the same region there are often to be found large low-lying areas from which the rainwater seldom entirely disappears. Even in the absence of pools there are in the ground a number of small ditches and depressions in which the anopheles breed undisturbed.

In addition to the breeding places mentioned above, there are others made by man which are seldom absent from the neighbourhood of human habitations. The presence of brick factories does not always explain the presence of stagnant water.

In most communities there are numerous ditches from which clay has been removed for making sun-dried brick or stamped earthern walls. Along the rivers, particularly in the northern and north-eastern regions, there are large flood plains or cut off former river beds created as a result of river control work. The water here is not drained and every year large quantities of mosquitoes are bred. The Hungarian plain, the surface of which lies partly below sea-level, has

some characteristic breeding places represented by the stagnant alkaline water. A. maculipennis var. atroparvus breeds here, yielding to var. messeae and var. typicus near fresh water. According to observations, the number of mosquitoes increases characteristically from early in the spring, towards the end of February, until the beginning of April, when the mosquitoes leave their winter hiding places. During the summer, between May and September, a second increase occurs which, given favourable weather, may last until October. (See graph showing monthly changes in the density of mosquitoes.)

Table L.

Data of Professor F. Lörincz.

The distribution of races in the vicinity of Szeged with the amount of chlor-ion's and pH in neighbouring breeding places.

Name of place	Number of egg batches examined	Percentage of races			pH	Water Cl.ion mgr. in 1000 cc. of water.	
		Atro-parvus %	Messeae %	Typicus %		May	June
"Cserepessor"	112	91	9	-	8.8	400	690
Garbage heap "Rokus"	98	74	24	1	9.5	350	370
"Somogyitelep XV"	87	46	51	3	7.9	120	290
"Somogyitelep Arment"	59	54	41	5	8.0	70	260
"Cut of" of the river Tisza (Klebelsberg telep)	57	33	67	-	7.7	100	
"New-Szeged" Agricult. Research Inst.	69	16	77	7	7.5	12	17
"New-Szeged" timber undertaking	41	22	66	12	7.5	12	17

Data of May 1st - June 23rd, 1939. Anophelines were taken from stables except at "Cserepessor" where some were also caught in the house. The water examined originates from standing water near the catching place except for the two last places at New-Szeged where the river water (Tisza) was analysed.

TABLEAU No. I.

TABLE No. I.

Données réunies par Lörincz et de Mihályi (Népegészégügy, 1937) relatives à la distribution de races d'Anophèles maculipennis en Hongrie.

Data of Lörincz and Mihályi /Népegészségügy, 1937/ on the distribution of races of Anopheles maculipennis in Hungary.

Localités Name of place	Nombre d'individus isolés No. isolated	Nombre de pontes No. of egg batches	Typicus Typicus	Messeae Messeae	Atroparvus Atroparvus
1. Tarpa	427	226	160	65	1
2. Tisztaberek	100	55	46	8	1
3. Gacsály	316	155	124	30	1
4. Rozsály	70	36	27	9	-
5. Csenger	501	270	220	49	1
6. Békéscsaba	200	100	11	55	34
7. Nagykörü	806	330	7	183	140
8. Soroksár	899	616	20	490	106
9. Vajszló-Vejti	308	172	83	89	-
10. Iharosberény	1105	622	100	513	9

Observations faites de mai à octobre 1936. Voir carte No. I. sous "A".

Observations made in 1936, May to October. See "A". Map No. I.

TABLE No.II

Data of the State Hygienic Institute (G. Makara) from 1937-1939 on the distribution of races of Anopheles maculipennis in Hungary.

Name of place	No. isolated	No. of egg batches	Typicus	Messeae	Atroparvus	Type of local breeding place
North-Eastern malarious region						
1. Mandok	3000	1521	553	951	17	pools
2. Jank	1539	1128	235	834	59	various
3. Darno	200	184	58	120	6	stagnant river
4. Kisnamény	200	180	60	101	19	ditch, pool near Tisza r.
5. Kiralyhaza	31	19	17	2	-	
South-Western malarious region						
6. Letenye cca.	4000	2856	1143	1713	-	meadow, ditch
7. Muraszemenye	78	41	2	39	-	stagnant river
8. Totszerdahely	110	78	45	33	-	river, meadow
9. Totsztmarton	148	117	88	19	-	river
10. Zajk	150	126	117	9	-	river
11. Muraratka	1451	1065	149	916	-	river cut off
Central Hungary (malaria sporadic or not)						
12. Dömsöd	210	192	2	175	15	Danube cut off
13. Felsögöd	23	21	3	18	-	fishpond,ditch
14. Szigliget	35	27	2	25	-	Lake Balaton
15. Szeged	?	95	2	2	91	salty marsh
16. " felsötanya	?	127	-	13	114	" "
17. Kiskunfélegyhaza	?	32	-	8	24	" "
18. Kalocsa	105	79	2	31	46	river, pool.

See "B", Map No.I.

Map No.II shows the percentage of varieties in the South-Western malarious region.

TABLEAU N° III.

TABLE N° III.

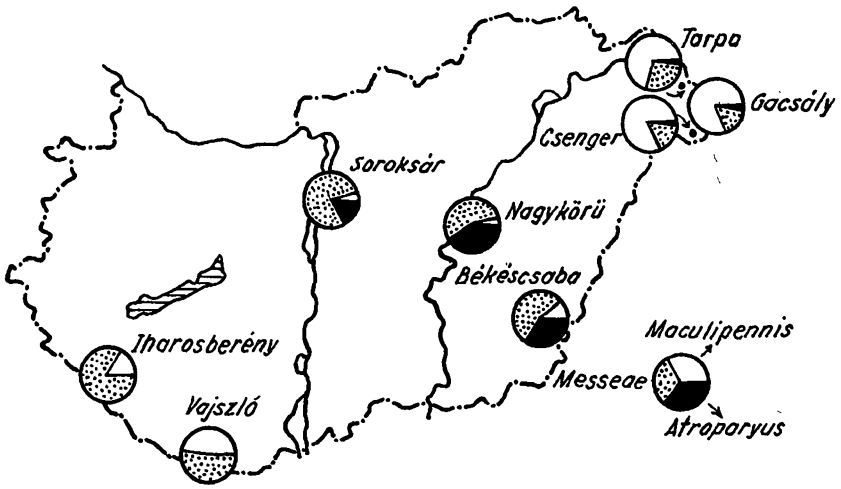
Données réunies par L.W. Hackett concernant la distribution des races d'Anophèles maculipennis en Hongrie (1937).

Data of L.W. Hackett on the distribution of races of Anopheles maculipennis in Hungary (1937).

Localités Name of place	Nombre d'individus isolés No. isolated	Nombre de pontes No. egg batches	Typicus	Messeae	Atroparvus
1. Besenyszög	63	32	1	26	5
2/a. Nagykörü	104	55	-	54	1
2/b. "	18	7	-	7	-
2/c. "	80	40	-	40	-
3. Tiszafüred	68	41	-	18	23
4. Hortobàgy csàrda	68	39	1	37	1
5. Nagyecsed	77	45	21	21	3
6. Nagygéc	99	44	12	31	1
7. Tunyog	125	74	1	72	1
8. Csaroda	109	60	-	60	-
9. Tiszabezdéd	81	38	4	32	2
10. T.szentmàrton	98	57	32	24	1
11. Zsurk	100	69	29	40	-
12. Zàhony	90	58	22	36	-
13. Kis Velence	85	60	-	24	36
14. Balatonföldvàr	70	44	12	21	11
15. Letenye	67	48	15	33	-
16. Muraràtka	78	46	2	44	-
17. Zalaszentgrót	99	65	-	65	-
18. Sàrmellék	133	95	-	95	-
19. B.ederics	105	67	5	61	1
20. Külsóvat	85	50	19	27	3
21. Hidegség	98	49	1	49	-
22. Ungvàr	92	37	36	1	-
23. Munkàcs	101	62	56	1	5
24. Beregszàsz	116	64	50	12	2
25. Csap	74	45	10	35	-

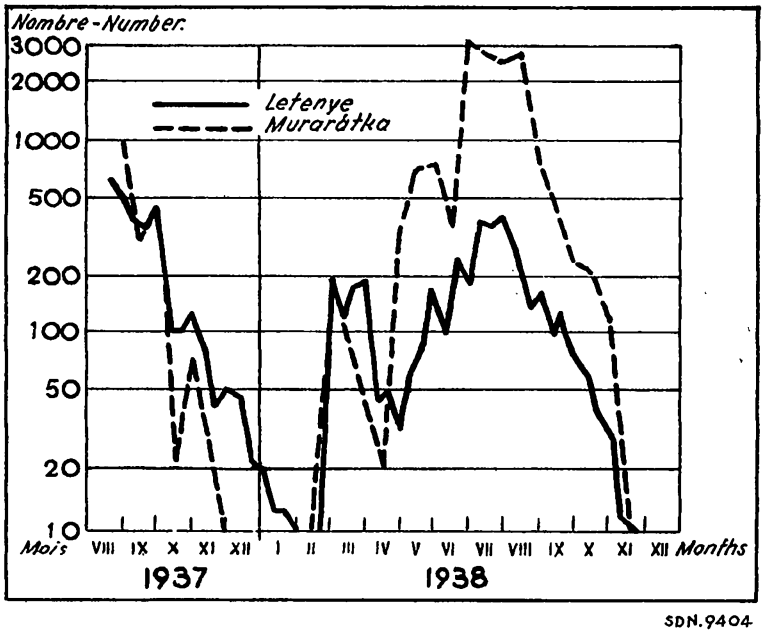
Voir carte N° I sous "C".

See "C" Map N° I.



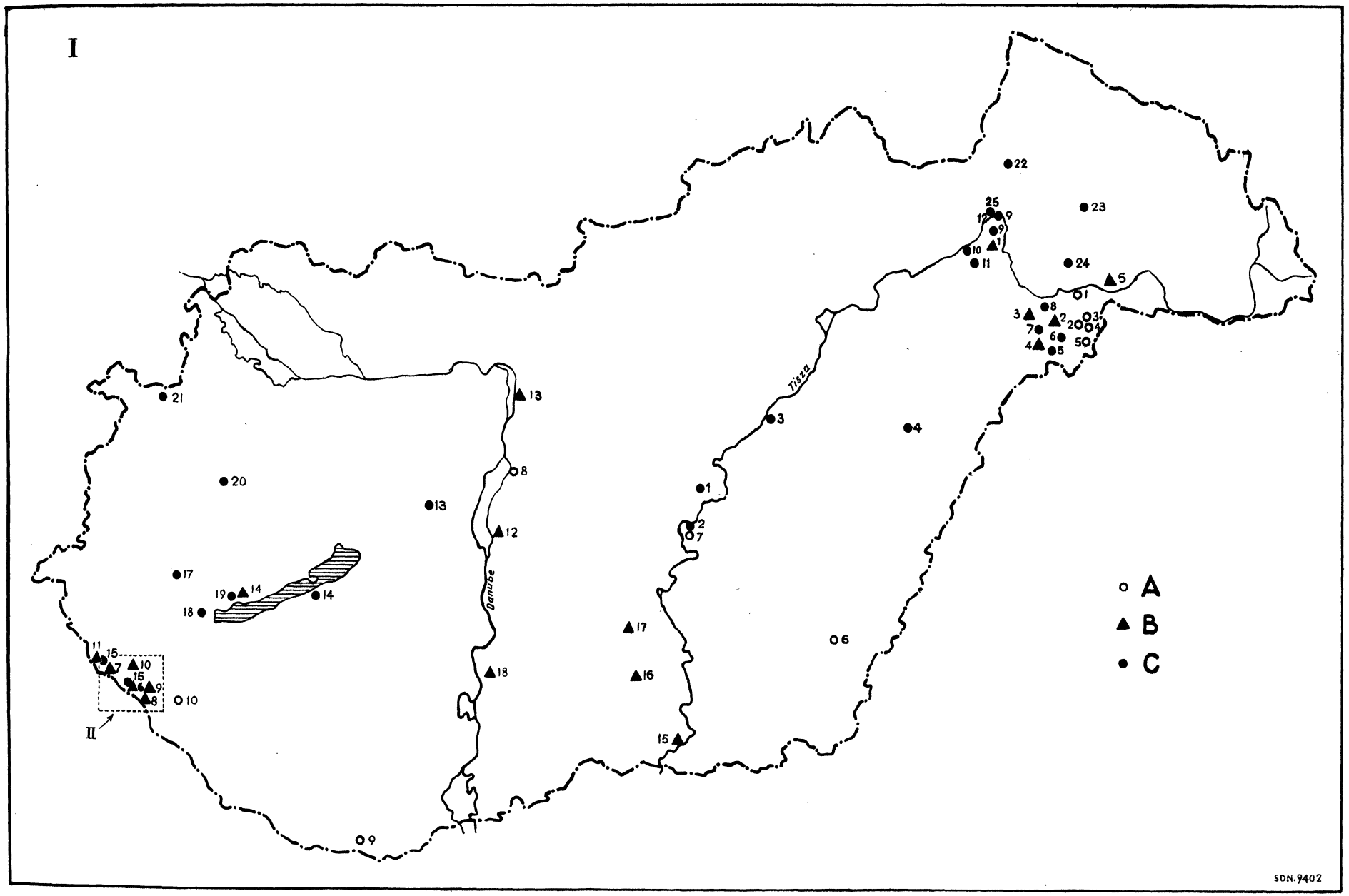
Distribution géographique des variétés d'A.maculipennis dans les territoires endémiques du Nord-Est et du Sud-Ouest et dans la Grande Plaine.

Geographical distribution of varieties of A.maculipennis in the North-Eastern and South-Western endemic territories and in the Great Plain.



Variations mensuelles dans la densité des moustiques en Letenye et Murarátka.

Monthly changes in the density of mosquitoes in Letenye and Murarátka.


I
II
Tisza
Danube
A
B
C
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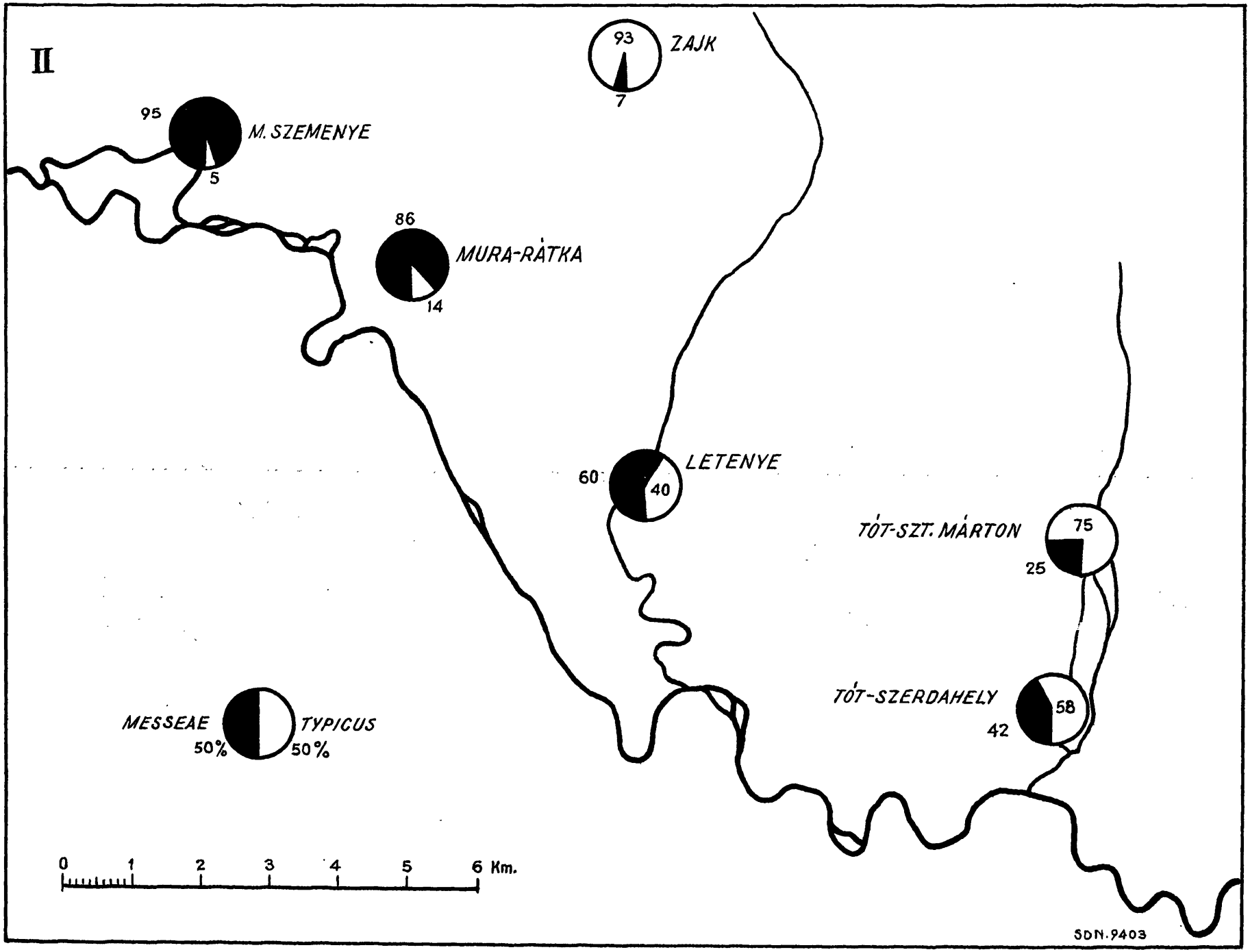
II
93
ZAJK
7
95
M. SZEMENYE
5
86
MURA-RÁTKA
14
60
LETENYE
40
TÓT-SZT. MÁRTON
75
25
TÓT-SZERDAHELY
58
42
MESSEAE
50%
TYPICUS
50%
0 1 2 3 4 5 6 Km.
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