Evolution and Variation in *Trillium*. V.

A list of Chromosome Composition in Natural Populations of *Trillium kamtschaticum* PALL.

By

ICHIRO FUKUDA and YOSHIMICHI KOZUKA

(With 7 text-figurs, 4 tables and 55 appendix tables)

Chromosome composition in natural populations of *Trillium kamtschaticum* PALL. distributed in northern Japan has been investigated in the writers' laboratory. Fifty-five populations were analysed up to the year 1957 (Fig. 2), and it becomes necessary to prepare a full list of their chromosome composition. The present paper was written to meet this demand. The chromosome composition in each of the populations is represented in the Appendix Tables 1-55 with chromosome types identified under low temperature condition in somatic metaphase of ovular tissues of each of the sample plants chosen for examination (cf. KURABAYASHI '52, HAGA and KURABAYASHI '53, '54, etc.). The number of types found in each chromosome pair attained 75, 21, 17, 17 and 20 in chromosome A, B, C, D and E respectively (Fig. 1 and Table 1).

The year of sampling of the materials in each population is written upon right shoulder of each of the Appendix Tables. The names of localities where the populations chosen for investigation grow are given in Table 2. The sample plants were taken at random from a quadrate, except the cases stated below, arbitralily thrown in each population. *Em-III A2* and *Em-III D* were respectively taken from an aggregate included in a small cluster developed along a short stream near Cape Erimo (Fig. 2). *Od(1)* and *Od(2)* were the samples from two neighboring aggregates separated by a distance of a few hundred meters. These two pairs of samples may respectively be regarded, judging from their chromosome composition (cf. Appendix Tables 20, 21 and 49, 50), to have a common gene pool. Six samples (*Ty-G*, *Ty-G(A)*, *Ty-G(B)*, *Ty-J*, *Ty-Q*$_3$, *Ty-Q*$_4$) were taken from Toyoni cluster (Fig. 2). *Ty-G* is a random sample taken in 1949 from G-terrace. Another sampling was made in the same terrace in 1952. In the latter, the sample plants were divided into two groups. *G(A)*: plants with only one flower-bearing

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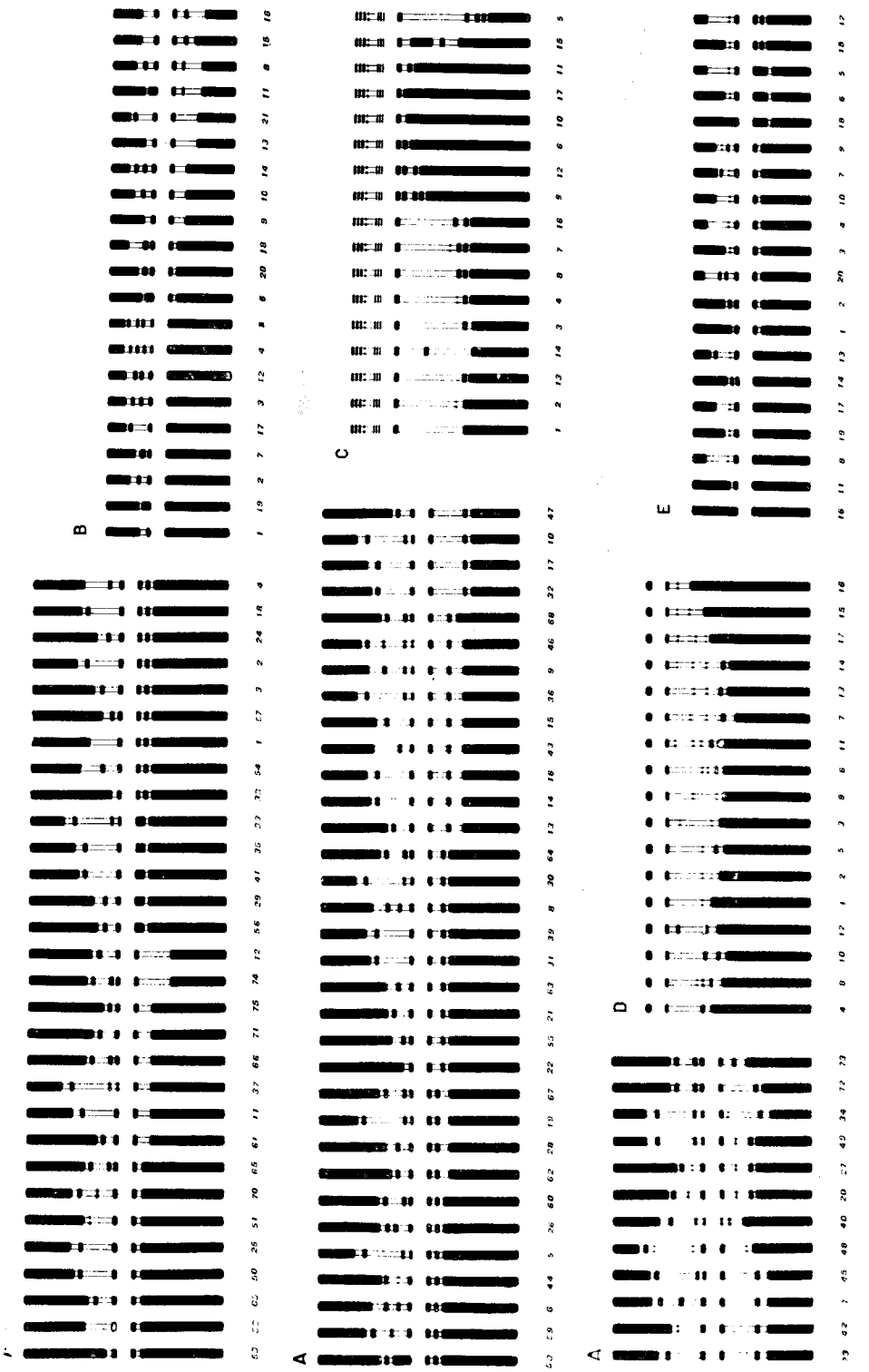

B
C
E
A
D
A

TABLE 1. Designation of chromosome A, B and E with their arm types (cf. Fig. 1).

Chromosome A		Chromosome A		Chromosome B		Chromosome E	
Chromosome Type	Arm Type	Chromosome Type	Arm Type	Chromosome Type	Arm Type	Chromosome Type	Arm Type
1	201–103	39	203–208	1	101– 50	1	101–151
2	201–208	40	210–309	2	201– 50	2	201–151
3	201–205	41	104–207	3	301– 50	3	202–151
4	201–211	42	208–209	4	401– 50	4	203–151
5	201–306	43	204–211	5	402– 50	5	203–152
6	201–302	44	201–303	6	102–151	6	202–152
7	208–305	45	208–308	7	202– 50	7	301–151
8	203–302	46	204–401	8	201–251	8	203– 50
9	204–307	47	207–310	9	101–152	9	302–151
10	207–306	48	209–402	10	201–152*	10	204–151
11	102–208	49	301–306	11	102–251	11	101– 50
12	103–205	50	101–207	12	302– 50	12	203–251
13	204–205	51	101–209	13	101–153	13	303– 50
14	204–207	52	101–103	14	301–152	14	206– 50
15	204–211	53	101–101	15	104–252	15	202–251
16	204–208	54	201–213	16	104–253	16	0– 50
17	207–208	55	203–202	17	204– 50	17	204– 50
18	201–207	56	104–203	18	205–151	18	0–152
19	202–308	57	201–202	19	102– 50	19	50–202
20	301–301	58	201–214	20	202–151	20	151–304
21	203–205	59	201–301	21	204–153		
22	203–101	60	201–311				
23	208–208	61	102–203				
24	201–206	62	202–203				
25	101–208	63	203–206				
26	201–310	64	203–311				
27	301–303	65	101–311				
28	202–206	66	102–311				
29	104–206	67	202–311				
30	203–306	68	205–311				
31	203–207	69	101–205				
32	207–207	70	101–301				
33	104–306	71	102–205				
34	304–306	72	206–311				
35	104–208	73	207–311				
36	204–306	74	103–311				
37	102–306	75	102–201				
38	201–101						

* The arm type of the long arm of B-10 was mistaken as 252 in Appendix Table 2 in the foregoing paper of this series (KURABAYASHI, '57, p. 42).

Fig. 1. Schematic representation of types found in chromosome A, B, C, D and E of *Trillium kamtschaticum*. Heterochromatic segments are shown by solid lines. Euchromatic segments are blacked. As regard to the criteria by which different types of the patterns in the differential segments are distinguished, detailed explanations have been given by previous authors (KURABAYASHI '52, HAGA and KURABAYASHI '54). It may be noted here that the patterns do not discriminate the gene arrangements in chromonemata as accurate as the bands of salivary gland chromosomes, in which an identical rearrangement might scarcely occur repeatedly in each chromosome arm. But in the present case there may be different procedures to result in the production of seemingly identical patterns. This is convincing because there are identical patterns in both arms of chromosome A's (cf. A-20, 23, 32 and 53 in Table 1 and Fig. 1), which are isobrachial. The judgement whether an identical pattern included in different populations is also identical in origin or is the one produced by a chance coincidence has been made by examinations of geographical distribution of the pattern (KURABAYASHI '57 and Table 4 in the present paper).

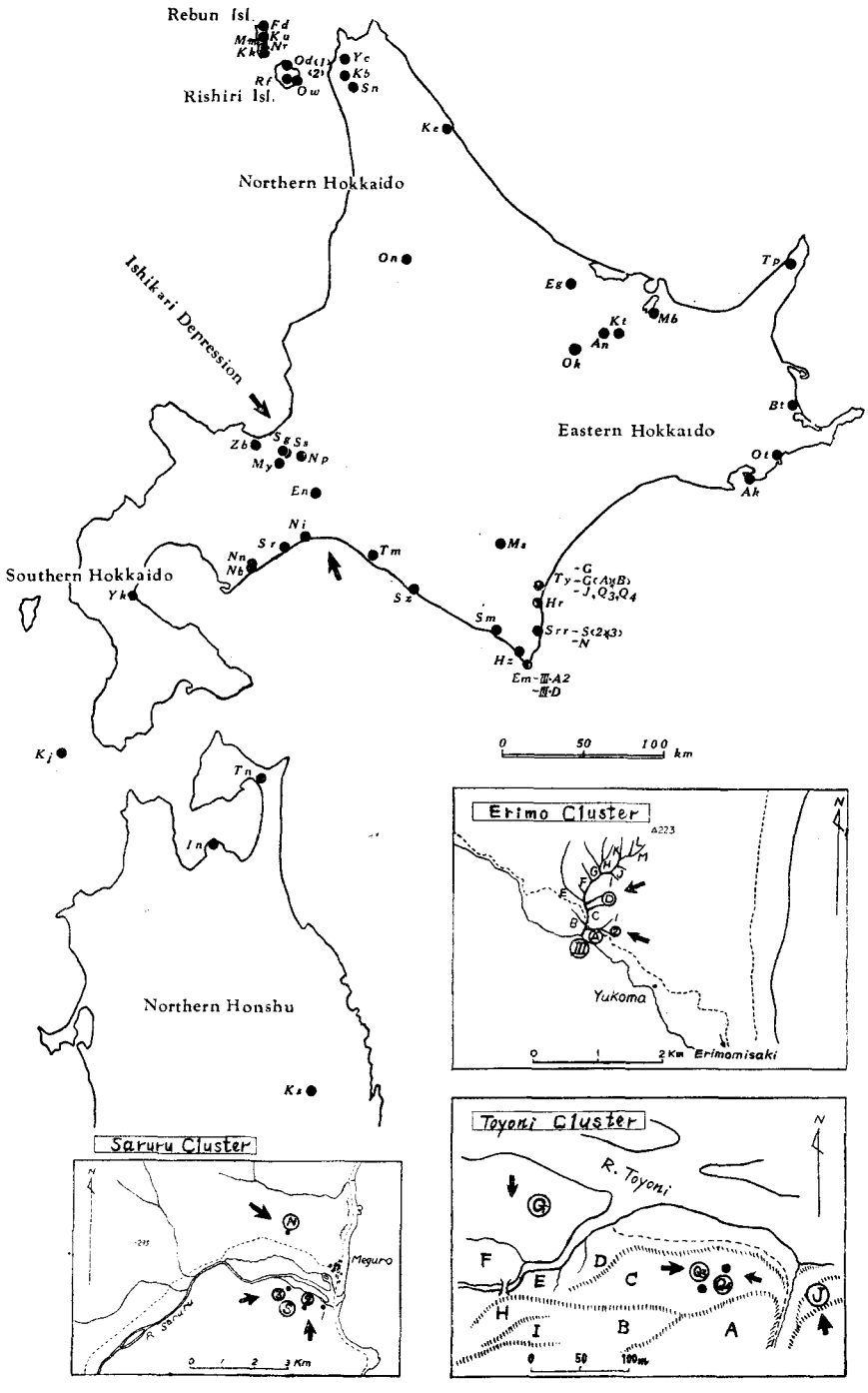


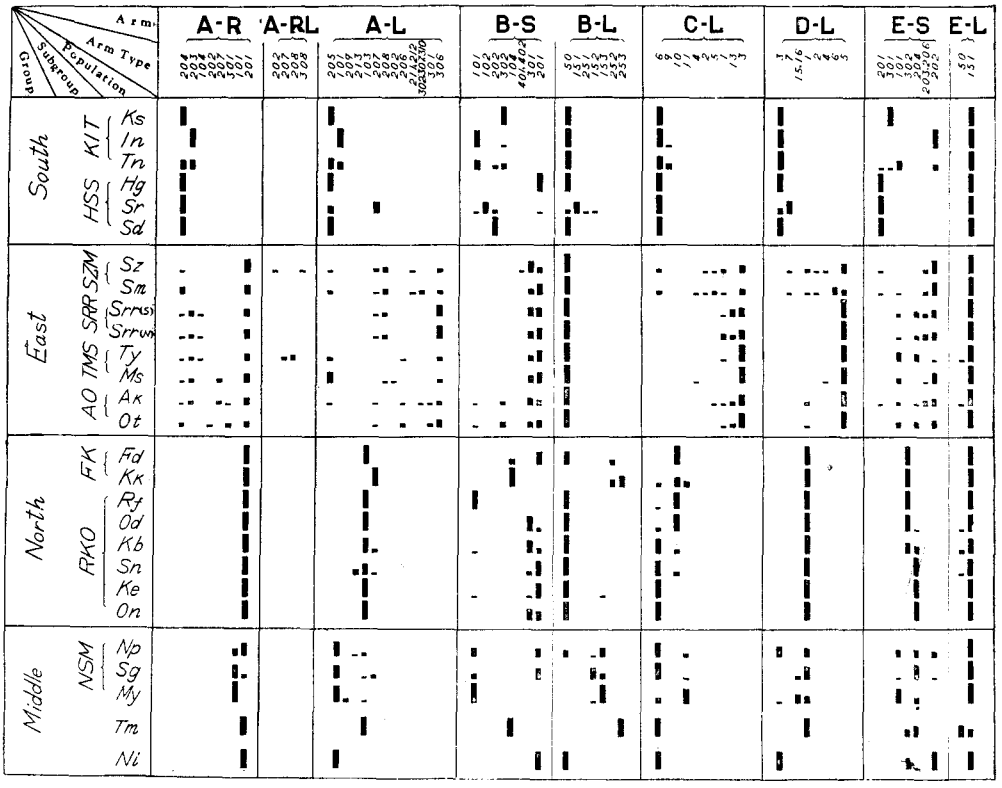
Fig. 2. Maps showing localities where the natural populations of *T. kamtschaticum* were chosen for examination.

TABLE 2. Names of populations and the locality in which each of the populations is found.

Population	Locality	Population	Locality
Ks	Kusakai	*Ty-J*	Toyoni-J
In	Ino	*Ty-*Q_3	Toyoni-Q_3
Tn	Tanabu	*Ty-*Q_4	Toyoni-Q_4
Kj	Kojima	*Ms*	Minamisatsunai
Yk	Yakumo	*Ak*	Akkeshi
Nb	Noboribetsu	*Ot*	Ochiishi
Nn	Nakanoboribetsu	*Bk*	Bettsukai
Sr	Siraoi	*Tp*	Teppanbetsu
Ni	Nishikioka	*Mb*	Memambetsu
En	Eniwa	*Kt*	Kitami
Ss	Sapporo-shokubutsuen	*An*	Ainonai
Sg	Sapporo-genshirin	*Ok*	Oketo
My	Maruyama	*Eg*	Engaru
Np	Nopporo	*On*	Onnebetsu
Zb	Zenibako	*Ke*	Kitamiesashi
Tm	Tomikawa	*Sn*	Shimonuma
Sz	Shizunai	*Kb*	Kabutonuma
Sm	Samani	*Yc*	Yuchi
Hz	Horoizumi	*Ow*	Oniwaki
Em-III A 2	Erimo-III A 2	*Rf*	Rishirifuji
Em-III D	Erimo-III D	*Od* (1)	Oshidomari (1)
Srr-S (1)	Southern Saruru (1)	*Od* (2)	Oshidomari (2)
Srr-S (3)	Southern Saruru (3)	*Kk*	Kafuka
Srr-N	Northern Saruru	*Mm*	Momoiwa
Hr	Hiroo	*Nr*	Nairo
Ty-G	Toyoni-G	*Kn*	Kitousu
Ty-G (A)	Toyoni-G (A)	*Fd*	Funadomari
Ty-G (B)	Toyoni-G (B)		

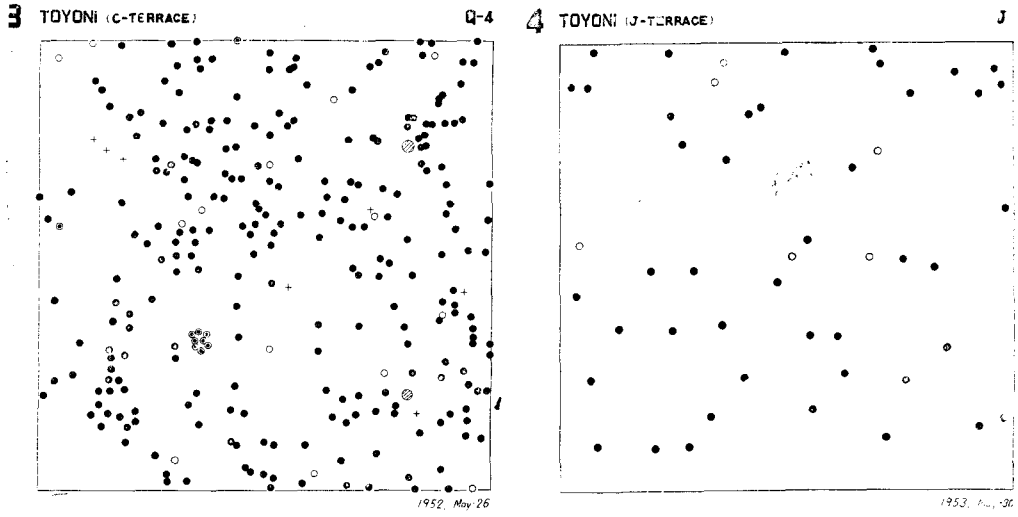
terrestrial stem, and *G*(*B*): plants with two or more flower-bearing terrestrial stems. It was presumed that one can distinguish, by the above grouping, plants belonging to two successive generations in this population, because the plants with two flowers are older than those with one. The validity of this presumption, however, cannot be discussed only on the basis of this smapling. *Ty-*Q_3 and *Ty-*Q_4 were taken respectively from a quadrate of 5 m^2 drown upon C-terrace. A through H-terrace have been used in these decades for cattle grazing, which promote much the propagation of *Trillium*, because some of the competing plants with the former are exhausted by the cattle which do not eat *Trilliums* before their fruits

TABLE 3. Demonstration of local difference in chromosome composition with arm types which attain more than five per cent in each of the 27 populations investigsted up to the year 1953. The group denoted here as **Middle** is the one distributed along and near Ishikari Depression (Fig. 2) where the three population groups, **South**, **East** and **North**, meet (cf. KURABAYASHI '57)*.



* Owing to a mistake made in Appendix Table 2 in the previous paper (KURABAYASHI '57 and also see the foot note of Table 1 in the present paper), three errata were present in Table 19 of the previous paper (KURABAYASHI '57, p. 35). That is B-L *152* in *Np* and *Sg*, and B-L *252* in *Fd*. These errata are corrected in this Table.

ripen. Thus the cattle contribute the seed dispersal also. J-terrace have never been used as meadows and therefore it may retain some of the original conditions which might have existed in this cluster before the artificial modifications. In actual fact, density of *T. kamtschaticum* in J is much lower than in A-H (Figs. 3, 4), and the plants grown in the former are largely aged ones with two or sometimes three flower-bearing terrestrial stems. A sampling was made also in J-terrace. Comparative examinations of these samples from Toyoni cluster will be made elsewhere.



Figs. 3, 4. *Trillium* plants in quadrates thrown in C-terrace (3) and J-terrace (4) at Toyoni. Note on the marked difference in density of *T. kamtschaticum* between the two quadrates.

● : *T. kamtschaticum*, ○ : *T. tschonoskii*, + : *T. smallii*, ◉: *T. hagae*

TABLE 4. Denotion of types according to their mode of geographical distribution.

Chromosome A				Chromosome C		Chromosome E	
Type No.	Distrib. Area	Type No.	Distrib. Area	Type No.	Distrib. Area	Type No.	Distrib. Area
1	N	41	E	1	E	1	SE
2	E	42	E	2	E	2	S
3	E	43	E	3	E	3	SE
4	E	44	E	4	E	4	E
5	E	45	E	5	E	5	C
6	E	46	E	6	SN	6	E
7	E	47	E	7	E	7	S
8	E	48	E	8	E	8	E
9	E	49	E	9	SE	9	N
10	E	50	I	10	N	10	SE
11	C	51	I	11	N	11	E
12	E	52	I	12	N	12	E
13	S	53	I	13	E	13	E
14	*Sr*	54	N	14	E	14	E
15	E	55	E	15	E	15	D
16	E					16	E
17	E					17	N
18	N						
19	E						
20	E	Chromosome B		Chromosome D			
21	SE	Type No.	Distrib. Area	Type No.	Distrib. Area		
22	S						
23	E	1	SN	1	N		
24	C	2	C	2	E		
25	C	3	C	3	S		
26	E	4	E	4	E		
27	E	5	E	5	E		
28	E	6	*Sr*	6	E		
29	E	7	S	7	S		
30	E	8	*Sr*	8	E		
31	E	9	I	9	C		
32	E	10	C	10	E		
33	E	11	*Sr*	11	I		
34	E	12	SE	12	E		
35	E	13	N	13	E		
36	E	14	E	14	E		
37	E	15	N	15	I		
38	SN	16	N	16	I		
39	E	17	E				
40	E	18	E				

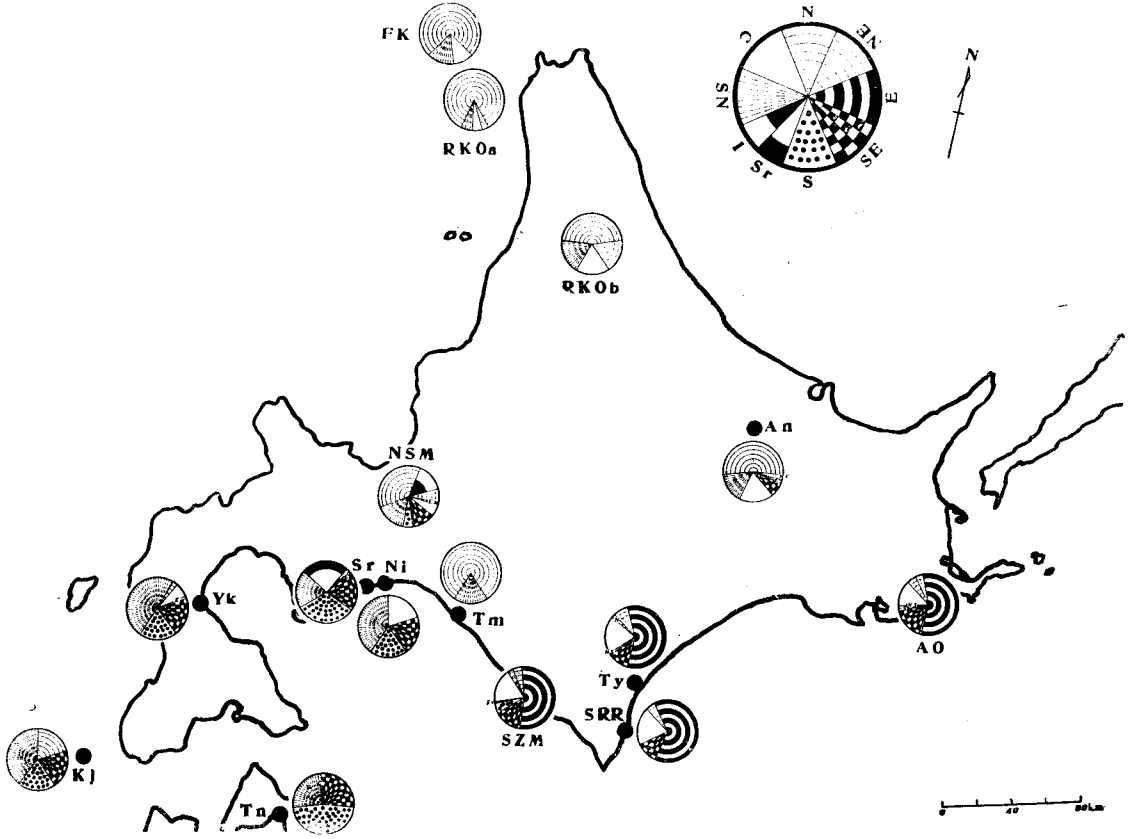


Fig. 5. Fan diagrams representing chromosome composition of populations and subgroups of populations of *T. kamtschaticum* distributed in northern Japan. The diagrams are put upon the places where the populations or the subgroups are found.

Three samplings were made in Saruru cluster (Fig. 2). *Srr* (*N*) was a random sample taken from a glade found in northern side of the river Saruru. Two samplings, *Srr-S* (*2*) and (*3*), were taken from the aggregates successively distributed in southern side of this river. These aggregates are not isolated spatially from each other. It was demonstrated after examining the chromosome composition of these samplings that subgrouping of the populations is marked in this cluster (NARISE '56). With regards to the mechanism of this subgrouping detailed examinations will be made in forthcoming paper of this series.

Geographical Differentiation in *T. kamtschaticum*

Comparative examinations of chromosome composition in natural populations of this plant elucidated clearly the existence of different geographical groups. Each of the groups is characterized by several arm types of each chromosome pair which are inherent to each group. Three geographical groups, **Noth, East and South**, have been described on the basis of such difference in the arm types (KURABAYASHI '57 and Table 3 in the present paper).

It was tried in the present paper to examine the geographical differentiation with chromosome types. Types which are found in common in majority of populations in a geographical region and are not in others are naturally the ones inherent there. Thus one can obtain types inherent to each of the geographical regions where populations belonging to **North, East** and **South** are distributed. These types are denoted as **N, E** and **S** respectively (cf. Table 4). Types included in common among populations distributed in two different geographical regions are the ones common in these regions. Thus types denoted as **NE, SE** and **NS**, each of which includes types which are common in **North** and **East, South** and **East**, and **North** and **South** respectively are identified. Types which commonly found in all the geographical regions are designated as **C**, viz. common types. Rare types which are included in common in a few populations distributed in two different geographical regions are also included in **C**, because chance coincidence of types seems to be not excluded in such cases (cf. the explanation of Fig. 1 in the present paper). By this distinction, majority of the types are distinguished and grouped into one of the seven categories denoted above. It was found, however, several types which are included restrictedly among populations distributed along and near Ishikari Depression. These types are named as **I**. Similarly types which were found only in *Sr* population are designated as **Sr**.

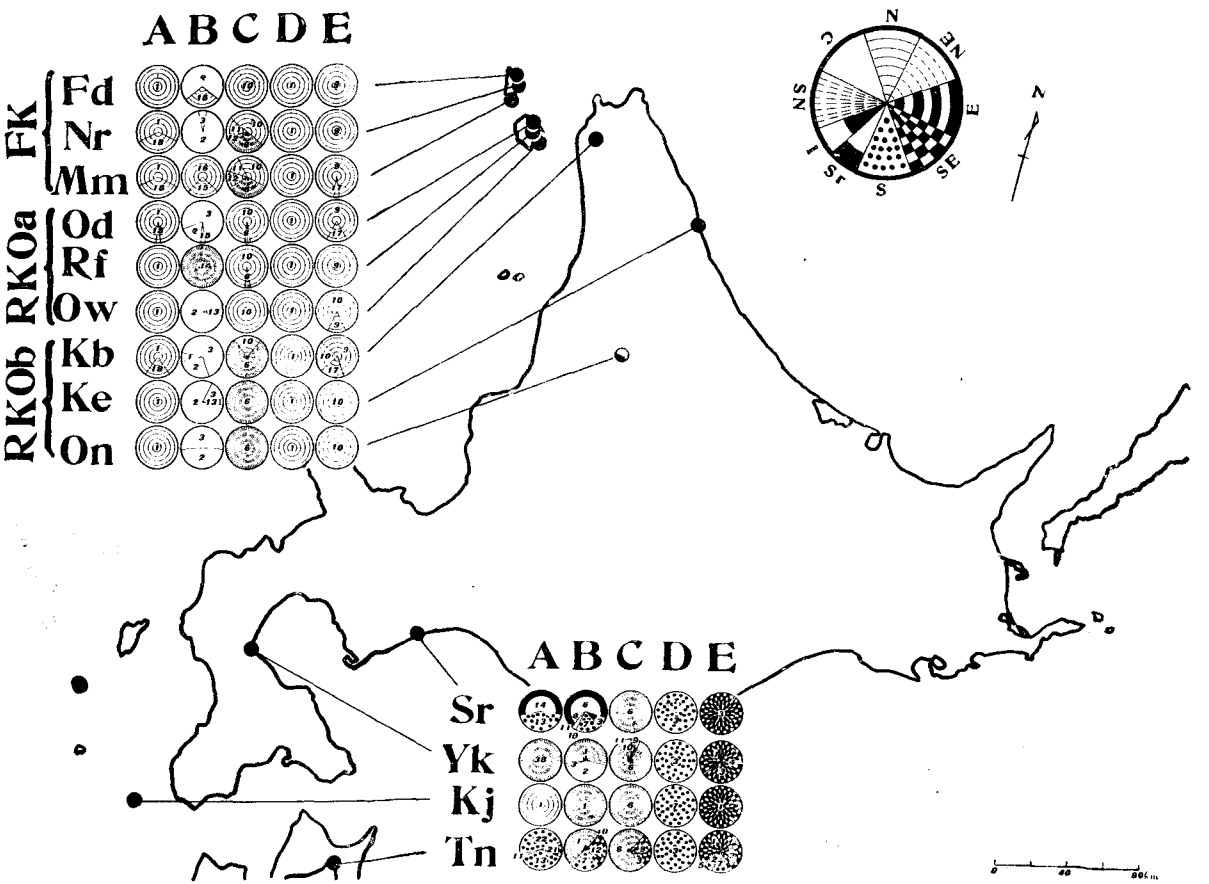


Fig. 6. Fan diagrams representing chromosome composition of the populations in North and South. The number written in each fan diagram represents type number of corresponding chromosome.

Summing up the relative frequency of types belonging to each of the nine categories in the five chromosome pairs of a given population or a given subgroup of populations (cf. Table 3 in the present paper and KURABAYASHI, 57), a fan diagram is obtained, which represents the relative frequency of the types belonging to each of the categories. The fan diagrams of populations and subgroups of populations obtained in various districts in northern Japan are represented in Figure 5. By doing so, the geographical differentiation of this plant is demonstrated with chromosome types as clearly as it was done with arm types.

Similar fan diagrams were obtained with respect to the composition of individual chromosome pairs included in the populations belonging to **North** and **South**, and in those distributed in northern and southern part of Ishikari Depression.

Conspicuous intra and interpopulational homogeneity in chromosome composition is clearly demonstrated among populations in **North**, while intra and interpopulational discontinuity is marked in **South** (Fig. 6).

Populations distributed along and near Ishikari Depression are characterized by their chromosome composition which is a mixture of the elements of **North**, **East** and **South**. The influence of **North** is conspicuous among populations in northern part of this Depression, while the populations in the southern part are suffered more from **South**. The migration from **East** is rather small in all the populations. Types inherent to this Depression are found more frequently in the northern part (Fig. 7).

Detailed examination of the factors responsible for the realization of chromosome composition in each populations represented in Figures 6 and 7 will be given in forthcoming papers of this series.

The chromosome composition of the populations represented in Appendix Tables 1–55 has been examined since 1943 by the following workers: T. HAGA (Kyushu University, Fukuoka*), M. KURABAYASHI (Hokkaido Gakugei University, Hakodate), Y. HIRAIZUMI (Wisconsin University, Madison, U. S. A.), T. NARISE (National Institute of Genetics, Mishima), K. and J. SAMEJIMA (Hokkaido Branch, Government Forestry Experiment Station), S. KOMOCHI (National Hokkaido Agricultural Experiment Station, Sapporo), M. TAJIMA (Jikei-kai School of Medicine, Tokyo), Y. KANEKO (The Terao Junior High School, Yokohama), and the present writers. The latter are much indebted to these predecessors and would hope that the data represented below may

* Present address of each of the workers is shown being put in parenthesis.

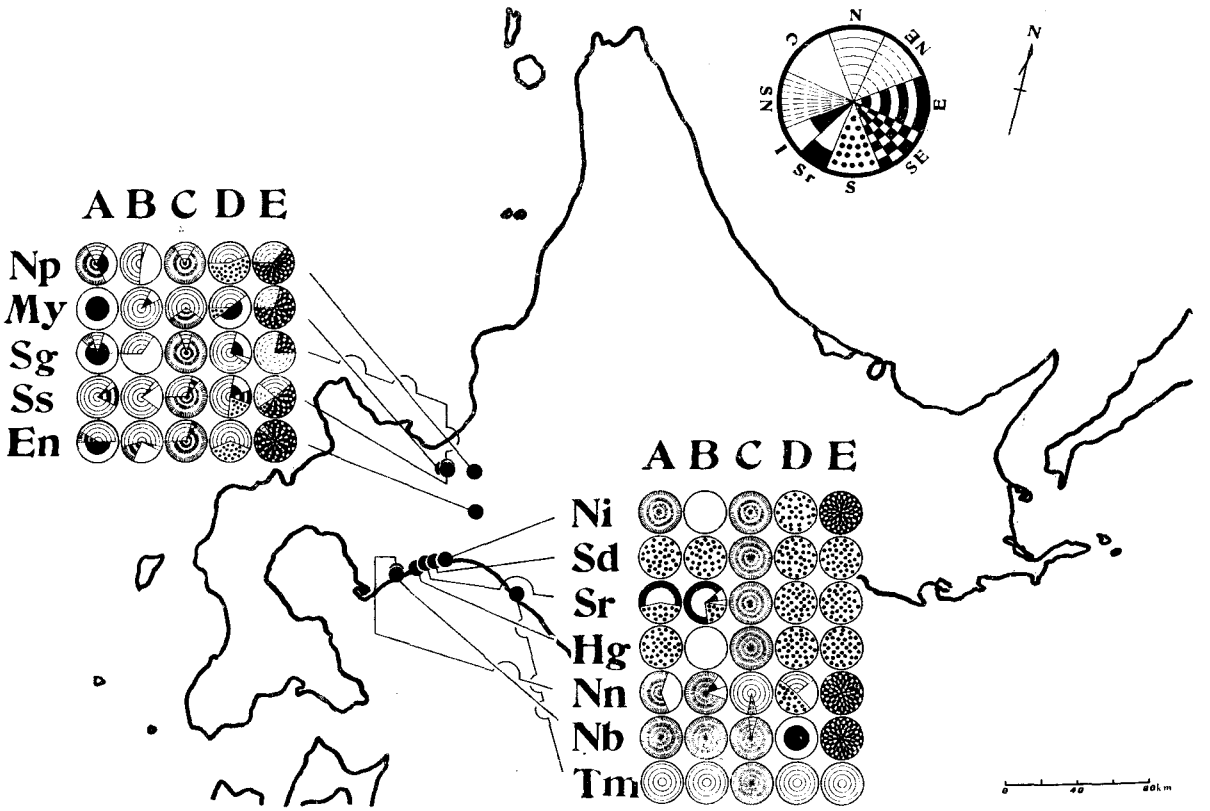


Fig. 7. Fan diagrams representing chromosome composition in populations chosen for examination in northern (upper left) and southern (lower right) part of Ishikari Depression.

facilitate further investigations concerning the mechanism of evolution in natural populations of *T. kamtschaticum*.

During the course of the preparation of the present paper valuable advices and encouragements were given by Dr. M. KURABAYASHI to whom the present writers' cordial thanks are due.

Literature Cited

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NARISE, T. 1956. Evolution and variation in *Trillium*. III. The breeding system of *Trillium kamtschaticum* PALL. in some natural populations. *Jap. J. Genet.* **31**: 65-81.

Correction of errata in the foregoing paper of this series (KURABAYASHI, M. 1957. Evolution and Variation in *Trillium*. IV. Chromosomal variation in natural populations of *Trillium kamtschaticum* PALL. *Jap. Jour. Bot.* **16**: 1-45).

Page	Line	Errata	Correction
1	2	KURABAYASHI ('54),	KURABAYASHI ('54).
5	5 from bottom	three	four
6, 7	Table 2	Type Number of B-L: In Sr Ty Fd Np Sg **152**: — 9 — — 3 2 **252**: 1 4 3 — 8 62 **253**: — — — 32 — — Total: 101	Type Number of B-L: Tn Sr Ty Fd Np Sg **152**: 1 13 3 — 10 64 **252**: — — — 32 — — **253**: — — — — — — Total: 100
8	8, 13	long arm	short arm
9	10	four types	three types
9	11	in My and three in Sr.	in My.
9	11	In the latter, additional to the three, two types were	Two types were
9	13	with two of the four found in Np and Sg.	with those found in Fd.
9	14	detected in Fd and predominant in Tm.	detected in Fd and Tm.
15	Table 6	Arm Type / Short Arm: 201 / Total Long Arm **152**: — / 16 Long Arm **252**: 55 / 81	Arm Type / Short Arm: 201 / Total Long Arm **152**: 55 / 71 Long Arm **252**: — / 26
15	Table 7 Long Arm	**252**	**152**
15	3	four and five types	four types
15	4 from bottom	**252**	**253**
15	3 from bottom	Three and four	Three
15	2 from bottom	short arm	short and long arm
15	1 from bottom	**201**-**252** and **301**-**50**) out of twelve	**201**-**152** and **301**-**50**) out of nine
16	Table 8	Arm Type / Short Arm: 201 / Total Long Arm **152**: — / 9 Long Arm **252**: 4 / 4	Arm Type / Short Arm: 201 / Total Long Arm **152**: 4 / 13
16	Table 9	**201**-**252**	**201**-**152**
16	12 from bottom	**203**-**50** and	**203**-**50**, **206**-**50** and
19	1 of foot note	the product	the product of
20	12 from bottom	between two groups of types	among types of each group
27	17 from bottom	Five and six types	Five types
35	Table 19	————	cf. Table 3 in the present paper
42	10 of Arm Type in Appendix Table 2	**201**-**252**	**201**-**152**

Appendix Tables 1–55

1 *Ks* 1947

Karyotype	Chromosome constitution					Freq.
1	A–13.13	B–12.12	C–6.6	D–3.3	E–7.7	50
Total						50

2 *In* 1949

Karyotype	Chromosome constitution					Freq.
1	A–22.22	B–1.1	C–6.6	D–3.3	E–3.3	36
2	A–22.22	B–1.1	C–6.9	D–3.3	E–3.3	5
3	A–22.22	B–1.12	C–6.6	D–3.3	E–3.3	4
4	A–22.22	B–12.12	C–6.6	D–3.3	E–3.3	5
Total						50

3 *Tn* 1949

Karyotype	Chromosome constitution					Freq.
1	A-11.13	B- 1.7	C-6 6	D-3.3	E-3.3	1
2	A-13.13	B- 1.1	C-6.6	D-3.3	E-1.1	2
3	A-13.13	B- 1.1	C-6.9	D-3.3	E-1.1	2
4	A-13.13	B- 1.7	C-6.6	D-3.3	E-1.1	1
5	A-13.13	B- 1.12	C-6.6	D-3.3	E-1.2	1
6	A-13.13	B- 1.12	C-6.6	D-3.3	E-1.3	1
7	A-13.13	B- 1.12	C-9.9	D-3.3	E-1.1	1
8	A-13.13	B- 7.7	C-6.6	D-3.3	E-1.5	1
9	A-13.13	B- 7.7	C-6.9	D-3.3	E-2.2	1
10	A-13.13	B- 7.7	C-6.9	D-3.3	E-7.7	1
11	A-13.13	B- 7.7	C-9.9	D-3.3	E-7.7	1
12	A-13.13	B-10.12	C-6.9	D-3.3	E-3.3	1
13	A-13.13	B-12.12	C-6.6	D-3.3	E-1.2	1
14	A-13.13	B-12.12	C-6.6	D-3.3	E-3.3	1
15	A-13.13	B-12.12	C-6.6	D-3.3	E-7.7	1
16	A-13.21	B- 1.1	C-9.9	D-3.3	E-1.3	1
17	A-13.21	B- 7.7	C-6.6	D-3.3	E-1.1	1
18	A-13.22	B- 1.1	C-6.6	D-3.3	E-1.3	2
19	A-13.22	B- 1.1	C-6.6	D-3.3	E-2.7	1
20	A-13.22	B- 1.1	C-9.9	D-3.3	E-1.3	1
21	A-13.22	B- 1.7	C-6.6	D-3.3	E-3.3	1
22	A-13.22	B- 1.7	C-6.9	D-3.3	E-1.2	1
23	A-13.22	B- 1.7	C-6.9	D-3.3	E-1.3	1
24	A-13.22	B- 1.12	C-3.9	D-3.3	E-3.3	1
25	A-13.22	B- 1.12	C-6.6	D-3.3	E-1.3	1
26	A-13.22	B- 1.12	C-6.6	D-3.3	E-1.7	1
27	A-13.22	B-12.12	C-9.9	D-3.3	E-3.3	1
28	A-21.21	B- 7.12	C-6.6	D-3.3	E-1.1	1
29	A-21.21	B-12.12	C-6.6	D-3.3	E-3.3	1
30	A-21.22	B- 1.1	C-6.6	D-3.3	E-7.7	1
31	A-21.22	B-12.12	C-6.6	D-3.3	E-1.1	1
32	A-22.22	B- 1.1	C-6.6	D-3.3	E-1.1	1
33	A-22.22	B- 1.1	C-6.9	D-3.3	E-1.1	2
34	A-22.22	B- 1.1	C-6.9	D-3.3	E-1.2	1
35	A-22.22	B- 1.7	C-6.6	D-3.3	E-1.1	1
36	A-22.22	B- 1.7	C-6.6	D-3.3	E-1.3	1
37	A-22.22	B- 1.12	C-6.6	D-3.3	E-1.2	1
38	A-22.22	B- 1.12	C-6.9	D-3.3	E-1.1	1
39	A-22.22	B- 7.7	C-6.9	D-3.3	E-1.1	1
40	A-22.22	B-12.12	C-6.6	D-3.3	E-1.7	1
total						44

4 *Kj* 1955

Karyotype	Chromosome constitution					Freq.
1	A-1.1	B-1.1	C-6.6	D-7.7	E-1.1	18
Total						18

5* *Yk* 1953

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	38	34	1	20	1	1	3	34	1	19
			2	13	6	29			3	14
			3	1	9	1			4	1
					10	2				
					11	1				
Total		34		34		34		34		34

* Only total frequency of each chromosome type was recorded in 13 populations: *Yk, Nb, En, Hz, Ms, Ot, Kt, On, Ke, Sn, Kb, Rf* and *Kk*.

6 *Nb* 1952

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	38	16	1	16	6	15	11	3	1	16
					10	1	15	1		
							16	12		
Total		16		16		16		16		16

7 *Nn* 1952

Karyotype	Chromosome constitution					Freq.
1	A-24.24	B-1.1	C-10.10	D-1.7	E- 3.3	1
2	A-24.24	B-1.1	C-10.10	D-1.9	E- 1.6	1
3	A-24.24	B-1.1	C-10.10	D-3.3	E- 1.3	2
4	A-24.24	B-1.1	C-10.10	D-3.3	E- 3.3	1
5	A-24.24	B-1.12	C- 6.10	D-3.3	E- 3.3	1
6	A-24.36	B-1.1	C- 2.10	D-3.4	E- 3.3	1
7	A-24.38	B-1.1	C- 6.10	D-1.3	E- 1.1	1
8	A-24.38	B-1.1	C- 6.10	D-3.3	E- 3.3	2
9	A-24.38	B-1.1	C- 6.10	D-3.14	E- 3.3	1
10	A-24.38	B-1.1	C- 9.10	D-3.4	E- 3.3	1
11	A-24.38	B-1.1	C-10.10	D-1.1	E- 1.6	1
12	A-24.38	B-1.1	C-10.10	D-1.3	E- 1.3	1
13	A-24.38	B-1.1	C-10.10	D-1.3	E- 3.3	2
14	A-24.38	B-1.1	C-10.10	D-1.4	E- 1.3	1
15	A-24.38	B-1.1	C-10.10	D-3.3	E- 3.3	2
16	A-24.38	B-1.6	C-10.10	D-4.9	E- 6.11	1
17	A-24.38	B-1.12	C- 6.10	D-3.7	E- 3.3	1
18	A-24.38	B-6.9	C-10.10	D-1.9	E- 1.1	1
19	A-24.39	B-1.1	C-10.10	D-3.3	E- 1.1	1
20	A-38.13	B-9.9	C-10.10	D-3.4	E- 1.1	1
21	A-38.38	B-1.1	C- 6.10	D-3.3	E- 3.3	1
22	A-38.38	B-1.1	C- 6.10	D-3.4	E- 3.3	1
23	A-38.38	B-1.1	C-10.10	D-1.1	E- 1.1	2
24	A-38.38	B-1.1	C-10.10	D-1.3	E- 1.1	1
25	A-38.38	B-1.1	C-10.10	D-1.4	E- 1.6	1
26	A-38.38	B-1.1	C-10.10	D-3.3	E- 1.3	3
27	A-38.38	B-1.1	C-10.10	D-3.4	E- 1.3	1
28	A-38.38	B-1.1	C-10.10	D-3.4	E- 3.3	1
29	A-38.38	B-1.1	C-10.10	D-4.4	E- 3.3	1
30	A-38.38	B-1.6	C-10.10	D-1.1	E-10.11	1
31	A-38.38	B-1.9	C-10.10	D-1.1	E- 1.1	4
32	A-38.38	B-1.10	C-10.10	D-1.1	E- 1.1	1
33	A-38.38	B-2.13	C-10.10	D-4.4	E- 1.1	1
34	A-38.38	B-9.9	C-10.10	D-4.4	E- 1.1	1
35	A-38.39	B-1.1	C-10.10	D-1.1	E- 1.3	1
36	A-38.54	B-2.2	C-11.11	D-4.4	E- 1.1	1
Total						46

8 *Sr* 1945, 1947*

Karyotype	Chromosome constitution					Freq.
1	A-13.13	B-6.6	C-6.6	D-3.3	E-2.2	1
2	A-13.13	B-6.6	C-6.6	D-3.7	E-2.2	1
3	A-13.13	B-6.6	C-6.6	D-7.7	E-2.2	1
4	A-13.13	B-6.7	C-6 6	D-3.3	E-2.2	1
5	A-13.13	B-6.7	C-6.6	D-7.7	E-2.2	1
6	A-13.13	B-6.11	C-6.6	D-3.3	E-2.2	1
7	A-13.13	B-7.7	C-6.6	D-3.3	E-2.2	2
8	A 13.13	B-7.7	C-6.6	D-3.7	E-2.2	1
9	A-13.13	B-8.8	C-6.6	D-7.7	E-2.2	1
10	A-13.13	B-8.9	C-6.6	D-3.3	E-2.2	1
11	A-13.13	B-8.10	C-6.6	D-3.3	E-2.2	1
12	A-13 13	B-8.10	C-6.6	D-7.7	E-2.2	1
13	A-13.13	B-9.9	C-6.6	D-3.3	E-2.2	3
14	A-13.13	B-9.10	C-6.6	D-3.7	E-2.2	2
15	A-13.14	B-6.6	C-6.6	D-7.7	E-2.2	2
16	A-13.14	B-6.8	C-6.6	D-3.7	E-2.2	1
17	A-13.14	B-6.8	C-6.6	D-7.7	E-2.2	1
18	A-13.14	B-7.7	C-6.6	D-7.7	E-2.2	3
19	A-13.14	B-7.9	C-6.6	D-3.7	E-2.2	1
20	A-14.14	B-6.6	C-6.6	D-3.7	E-2.2	1
21	A-14.14	B-6.6	C-6 6	D-7.7	E-2.2	21
22	A-14.14	B-6.7	C-6.6	D-7.7	E-2.2	1
23	A-14.14	B-7.7	C-6.6	D-7.7	E-2.2	1
Total						50

* Sampling of the plants was made in several different years from one and the same area in *Sr*, *Tm*, *Sz*, *Sm*, *Ms*, *Ak* and *Mm* population.

9 *Ni* 1952

Karyotype	Chromosome constitution					Freq.
1	A-38.38	B-2.2	C-6.6	D-3.3	E-3.3	15
Total						15

10 *En* 1953

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	10	1	4	1	1	1	15	1	11
	38	1	2	3	6	15	3	9	3	12
	40	1	3	1	11	8			10	1
	53	12	9	1						
			10	1						
			13	14						
Total		24		24		24	24			24

11 *Ss* 1954

Karyotype	Chromosome constitution					Freq.
1	A- 1.1	B- 2.13	C- 6.6	D- 1.1	E- 1.1	2
2	A- 1.1	B- 3.10	C-11.11	D- 4 4	E-17.17	1
3	A- 1.1	B- 9.13	C- 6.6	D- 1.1	E- 3.3	2
4	A- 1.1	B-13.13	C- 6.6	D- 1.1	E- 3.3	1
5	A- 1.1	B-13.13	C- 6.6	D- 1.1	E-10.17	1
6	A- 1.1	B-13.13	C- 6.6	D- 1.11	E-17.17	1
7	A- 1.1	B-13.13	C- 6.6	D- 3.3	E-10.10	1
8	A- 1.1	B-13.13	C- 6.6	D-11.11	E-17.17	1
9	A- 1.1	B-13.13	C-11.11	D- 1.1	E- 6.6	1
10	A- 1.1	B-13.13	C-11.11	D- 3.3	E-10.17	1
11	A- 1.1	B-13.13	C-11.11	D- 3.11	E-10.17	1
12	A- 1.29	B-13.13	C- 6.6	D- 1.1	E- 3.10	2
13	A- 1.53	B-10.13	C- 6.6	D- 1.4	E- 3.3	2
14	A-11.33	B- 2.17	C- 4.4	D-11.11	E- 1.1	1
Total						18

12 *Sg* 1953

Karyotype	Chromosome constitution					Freq.
1	A- 1.1	B-10.10	C- 6.6	D- 1.1	E- 3.10	1
2	A-11.38	B-10.10	C- 6.6	D- 9.9	E-10.10	1
3	A-38.38	B-10.10	C- 6.6	D- 1.15	E- 1.10	1
4	A-38.50	B-13.13	C- 6.6	D- 1.1	E-10.10	1
5	A-50.50	B- 9.13	C- 6.6	D- 1.1	E-10.10	1
6	A-50.50	B-10.10	C- 6.6	D- 1.1	E-10.10	1
7	A-50.50	B-10.13	C- 6.6	D- 1.1	E-10.10	1
8	A-53.1	B- 2.3	C- 6.6	D- 1.1	E-10.10	1
9	A-53.1	B-10.10	C- 6.6	D- 1.15	E- 3.10	1
10	A-53.1	B-10.10	C- 6.6	D-16.16	E-10.10	1
11	A-53.25	B-10.10	C- 6.6	D- 1.1	E-10.10	1
12	A-53.38	B-10.10	C- 6.6	D- 1.1	E-10.10	1
13	A-53.38	B-10.13	C- 6.6	D- 1.15	E-10.10	1
14	A-53.53	B-10.10	C- 6.6	D- 1.1	E- 3.10	1
15	A-53.53	B-10.10	C- 6.6	D- 1.15	E-10.10	2
16	A-53.53	B-10.10	C- 6.6	D-15.15	E- 1.1	1
17	A-53.53	B-10.10	C- 6.6	D-15.15	E-10.10	1
18	A-53.53	B-10.13	C- 6.6	D- 1.15	E-10.10	1
19	A-53.53	B-10.13	C- 6.11	D- 1.15	E-10.10	1
20	A-53.53	B-10.13	C-11.11	D- 1.1	E -1.1	1
21	A-53.53	B-10.13	C- 6.6	D- 1.1	E-10.10	2
22	A-53.53	B-10.13	C-11.11	D- 1.1	E- 1.1	1
23	A-53.50	B-10.13	C- 6.6	D- 1.1	E-10.10	1
Total						25

13 *My* 1953

Karyotype	Chromosome constitution					Freq.
1	A-51.52	B-13.13	C-11.11	D- 1.15	E- 1.10	1
2	A-53.51	B-13.13	C- 6.11	D- 1.15	E- 1.1	2
3	A-53.52	B-13.13	C- 6.11	D-15.16	E- 1.10	1
4	A-53.53	B- 9.13	C- 6.11	D- 3.15	E- 1.10	1
5	A-53.53	B- 9.13	C-11.11	D- 1.15	E- 1.10	1
6	A-53.53	B-13.13	C- 6.11	D- 1.1	E- 1.1	1
7	A-53.53	B-13.13	C- 6.11	D- 1.15	E- 1.10	2
8	A-53.53	B-13.13	C-11.11	D- 3.15	E- 1.1	1
Total						10

14 *Np* 1953

Karyotype	Chromosome constitution					Freq.
1	A- 1.1	B-13.13	C-11.11	D-1.1	E- 1.10	1
2	A- 1.38	B- 3.13	C- 6.6	D-1.3	E- 1.1	1
3	A- 1.38	B-13.13	C- 6.11	D-3.3	E-10.10	1
4	A- 1.53	B-13.13	C- 6.6	D-1.1	E- 1.10	1
5	A- 1.53	B-13.13	C- 6.6	D-3.3	E-10.10	1
6	A-38.38	B- 2.2	C- 6.6	D-3.3	E- 3.3	1
7	A-38.38	B- 2.10	C- 6.10	D-3.3	E- 1.3	1
8	A-38.38	B- 3.13	C- 6.6	D-3.3	E- 1.10	1
9	A-38.38	B- 2.13	C- 6.6	D-1.1	E- 3.10	1
10	A-38.38	B-13.13	C- 6.6	D-1.1	E- 1.1	1
11	A-38.53	B- 2.3	C- 6.6	D-3.3	E-10.10	1
12	A-38.53	B- 2.13	C- 6.6	D-1.1	E- 1.10	1
13	A-38.53	B- 2.13	C- 6.6	D-1.3	E- 3.3	1
14	A-38.53	B- 2.13	C- 6.11	D-1.3	E-10.10	1
15	A-38.54	B- 2.13	C- 6.6	D-1.1	E- 3.3	1
16	A-38.54	B- 9.13	C- 6.11	D-1.3	E- 1.1	1
17	A-53.53	B- 2.2	C- 6.6	D-3.3	E- 1.10	1
18	A-53.53	B- 2.13	C- 6.6	D-1.3	E- 3.3	1
19	A-53.53	B- 2.13	C- 6.6	D-1.1	E- 3.10	1
20	A-53.53	B-10.10	C- 6.11	D-3.3	E- 1.1	1
Total						20

15 *Zb* 1957

Karyotype	Chromosome constitution					Freq.
1	A-24.24	B-19.19	C-6.6	D-3.17	E-1.7	1
2	A-24.38	B-19.19	C-6.6	D-3.3	E-3.3	1
3	A-24.54	B-19.19	C-6.6	D-3.3	E-1.1	1
4	A-38.28	B-19.3	C-6.6	D-3.3	E-1.3	1
5	A-38.38	B-19.2	C-6.6	D-3.17	E-1.3	1
6	A-53.29	B-19.19	C-6 6	D-3.8	E-1.3	1
7	A-53.38	B-19.19	C-6.6	D-3.3	E-1.3	1
8	A-53.38	B-19.19	C-6.6	D-3.17	E-3 3	1
9	A-53.56	B-19.19	C-6.6	D-3.3	E-3.1	1
10	A-53 56	B-19.19	C-6.6	D-3.3	E-1.1	1
11	A-53.56	B-19.19	C-6.6	D-3.7	E-1.1	1
12	A-56.56	B-19.19	C-6.6	D-3.3	E-3.9	1
13	A-56.56	B-19.19	C-6.6	D-3.7	E-1.11	1
14	A-56.56	B-19.19	C-6.6	D-3.17	E-1.15	1
Total						14

16 *Tm* 1951, 1955

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	18	16	18	6	18	1	18	9	10
									17	8
Total		18		18		18		18		18

19 *Hz* 1951

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	24	7	3	14	13	16	5	11	3	8
	39	3	2	6	3	2	14	3	1	6
	3	2			1	2	13	2	4	3
	5	2					12	1	10	3
	12	1					4	1		
	44	1					6	1		
	31	1					7	1		
	30	1								
	13	1								
	15	1								
Total		20		20		20		20		20

17 *Sz* 1944, 1945, 1946, 1947

Karyotype	Chromosome constitution					Freq.
1	A-1.2	B-2.4	C-1.1	D-1.5	E-2.3	1
2	A-1.2	B-3.3	C-3.6	D-4.5	E-2.2	1
3	A-1.8	B-3.3	C-1.3	D-1.5	E-2.3	1
4	A-2.2	B-2.3	C-1.1	D-2.5	E-3.4	1
5	A-2.2	B-3.3	C-2.5	D-5.5	E-3.3	1
6	A-2.2	B-3.3	C-3.5	D-7.7	E-3.4	1
7	A-2.2	B-3.3	C-3.6	D-5.5	E-3.3	1
8	A-2.3	B-2.2	C-1.3	D-1.1	E-3.4	1
9	A-2.3	B-2.2	C-2.3	D-4.4	E-3.4	1
10	A-2.4	B-2.3	C-1.1	D-5.5	E-3.3	1
11	A-2.4	B-2.3	C-1.1	D-5.7	E-3.3	1
12	A-2.4	B-3.3	C-3.3	D-1.5	E-3.3	1
13	A-2.5	B-2.3	C-2.3	D-5.5	E-3.4	1
14	A-2.5	B-3.4	C-2.3	D-2.5	E-3.4	1
15	A-2.14	B-2.3	C-6.9	D-5.7	E-4.4	1
16	A-2.18	B-3.3	C-2.3	D-5.5	E-1.3	1
17	A-2.18	B-3.3	C-3.3	D-4.5	E-3.4	1
18	A-2.18	B-3.4	C-2.4	D-2.5	E-3.3	1
19	A-2.19	B-2.4	C-2.6	D-5.5	E-3.3	1
20	A-3.3	B-2.2	C-1.6	D-1.1	E-3.4	1
21	A-4.9	B-2.3	C-3.6	D-1.5	E-3.4	1
22	A-4.16	B-2.3	C-3.3	D-3.3	E-3.3	1
23	A-4.19	B-2.3	C-2.3	D-1.5	E-3.3	1
24	A-5.5	B-2.3	C-3.3	D-1.5	E-3.3	1
25	A-5.5	B-2.3	C-4.5	D-1.5	E-1.3	1
26	A-5.5	B-2.5	C-3.3	D-6.7	E-2.4	1
27	A-5.5	B-3.3	C-3.3	D-2.5	E-3.3	1
28	A-5.5	B-3.3	C-6.7	D-5.6	E-3.3	1
29	A-5.5	B-3.4	C-5.5	D-1.5	E-3.3	1
30	A-5.5	B-3.5	C-1.1	D-1.4	E-3.4	1
31	A-5.5	B-3.5	C-2.5	D-7.7	E-3.3	1
32	A-5.12	B-2.3	C-1.6	D-1.7	E-3.4	1
33	A-5.18	B-2.5	C-3.5	D-5.5	E-1.3	1
34	A-5.18	B-3.3	C-3.6	D-2.2	E-2.3	1
35	A-5.18	B-3.3	C-6.6	D-1.2	E-4.4	1
36	A-5.19	B-2.3	C-3.3	D-3.5	E-2.3	1
37	A-5.19	B-2.4	C-5.7	D-2.2	E-3.3	1
38	A-5.19	B-3.5	C-2.5	D-1.5	E-3.3	1
39	A-9.9	B-2.2	C-3.6	D-1.5	E-3.3	1
40	A-14.14	B-3.12	C-3.6	D-1.5	E-3.4	1
41	A-14.16	B-3.3	C-3.6	D-5.7	E-3.4	1
42	A-14.19	B-2.3	C-2.3	D-1.5	E-4.4	1
43	A-16.16	B-3.3	C-1.3	D-5.5	E-3.3	1
44	A-16.18	B-3.3	C-3.3	D-5.5	E-3.3	1
45	A-18.18	B-2.3	C-2.5	D-2.5	E-3.4	1
46	A-18.18	B-2.3	C-3.6	D-2.8	E-1.2	1
47	A-19.19	B-2.3	C-1.3	D-5.5	E-2.3	1
48	A-19.19	B-2.3	C-6.8	D-5.5	E-3.3	1
49	A-19.19	B-2.3	C-7.7	D-1.2	E-3.3	1
50	A-19.19	B-3.3	C-3.3	D-4.5	E-3.4	1
Total						50

18 *Sm* 1945, 1946, 1947

Karyotype	Chromosome constitution					Freq.
1	A–1.19	B–2.4	C–1.3	D–1.5	E–2.3	1
2	A–2.2	B–2.3	C–5.6	D–3.7	E–1.3	1
3	A–2.3	B–2.3	C–3.6	D–5.7	E–3.4	1
4	A–2.4	B–2.2	C–2.6	D–5.5	E–1.1	1
5	A–2.5	B–2.2	C–1.3	D–5.5	E–1.1	1
6	A–2.5	B–2.2	C–2.5	D–4.6	E–3.3	1
7	A–2.5	B–2.3	C–3.6	D–2.5	E–2.3	1
8	A–2.5	B–2.3	C–3.5	D–3.7	E–3.3	1
9	A–2.7	B–2.3	C–4.6	D–6.7	E–2.3	1
10	A–2.9	B–2.2	C–3.3	D–5.6	E–3.4	1
11	A–2.9	B–2.3	C–3.5	D–6.7	E–3.3	1
12	A–2.15	B–2.3	C–2.4	D–2.6	E–3.5	1
13	A–2.16	B–2.2	C–3.4	D–5.6	E–3.4	1
14	A–3.3	B–2.3	C–2.4	D–2.6	E–4.4	1
15	A–3.6	B–2.3	C–2.3	D–5.6	E–3.3	1
16	A–3.8	B–2.2	C–5.5	D–6.7	E–3.3	1
17	A–3.10	B–2.3	C–3.5	D–5.7	E–3.4	1
18	A–3.13	B–2.2	C–2.5	D–5.7	E–3.3	1
19	A–3.13	B–2.3	C–1.7	D–5.6	E–3.4	1
20	A–3.17	B–2.2	C–6.8	D–5.6	E–3.6	1
21	A–5.5	B–2.2	C–1.3	D–6.7	E–3.3	1
22	A–5.5	B–3.3	C–3.4	D–6.6	E–3.3	1
23	A–5.9	B–2.2	C–1.6	D–1.8	E–3.3	1
24	A–5.9	B–2.3	C–4.5	D–6.6	E–3.4	1
25	A–5.13	B–2.2	C–1.3	D–6.6	E–2.3	1
26	A–5.13	B–3.3	C–3.3	D–5.7	E–3.3	1
27	A–5.13	B–3.3	C–5.5	D–7.8	E–1.4	1
28	A–5.15	B–2.3	C–6.6	D–6.6	E–3.3	1
29	A–5.16	B–2.3	C–3.3	D–2.2	E–3.4	1
30	A–5.16	B–2.3	C–8.8	D–5.7	E–3.3	1
31	A–5.16	B–4.7	C–6.6	D–1.5	E–1.3	1
32	A–5.19	B–3.3	C–3.3	D–1.5	E–3.4	1
33	A–6.6	B–2.2	C–5.5	D–6.6	E–3.4	1
34	A–6.6	B–2.2	C–7.8	D–5.6	E–3.3	1
35	A–6.8	B–2.3	C–3.3	D–6.7	E–3.4	1
36	A–6.8	B–3.3	C–3.5	D–5.8	E–3.3	1
37	A–7.17	B–3.3	C–3.6	D–5.6	E–3.4	1
38	A–9.14	B–2.3	C–5.5	D–5.6	E–3.3	1
39	A–13.14	B–2.2	C–1.3	D–6.6	E–3.3	1
40	A–14.15	B–2.2	C–8.8	D–2.6	E–3.6	1
41	A–14.15	B–2.2	C–5.6	D–5.6	E–3.3	1
42	A–14.15	B–2.3	C–5.5	D–6.7	E–1.3	1
43	A–15.15	B–2.2	C–3.6	D–2.6	E–3.3	1
44	A–15.16	B–2.2	C–3.6	D–5.6	E–3.3	1
45	A–15.16	B–2.3	C–5.5	D–1.6	E–3.4	1
46	A–16.16	B–2.2	C–3.8	D–6.6	E–3.4	1
47	A–16.16	B–2.3	C–2.6	D–1.5	E–1.4	1
48	A–16.16	B–2.12	C–3.9	D–1.2	E–3.3	1
49	A–18.18	B–2.2	C–3.3	D–5.5	E–3.3	1
Total						50

Karyotype	Chromosome constitution					Freq.
1	A- 1.2	B-2.2	C- 1.13	D-5.5	E- 3.10	1
2	A- 1.3	B-2.3	C- 1.13	D-3.5	E- 1.3	1
3	A- 1.3	B-2.3	C- 1.3	D-5.5	E- 1.3	1
4	A- 1.5	B-2.3	C- 1.1	D-1.5	E- 3 3	1
5	A- 1.17	B-2 3	C- 4.13	D-5.7	E- 1.10	1
6	A- 1.18	B-3.3	C- 1.1	D-5.5	E- 1.4	1
7	A- 1.30	B-2.3	C-13.13	D-5.7	E- 3.3	1
8	A- 2.2	B-3.3	C- 3.13	D-7.7	E- 3.10	1
9	A- 2.3	B-2.3	C- 1.13	D-5.5	E- 1.1	1
10	A- 2.15	B-2.3	C- 1.13	D-5.5	E-10.10	1
11	A- 2.15	B-3.3	C- 1.13	D-5.7	E- 1.3	1
12	A- 2.30	B-2.3	C- 1.1	D-5.5	E- 3.10	1
13	A- 2.30	B-2.2	C- 3.13	D-5.7	E- 3.10	1
14	A- 2.37	B-2.3	C-13.13	D-5.5	E- 1.3	1
15	A- 3.5	B-2.2	C-13.13	D-5.7	E- 3.10	1
16	A- 3.3	B-2.3	C- 1.13	D-1.5	E-10.15	1
17	A- 3.5	B-2.3	C- 1.13	D-5.5	E- 3.10	1
18	A- 3.5	B-2.3	C-13.13	D-5.5	E- 3.10	1
19	A- 3.5	B-2.3	C-13.13	D-5.7	E- 1.15	1
20	A- 3.5	B-2.3	C-13.13	D-5.7	E- 3.3	1
21	A- 3.5	B-3.3	C- 1.13	D-5.5	E - 3.3	1
22	A- 3.6	B-2 2	C - 1.13	D-5.5	E-10.10	1
23	A- 3.11	B-2.3	C- 1.13	D-1.1	E- 1.3	1
24	A- 3.11	B-3.3	C- 1.13	D-5.5	E- 3.10	1
25	A- 3.15	B-2.3	C- 1.13	D-5.5	E- 3.10	1
26	A- 3.17	B-2.2	C- 1.13	D-5.5	E- 1.3	1
27	A- 3.30	B-2.2	C- 1.13	D-5.5	E- 1.3	1
28	A- 3.30	B-2.3	C- 1.13	D-5.5	E- 4.10	1
29	A- 3.30	B-2.3	C- 1.13	D-5.7	E- 1.3	1
30	A- 3.30	B-2.3	C-13.13	D-7.7	E- 1.1	1
31	A- 4.5	B-2.3	C- 3.13	D-5.5	E- 3.10	1
32	A- 5.5	B-2.3	C-13.13	D-1.5	E- 1.1	1
33	A- 5.5	B-2.3	C-13.13	D-1.5	E- 3.3	1
34	A- 5.10	B-2.3	C- 1.13	D-5.5	E- 1.10	1
35	A- 5.11	B-2.3	C- 1.1	D-5.5	E- 1.10	1
36	A- 5.30	B-2.3	C- 1.13	D-5.5	E- 4.10	1
37	A- 5.31	B-2.3	C- 1.1	D-1.1	E- 1.1	1
38	A- 5 31	B-3.3	C- 3.13	D-7.7	E- 1.10	1
39	A- 7.30	B-2.3	C- 1.1	D-5.7	E-10.15	1
40	A- 8.29	B-3.3	C- 1.13	D-5.5	E- 3.3	1
41	A-13.21	B-2.3	C-13.13	D-5.5	E- 1.10	1
42	A-15.18	B-2.2	C-13.13	D-5.5	E-10.10	1
43	A-15.30	B-2.3	C-13.13	D-5.5	E- 3.3	1
44	A-15.31	B-3.3	C-13.13	D-5.5	E-10.10	1
45	A-18.21	B-3.3	C- 1.1	D-5.5	E- 1.14	1
46	A-24.30	B-2.3	C- 1.1	D-5.7	E- 3.10	1
47	A-30.35	B-2.3	C- 1.13	D-5.5	E-10.10	1
Total						47

21 *Em-III D* 1952

Karyotype	Chromosome constitution					Freq.
1	A- 1.5	B-2.3	C- 1.13	D-1.5	E- 1.4	1
2	A- 2.8	B-3.3	C- 1.13	D-5.5	E- 1.3	1
3	A- 2.30	B-2.3	C- 1.13	D-1.5	E- 3.10	1
4	A- 2.36	B-2.3	C- 3.13	D-5.5	E- 1.10	1
5	A- 3.5	B-2.3	C- 1.13	D-5.5	E- 1.10	1
6	A- 3.15	B-3.3	C-13.13	D-5.5	E- 3.10	1
7	A- 5.13	B-2.2	C-13.13	D-5.5	E- 1.1	1
8	A- 5.15	B-2.2	C- 1.1	D-5.5	E- 1.1	1
9	A- 5.17	B-2.3	C- 1.1	D-5.5	E- 3.3	1
10	A- 5.30	B-2.3	C- 1.13	D-5.5	E- 1.10	1
11	A- 6.30	B-2.2	C- 1.1	D-5.5	E- 1.1	1
12	A-15.30	B-2.2	C-13.13	D-5.5	E-10.10	1
13	A-17.30	B-2.3	C- 1.13	D-5.5	E- 1.10	1
14	A-32.37	B-2.3	C- 1.13	D-5.5	E- 1.3	1
Total						14

22 *Srr-S* (2) 1949

Karyotype	Chromosome constitution					Freq.
1	A- 2.5	B-2.3	C- 3.13	D-5.5	E- 4.10	1
2	A- 2.5	B-2.3	C- 3.3	D-5.5	E- 1.13	1
3	A- 2.17	B-2.3	C- 3.3	D-5.5	E-10.10	1
4	A- 2.19	B-2.2	C- 3.3	D-5.5	E- 4.4	1
5	A- 2.30	B-2.2	C-13.13	D-5.5	E- 3.3	1
6	A- 2.30	B-2.3	C- 1.3	D-5.5	E- 1.1	1
7	A- 2.30	B-2.3	C- 3.3	D-5.5	E- 1.3	1
8	A- 2.32	B-2.3	C-13.13	D-5.5	E- 3.4	1
9	A- 2.33	B-2.3	C- 3.3	D-5.5	E- 3.4	1
10	A- 2.33	B-2.3	C- 3.3	D-5.5	E-10.10	1
11	A- 2.35	B-3.3	C- 3.3	D-5.5	E- 3.3	1
12	A- 2.39	B-2.3	C- 1.3	D-5.5	E- 3.4	1
13	A- 3.5	B-2.3	C- 1.3	D-5.5	E- 1.3	1
14	A- 3.5	B-2.3	C- 3.15	D-5.5	E-10.10	1
15	A- 3.35	B-2.3	C- 3.3	D-5.5	E- 1.1	1
16	A- 5.7	B-2.3	C- 3.15	D-5.5	E- 1.10	1
17	A- 5.25	B-2.2	C- 3.3	D-5.5	E- 3.4	1
18	A- 5.30	B-2.2	C- 3.13	D-5.5	E- 1.4	1
19	A- 5.30	B-3.3	C- 3.3	D-5.5	E- 4.10	1
20	A- 5.30	B-2.3	C-13.13	D-5.5	E- 3.3	1
21	A- 5.30	B-2.3	C- 3.13	D-5.5	E- 3.10	1
22	A- 5.30	B-3.3	C-13.13	D-5.5	E- 3.3	1
23	A- 5.30	B-2.3	C- 3.3	D-5.5	E- 3.3	1
24	A- 5.30	B-2.3	C- 3.3	D-5.5	E- 3.3	1
25	A- 5.30	B-2.2	C-13.13	D-5.5	E- 3.10	1
26	A- 5.31	B-2.2	C- 3.13	D-5.5	E-10.10	1
27	A- 5.31	B-2.2	C- 3.3	D-5.5	E- 3.3	1
28	A- 5.31	B-2.3	C-13.13	D-5.5	E- 1.10	1
29	A- 5.32	B-2.3	C- 3.3	D-5.5	E- 1.3	1
30	A- 5.33	B-3.3	C-13.13	D-5.5	E- 3.10	1
31	A- 5.35	B-3.3	C-13.13	D-5.5	E- 3.3	1
32	A- 5.36	B-2.3	C- 3.3	D-5.5	E- 3.3	1
33	A- 5.36	B-3.3	C- 3.3	D-5.5	E- 3.10	1
34	A- 5.39	B-2.2	C- 3.3	D-5.5	E- 4.10	1
35	A- 5.37	B-2.3	C-13.13	D-5.5	E- 3.10	1
36	A-15.36	B-2.2	C- 3.3	D-5.5	E- 4.10	1
37	A-17.30	B-2.3	C-13.13	D-5.5	E- 1.4	1
38	A-17.30	B-3.3	C- 1.13	D-5.5	E- 3.10	1
39	A-30.30	B-3.3	C-13.13	D-5.5	E- 3.10	1
40	A-30.30	B-2.2	C-13.13	D-5.5	E- 3.10	1
41	A-30.33	B-2.2	C- 1.3	D-5.5	E- 1.10	1
42	A-30.36	B-2.3	C- 3.13	D-5.5	E- 4.9	1
43	A-30.36	B-2.3	C-13.13	D-5.5	E-10.10	1
44	A-33.33	B-2.2	C- 3.13	D-5.5	E- 3.10	1
45	A-33.36	B-2.3	C-13.13	D-5.5	E- 3.4	1
Total						45

23 *Srr-S (3)* 1952

Karyotype	Chromosome constitution					Freq.
1	A- 2.3	B-2.2	C- 1.3	D-5.5	E- 1.3	1
2	A- 2.5	B-2.2	C- 1.3	D-5.5	E- 1.1	1
3	A- 2.15	B-2.3	C- 1.13	D-5.5	E- 1.10	1
4	A- 2.17	B-2.2	C- 1.13	D-5.5	E- 3.4	1
5	A- 2.17	B-2.3	C-13.13	D-5.5	E- 1.1	1
6	A- 2.30	B-2.2	C- 1.13	D-5.5	E- 1.10	1
7	A- 2.30	B-2.3	C- 1.3	D-5.5	E- 1.10	1
8	A- 2.35	B-2.3	C- 3.3	D-5.5	E- 1.10	1
9	A- 2.36	B-2.3	C-13.13	D-5.5	E- 4.4	1
10	A- 3.5	B-2.2	C- 3.3	D-5.5	E- 1.10	1
11	A- 3.5	B-2.3	C- 3.3	D-5.5	E- 1.1	1
12	A- 3.5	B-2.3	C- 1.1	D-5.5	E- 1.4	1
13	A- 3.39	B-2.3	C- 3.3	D-5.5	E- 1.3	1
14	A- 5.15	B-2.3	C- 3.3	D-5.5	E- 1.1	1
15	A- 5.19	B-2.2	C- 1.13	D-5.5	E- 3.3	2
16	A- 5.30	B-2.2	C- 1.13	D-5.5	E- 3.10	1
17	A- 5.30	B-2.3	C- 1.1	D-5.5	E- 3.4	1
18	A- 5.30	B-2.3	C- 1.13	D-5.5	E- 1.10	1
19	A- 5.30	B-3.3	C- 1.13	D-1.5	E- 1.10	1
20	A- 5.30	B-3.3	C- 1.13	D-5.5	E- 1.10	1
21	A- 5 33	B-2.3	C-13.13	D-5.5	E- 1.4	1
22	A- 5.37	B-2.3	C- 1.13	D-5.5	E- 4.10	1
23	A- 5.40	B 2.3	C- 1.13	D-5.5	E- 1.3	1
24	A- 8.30	B-2.3	C-13.13	D-5.5	E- 1.3	1
25	A-11.19	B-2.3	C-13.13	D-1.5	E-10.10	1
26	A-11.30	B-2.3	C- 3.13	D-5.5	E- 1.10	1
27	A-15.30	B-2.2	C- 3.3	D-5.5	E- 3.4	1
28	A-15.33	B-2.3	C- 3.3	D-5.5	E- 1.10	1
29	A-17.34	B-2.3	C- 1.13	D-5.5	E- 3.10	1
30	A-17.35	B-2.2	C- 3.3	D-5.5	E- 1.1	1
31	A-17.36	B-3.3	C-13.13	D-5.5	E- 1.1	1
32	A-19.33	B-2.3	C- 3.3	D-5.5	E- 1.10	1
33	A-20.30	B-2.3	C- 1.13	D-5.5	E-10.10	1
34	A-25.30	B-2.3	C- 1.13	D-5.5	E- 1.10	1
35	A-25.30	B-3.3	C- 3.3	D-5.5	E- 3.10	1
36	A-30.30	B-2.3	C-13.13	D-5.5	E- 1.10	1
37	A-30.30	B-3.3	C-13.13	D-5.5	E- 1.1	1
38	A-30.35	B-2.3	C- 1.13	D-5.5	E- 1.10	1
39	A-30.36	B-2.3	C- 1.13	D-5.5	E-10.10	1
Total						40

24 *Srr-N* 1949

Karyotype	Chromosome constitution					Freq.
1	A- 2.5	B-2.2	C- 1.13	D-5.5	E- 3.3	1
2	A- 2.5	B-2.3	C- 3.13	D-5.5	E- 4.4	1
3	A- 2.30	B-2.3	C- 1.1	D-5.5	E- 3.4	1
4	A- 2.30	B-2.3	C- 3.3	D-5 5	E- 1.3	1
5	A- 2.35	B-2.3	C- 1.1	D-5.5	E- 3.4	1
6	A- 3.5	B-2.2	C- 3.3	D-5.5	E- 1.10	1
7	A- 5.5	B-2.2	C- 3.3	D-5.5	E- 3.10	1
8	A- 5.5	B-2.3	C- 1.3	D-5.5	E- 3.3	1
9	A- 5.5	B-2.2	C-13.13	D-5.5	E- 1.3	1
10	A- 5.5	B-2.3	C- 3.3	D-5.5	E- 3.4	1
11	A- 5.5	B-2.3	C- 1.13	D-5.5	E- 3.10	1
12	A- 5.10	B-2.3	C- 1.3	D-5.5	E- 4.4	1
13	A- 5.17	B-2.2	C- 3.13	D-5.5	E- 4.4	1
14	A- 5.17	B-2.3	C- 1.1	D-5.5	E- 4.10	1
15	A- 5.21	B-2.3	C- 3.3	D-5.5	E- 4.10	1
16	A- 5.25	B-2.3	C- 3.3	D-5.5	E- 3.10	1
17	A- 5.30	B-2.3	C- 1.13	D-5.5	E- 3.4	1
18	A- 5.30	B-2.3	C- 3.3	D-5.5	E- 3.3	1
19	A- 5.30	B-2.3	C- 1.1	D-5.5	E- 3.3	1
20	A- 5.30	B-3.3	C- 3.13	D-5.5	E- 3.3	1
21	A- 5.30	B-2.3	C- 3.3	D-5.5	E- 3.10	1
22	A- 5.30	B-2.3	C- 1.1	D-5.5	E- 4.10	1
23	A- 5.30	B-2.3	C-13.13	D-5.5	E- 3.4	1
24	A- 5.30	B-2.3	C- 1.13	D-5.5	E- 1.4	1
25	A- 5.30	B-2.3	C- 3.3	D-5.5	E- 3.4	1
26	A- 5.30	B-2.3	C- 3.13	D-5.5	E- 4.10	1
27	A- 5.33	B-2.2	C- 1.3	D-5.5	E- 1.10	1
28	A- 5.34	B-2.2	C- 1.13	D-5.5	E- 3.3	1
29	A- 5.35	B-2.3	C- 1.13	D-5.5	E- 3.4	1
30	A- 5.35	B-2.3	C- 3.3	D-5.5	E- 4.10	1
31	A- 5.36	B-2.3	C- 3.3	D-5.5	E- 4.3	1
32	A-11.33	B-2.2	C- 1.3	D-5.5	E- 3.11	1
33	A-15.17	B-2.3	C- 3.3	D-5.5	E- 3.8	1
34	A-15.36	B-2.3	C- 1.3	D-5 5	E- 3.4	1
35	A-17.33	B-2.3	C- 1.1	D-5.5	E- 1.10	1
36	A-21.36	B-2.2	C- 3.3	D-5.5	E- 3.4	1
37	A-24.36	B-2.3	C- 3.3	D-5.5	E- 1.3	1
38	A-27.29	B-2.3	C- 3.3	D-5.5	E- 3.3	1
39	A-30.30	B-3.3	C- 1.13	D-5.5	E- 3.4	1
40	A-30.31	B-2.2	C- 1.1	D-5.5	E- 4.10	1
41	A-30.35	B-2.3	C- 3.3	D-5.5	E- 4.10	1
42	A-30.36	B-2.3	C- 3.3	D-5.5	E- 3.4	1
43	A-31.33	B-2.3	C- 1.3	D-5.5	E- 1.15	1
44	A-31.33	B-3.3	C- 1.1	D-5.5	E-10.10	1
45	A-33.35	B-2.3	C- 3.3	D-5.5	E- 3.10	1
Total						45

25 *Hr* 1951

Karyotype	Chromosome constitution					Freq.
1	A- 1.3	B- 2.3	C-13.13	D-5.5	E-3.4	1
2	A- 5.5	B- 3.10	C- 3.3	D-5.5	E-4.4	1
3	A- 5.10	B- 2.10	C- 3.3	D-5.5	E-3.3	1
4	A- 5.11	B- 2.2	C- 3.3	D-1.5	E-3.3	1
5	A- 5.11	B- 2.3	C- 3.3	D-1.5	E-3.14	1
6	A- 5.30	B- 2.3	C- 3.4	D-5.5	E-3.3	1
7	A- 5.31	B-10.14	C- 3.13	D-5.5	E-3.3	1
8	A- 5.32	B- 2.3	C- 3.13	D-5.5	E-1.4	1
9	A- 5.33	B- 3.3	C- 3.3	D-5 5	E-3.10	1
10	A- 5.34	B- 3.3	C- 3.3	D-5.5	E-3.10	1
11	A- 5.37	B- 2.3	C-13.13	D-5.5	E-3.3	1
12	A- 5.39	B- 2.3	C- 3.13	D-5.5	E-3.10	1
13	A- 5.48	B- 3.14	C- 3.3	D-1.5	E-3.3	1
14	A-10.10	B- 2.2	C- 3.3	D-5.5	E-3.3	1
15	A-10.17	B- 3.3	C- 3.3	D-5.5	E-3.3	1
16	A-10.18	B- 2.3	C- 3.13	D-5.5	E-3.3	1
17	A-10.18	B- 3.10	C- 3.13	D-5.5	E-3.4	1
18	A-10.18	B-10.10	C- 3.13	D-5.5	E-4.4	1
19	A-10.23	B- 2.10	C- 3.3	D-5.5	E-3.3	1
20	A-10.30	B- 2.3	C- 3.3	D-5.5	E-3.4	1
21	A-11.18	B- 3.3	C- 3.3	D-5.5	E-3.3	1
22	A-11.32	B- 2.3	C- 3.3	D-5.5	E-4.10	1
23	A-17.18	B- 2.3	C- 3.3	D-5.5	E-3.10	1
24	A-17.18	B- 2.10	C- 3.14	D-5.5	E-1.3	1
25	A-18.18	B- 2.10	C- 3.3	D-5.5	E-3.3	1
26	A-18.21	B- 2.2	C- 3.3	D-5.5	E-3.4	1
27	A-18 30	B- 2.10	C- 3.3	D-5.5	E-3.15	1
28	A-18.47	B- 2.3	C- 3.3	D-5.5	E-3.3	1
29	A-19.24	B- 3.3	C-13.13	D-5.15	E-1.3	1
30	A-20.30	B- 3.3	C- 3.13	D-5.5	E-3.10	1
31	A-24.30	B- 2.3	C- 3.13	D-1.5	E-3.3	1
32	A-30.30	B- 2.2	C- 3.13	D-5.5	E-3.3	1
33	A-30.30	B- 3.10	C- 3.3	D-5.5	E-3.3	1
Total						33

26 *Ty-G* 1949

Karyotype	Chromosome constitution					Freq.
1	A- 1.30	B-2.3	C-1.1	D-5.5	E- 1.16	1
2	A- 2.30	B-2.2	C-3.3	D-5.5	E-13.16	1
3	A- 3.3	B-2.2	C-3.3	D-4.5	E- 1.1	1
4	A- 3.3	B-2.3	C-3.3	D-5.5	E- 1.10	1
5	A- 3.5	B-2.3	C-3.3	D-5.5	E- 1.10	1
6	A- 3.10	B-2.2	C-3.3	D-5.5	E-10.10	1
7	A- 3.11	B-2.3	C-3.3	D-5.5	E-10.10	1
8	A- 3.17	B-2.3	C-3.3	D-5.5	E- 1.10	1
9	A- 3.23	B-2.3	C-3.3	D-5.5	E- 1.1	1
10	A- 3.23	B-2.2	C-3.2	D-5.5	E- 3.3	1
11	A- 3.36	B-2.2	C-3.3	D-5.5	E- 1.1	1
12	A- 7.15	B-2.3	C-3.3	D-5.5	E-10.10	1
13	A- 9.26	B-2.3	C-3.3	D-5.5	E- 3.3	1
14	A-10.23	B-1.3	C-3.3	D-4.4	E- 1.1	1
15	A-11.17	B-2.3	C-3.3	D-5.5	E- 1.1	1
16	A-13.21	B-2.3	C-3.5	D-5 5	E- 1.1	1
17	A-15.18	B-2.3	C-3.3	D-5.5	E- 1.1	1
18	A-17.44	B-3.3	C-3 3	D-5.5	E- 1.1	1
19	A-17.30	B-1.3	C-3.3	D-5.5	E-11.11	1
20	A-17.30	B-2.2	C-3.3	D-5.5	E- 1.10	1
21	A-18.23	B-2.3	C-3.3	D-5.5	E- 1.16	1
22	A-18.44	B-1.2	C-3.3	D-5.5	E- 1.10	1
23	A-19.46	B-2.3	C-3.3	D-5.5	E- 1.10	1
24	A-21.24	B-2.2	C-3.3	D-5.5	E- 3.10	1
25	A-21.26	B-1.3	C-3.3	D-1.5	E- 1.11	1
26	A-21.30	B-2.2	C-3.3	D-4.4	E-10.10	1
27	A-23 43	B-2.3	C-3.3	D-5.5	E- 1.10	1
28	A-23.30	B-2.2	C-3.3	D-5.5	E- 1.10	1
29	A-23.30	B-2.3	C-3.3	D-5.5	E-10.10	1
30	A-24 36	B-2.2	C-3.9	D-5.5	E- 1.10	1
31	A-26 29	B-2.10	C-1.3	D-5.5	E-10.10	1
32	A-26.31	B-3.3	C-1.3	D-5 5	E-10.10	1
33	A-29.36	B-2.2	C-3.13	D-5.5	E- 1.10	1
34	A-29.30	B-2.3	C-3.3	D-5.5	E- 1.3	1
35	A-29.31	B-2.2	C-3.3	D-4.4	E- 1.8	1
36	A-29.45	B-2.2	C-3.3	D-5.5	E-10.11	1
37	A-30.30	B-2.2	C-3.3	D-5.5	E- 1.10	1
38	A-30.30	B-2.3	C-1.3	D-1.5	E- 1.10	1
39	A-30.30	B-2.3	C-3.3	D-5.5	E- 1.10	1
40	A-30.30	B-2.6	C-3.3	D-5.5	E-10.10	1
41	A-30.44	B-2.3	C-3.3	D-5.5	E- 1.10	1
42	A-40.40	B-2.18	C-3,3	D-5.5	E-10.13	1
43	A-40.43	B-2.2	C-3.13	D-5.5	E- 3.8	1
44	A-41.42	B-3.3	C-3.3	D-5.5	E- 1.15	1
45	A- 3.6	B-2.2	C-3.3	D-5.5	E- 1.1	1
46	A- 5.6	B-2.2	C-3.3	D-5.5	E- 1.10	1
47	A- 7.18	B-2.3	C-3.3	D-5.5	E- 1.10	1
48	A- 8.18	B-2.3	C-3.3	D-5.5	E- 1.10	1
49	A-13.19	B-2.2	C-3.3	D-5.5	E- 1.10	1
50	A-18.18	B-2.2	C-3.3	D-5.5	E-10.10	1
Total						50

27 *Ty-G (A)* 1952

Karyotype	Chromosome constitution					Freq.
1	A- 1.30	B-2.3	C-1.1	D-5.5	E- 1.16	1
2	A- 2.30	B-2.2	C-3.3	D-5.5	E-13.16	1
3	A- 3.3	B-2.2	C-3.3	D-4.4	E- 1.1	1
4	A- 5.17	B-1.3	C-3.3	D-5.5	E-11.11	1
5	A- 5.17	B-2.2	C-3.3	D-5.5	E- 1.10	1
6	A- 5.17	B-3.3	C-3.3	D-5.9	E- 1.1	1
7	A- 5.30	B-2.3	C-3.4	D-5.5	E- 1.10	1
8	A-18.18	B-2.2	C-3.3	D-5.5	E-10.10	1
9	A-18.23	B-2.3	C-3.3	D-5.9	E- 1.16	1
10	A-21.24	B-2.2	C-3.3	D-5.9	E- 3.10	1
11	A-21.26	B-1.3	C-3.3	D-1.5	E- 1.11	1
12	A-21.30	B-2.2	C-3.3	D-4.4	E-10.10	1
13	A-24.36	B-2.2	C-3.9	D-5.5	E- 1.10	1
14	A-26.29	B-2.10	C-1.3	D-5.5	E-10.10	1
15	A-36.29	B-2.2	C-3.3	D-5.5	E-10.11	1
16	A-30.30	B-2.2	C-3.3	D-5.5	E- 1.16	1
17	A-30.30	B-2.3	C-1.3	D-1.5	E- 1.10	1
18	A-30.30	B-2.3	C-3.3	D-5.5	E- 1.10	1
19	A-30.30	B-2.6	C-3.3	D-5.9	E-10.10	1
20	A-41.42	B-3.3	C-3.3	D-5.5	E- 1.15	1
Total						20

28 *Ty-G (B)* 1952

Karyotype	Chromosome constitution					Freq.
1	A- 2.3	B-2.2	C-3.3	D-4.5	E- 1.11	1
2	A- 2.31	B-2.2	C-3.3	D-5.5	E-11.11	1
3	A- 3.3	B-2.2	C-3.3	D-1.5	E- 1.11	1
4	A- 3.3	B-2.3	C-1.3	D-5.5	E- 1.1	1
5	A- 3.3	B-2.3	C-3.3	D-5.5	E- 1.1	1
6	A- 3.3	B-2.3	C-3.3	D-5.5	E- 1.11	1
7	A- 3.4	B-2.3	C-3.3	D-1.5	E-11.11	1
8	A- 3.11	B-2.2	C-1.3	D-5.5	E- 1.2	1
9	A- 3.25	B-2.2	C-3.3	D-1.5	E- 1.1	1
10	A- 3.30	B-2.2	C-3.3	D-5.5	E- 1.1	1
11	A-18.30	B-2.2	C-2.3	D-1.5	E- 1.1	1
12	A-30.30	B-2.2	C-3.3	D-5.5	E- 1.1	1
13	A-31.31	B-2.2	C-3.3	D-5.5	E- 1.11	1
Total						13

30 *Ty-Q*$_{11}$ 1952

Karyotype	Chromosome constitution					Freq.
1	A- 1.30	B-2.10	C-1.13	D-5.5	E- 1.1	1
2	A- 1.32	B-2.3	C-3.3	D-5.5	E- 8.20	1
3	A- 2.4	B-2.3	C-3.13	D-5.5	E- 1.1	1
4	A- 2.4	B-2.3	C-3.3	D-5.5	E- 1.10	1
5	A- 2.5	B-2.3	C-3.3	D-5.5	E- 1.3	2
6	A- 2.14	B-2.3	C-3.13	D-5.5	E- 1.10	1
7	A- 2.17	B-2.2	C-1.3	D-5.5	E- 1.10	1
8	A- 2.17	B-2.2	C-1.3	D-5.5	E- 1.15	1
9	A- 2.17	B-2.3	C-3.3	D-5.5	E- 1.10	1
10	A- 2.24	B-2.3	C-3.3	D-5.5	E- 1.10	1
11	A- 2.29	B-2.3	C-3.3	D-5.5	E- 1.3	1
12	A- 2.40	B-2.3	C-3.13	D-5.5	E- 3.10	1
13	A- 3.11	B-2.3	C-3.3	D-5.5	E- 1.8	1
14	A- 3.15	B-2.3	C-1.3	D-5.5	E- 1.10	1
15	A- 3.19	B-2.3	C-3.3	D-5.5	E- 3.10	1
16	A- 3.26	B-2.10	C-3.3	D-5.5	E- 1.1	1
17	A- 3.45	B-2.2	C-3.3	D-5.5	E- 1.10	1
18	A- 5.15	B-2.3	C-3.3	D-5.5	E- 1.15	1
19	A- 5.24	B-2.3	C-3.3	D-5.5	E- 1.10	1
20	A- 5.25	B-2.2	C-3.13	D-5.5	E- 3.10	1
21	A- 5.31	B-2.3	C-3.13	D-5.5	E- 3.10	1
22	A- 5.32	B-2.3	C-1.3	D-5.5	E- 1.10	1
23	A- 5.36	B-2.3	C-3.3	D-5.5	E- 1.1	1
24	A- 5.36	B-2.3	C-3.3	D-5.5	E-10.10	1
25	A- 6.11	B-2.2	C-3.3	D-5.5	E- 1.3	1
26	A-10.42	B-2.3	C-3.3	D-5.5	E- 1.8	1
27	A-14.16	B-2.2	C-3 3	D-5.5	E- 1.10	1
28	A-15.32	B-2.3	C-3.13	D-5.5	E- 1.10	1
29	A-15.36	B-2.3	C-3 3	D-5.5	E- 1.10	1
30	A-17.18	B-2.3	C-3.3	D-5.5	E- 1.1	1
31	A-21.26	B-2.3	C-3.3	D-5.5	E-10.10	1
32	A-21.30	B-2.2	C-3.3	D-5.5	E-10.10	1
33	A-30.19	B-2.3	C-3.13	D-5.5	E- 8.10	1
34	A-30.24	B-2.3	C-3.3	D-5.5	E-10.10	1
35	A-30.32	B-3.10	C-3.3	D-5.5	E- 3.8	1
36	A-31.23	B-2.3	C-3.3	D-5.5	E- 1.20	1
37	A-34.32	B-2.10	C-3.3	D-5.5	E- 1.1	1
38	A-36.34	B-3.3	C-3.3	D-5.5	E- 1.10	1
39	A-39.23	B-2.3	C-3.3	D-5.5	E- 1.16	1
40	A-45.11	B-2.10	C-3.13	D-5.5	E- 3.10	1
Total						41

31 *Ty-Q*$_4$ 1952

Karyotype	Chromosome constitution					Freq.
1	A- 1.6	B-2.3	C-3.3	D-5.5	E-10.16	1
2	A- 2.24	B-2.3	C-3.3	D-1.5	E- 1.1	1
3	A- 2.30	B-2.3	C-3.3	D-1.5	E- 1.10	1
4	A- 2.31	B-1.3	C-3.3	D-5.5	E- 1.10	1
5	A- 2.43	B-2.2	C-3.3	D-5.5	E- 1.8	1
6	A- 3.5	B-2.3	C-3.9	D-5.5	E- 1.10	1
7	A- 3.7	B-2.3	C-3.3	D-1.5	E- 1.10	1
8	A- 3.17	B-2.3	C-3.3	D-5.7	E- 1.10	1
9	A- 3.31	B-2.2	C-3.3	D-5.5	E-10.11	1
10	A- 4.36	B-2.2	C-3.3	D-5.5	E- 1.1	1
11	A- 5.15	B-2.2	C-3.1	D-5.5	E- 1.1	1
12	A- 5.16	B-2.2	C-3.3	D-5.5	E- 1.10	1
13	A- 5.18	B-2.3	C-3.3	D-5.5	E- 1.16	1
14	A- 5.26	B-2.3	C-1.1	D-5.5	E- 1.10	1
15	A- 5.31	B-2.3	C-3.3	D-5.5	E- 1.1	1
16	A- 5.31	B-2.3	C-3.3	D-5.5	E- 1.10	1
17	A- 5.45	B-2.10	C-3.3	D-5.7	E-10.10	1
18	A- 6.36	B-1.3	C-3.9	D-5.5	E- 1.16	1
19	A- 7.26	B-2.3	C-3.3	D-1.5	E- 1.10	1
20	A- 8.10	B-2.3	C-3.3	D-5.5	E- 1.10	1
21	A- 8.23	B-2.2	C-3.3	D-5.5	E-10.11	1
22	A-10.49	B-3.3	C-3.3	D-5.5	E- 8.10	1
23	A-11.17	B-2.2	C-3.3	D-5.5	E- 1.1	1
24	A-13.23	B-2.3	C-3.3	D-5.5	E- 1.1	1
25	A-14.29	B-2.3	C-1.3	D-5.5	E-10.11	1
26	A-15.19	B-2.3	C-3.3	D-1.5	E-10.10	1
27	A-16.19	B-2.10	C-3.3	D-5.5	E-10.11	1
28	A-16.30	B-2.3	C-3.3	D-5.5	E- 8.10	1
29	A-17.21	B-2.10	C-3.3	D-5.5	E- 1.10	1
30	A-23.32	B-2.10	C-3.3	D-5.5	E- 1.10	1
31	A-24.30	B-2.3	C-3.3	D-5.5	E- 1.11	1
32	A-24.31	B-2.3	C-3.3	D-5.5	E-10.10	1
33	A-30.31	B-2.3	C-3.3	D-5.5	E- 1.1	1
Total						33

29 *Ty-J* 1952

Karyotype	Chromosome constitution					Freq.
1	A- 3.3	B-2.2	C-3.3	D-5.5	E-1.1	2
2	A- 3.3	B-2.3	C-3.3	D-5.5	E-1.1	1
3	A- 3.30	B-2.2	C-3.3	D-5.5	E-1.1	3
4	A- 3.30	B-2.2	C-3.3	D-5.5	E-1.11	1
5	A- 3.30	B-2.3	C-3.3	D-1.5	E-1.1	1
6	A-20.30	B-2.2	C-3.3	D-1.5	E-1.1	1
Total						9

32 *Ms* 1954, 1952

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	3	15	2	23	3	33	5	34	3	20
	10	6	3	13	4	2	4	2	1	12
	21	5			5	1			4	3
	16	4							10	1
	19	2								
	55	2								
	6	1								
	2	1								
Total		36		36		36		36		36

33 *Ak* 1944, 1947, 1950

Karyotype	Chromosome constitution					Freq.
1	A– 3.24	B– 1.3	C– 1.3	D–5.5	E– 1.3	1
2	A– 3.40	B– 3.3	C– 1.3	D–1.5	E– 3.3	1
3	A– 5.26	B– 1.4	C– 3.3	D–1.5	E– 1.4	1
4	A– 5.32	B– 4.11	C– 3.3	D–1.5	E– 4.11	1
5	A– 5.32	B– 3.3	C– 3.3	D–5.5	E– 3.3	1
6	A– 5.37	B– 1.10	C– 3.13	D–5.5	E– 1.10	1
7	A– 9.18	B– 3.3	C– 3.9	D–1.5	E– 3.3	1
8	A–10.26	B– 4.14	C– 3.3	D–5.11	E– 4.14	1
9	A–10.30	B– 3.3	C– 1.3	D–1.5	E– 4.4	1
10	A–10.32	B– 3.4	C– 3.13	D–5.5	E– 3.4	1
11	A–10.34	B– 3.14	C–13.13	D–1.5	E– 1.3	1
12	A–18.26	B– 4.14	C– 3.11	D–1.5	E– 3.14	1
13	A–18.33	B– 4.4	C– 3.13	D–1.5	E–14.14	1
14	A–19.31	B– 3.4	C– 3.13	D–1.5	E– 3.10	1
15	A–24.26	B– 1.3	C– 3.13	D–1.5	E– 1.8	1
16	A–24.26	B– 3.14	C– 3.3	D–5.5	E– 3.10	1
17	A–31.38	B–14.14	C– 3.13	D–1.5	E– 3.10	1
18	A–31.39	B– 3.10	C– 3.3	D–1.1	E– 1.7	1
19	A– 3.20	B– 1.8	C– 3.3	D–5.5	E– 1.3	1
20	A– 3.24	B– 3.10	C– 3.13	D–5.5	E– 1.4	1
21	A– 8.10	B– 3.10	C– 3.3	D–5.5	E– 3.3	1
22	A–10.18	B– 1.7	C– 1.1	D–5.5	E– 3.15	1
23	A–10.18	B– 1.3	C– 1.13	D–5.5	E– 4.8	1
24	A–10.24	B– 1.4	C– 3.13	D–5.5	E– 1.3	1
25	A–11.26	B– 3.3	C– 9.13	D–4.5	E– 1.4	1
26	A–14.24	B– 3.15	C– 3.3	D–5.5	E– 3.3	1
27	A–14.27	B– 4.8	C– 3.14	D–5.10	E– 4.4	1
28	A–17.32	B– 1.3	C– 3.13	D–5.5	E– 3.3	1
29	A–18.20	B– 1.4	C– 1.3	D–5.5	E– 3.3	1
30	A–18.32	B– 3.3	C– 1.3	D–5.5	E– 1.3	1
31	A–19.30	B– 4.4	C– 3.3	D–5.5	E– 1.3	1
32	A–20.20	B– 3.3	C– 3.3	D–1.5	E– 1.10	1
33	A–21.24	B– 3.3	C– 3.13	D–1.5	E– 4.13	1
34	A–21.26	B– 1.3	C– 3.13	D–1.5	E– 3.12	1
35	A–22.28	B– 2.3	C– 3.3	D–1.5	E– 1.3	1
36	A–24.25	B– 3.3	C– 3.3	D–5.5	E– 1.10	1
37	A–24.29	B– 3.3	C– 2.3	D–5.5	E– 4.13	1
38	A–26.26	B– 1.12	C– 3.3	D–5.5	E– 3.12	1
39	A–29.31	B– 2.2	C– 3.13	D–1.5	E– 3.3	1
40	A– 2.15	B– 2.3	C– 2.3	D–5.5	E– 3.4	1
41	A– 2.18	B– 2.2	C– 3.3	D–5.5	E– 2.2	1
42	A– 3.8	B–12.12	C– 3.3	D–5.5	E– 3.4	1
43	A– 3.14	B– 2.12	C– 3.3	D–5.5	E– 2.4	1
44	A– 3.15	B– 2.3	C– 3.3	D–1.7	E– 2.2	1
45	A– 7.16	B–12.12	C– 5.5	D–5.5	E– 4.4	1
46	A– 8.8	B– 3.12	C– 5.5	D–5.5	E– 4.4	1
47	A– 8.15	B– 2.12	C– 3.5	D–5.5	E– 3.4	1
48	A– 9.11	B– 3.3	C– 1.3	D–1.5	E– 3.3	1
49	A–10.11	B– 1.3	C– 1.3	D–5.5	E– 1.1	1
50	A–20.20	B–12.12	C– 3.2	D–5.5	E– 3.3	1
Total						50

34 *Ot* 1951

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	25	1	1	6	1	5	1	9	1	30
	37	4	2	35	3	75	4	1	3	36
	29	1	7	1	13	20	5	90	10	34
	38	2	17	2						
	1	1	3	27						
	3	1	12	29						
	24	6								
	18	6								
	6	1								
	5	9								
	28	11								
	19	2								
	30	4								
	36	16								
	9	2								
	32	2								
	10	4								
	23	1								
	7	2								
	20	22								
	27	2								
Total		100		100		100		100		100

36 *Tp* 1952

Karyotype	Chromosome constitution					Freq.
1	A- 1.38	B-3.3	C-13.13	D-1.5	E-10.18	1
2	A- 2.2	B-1.2	C- 6.10	D-1.4	E-10.10	1
3	A- 2.3	B-2.3	C- 2.13	D-4.8	E-10.10	1
4	A- 2.67	B-3.20	C- 6.6	D-2.4	E- 3.3	1
5	A- 3.65	B-2.3	C- 3.9	D-1.5	E-10.10	1
6	A- 3.65	B-3.3	C- 1.13	D-5.5	E-10.10	1
7	A- 3.65	B-3.3	C-13.13	D-4.5	E-10.10	1
8	A-18.60	B-3.3	C- 3.4	D-1.8	E-10.10	1
9	A-26.68	B-2.3	C- 3.3	D-4.5	E-10.10	1
10	A-31.60	B-3.3	C- 3.4	D-4.5	E-10.10	1
11	A-31.65	B-2.3	C- 1.3	D-5.8	E- 3.10	1
12	A-38.65	B-3.3	C- 3.4	D-1.1	E-10.10	1
13	A-38.66	B-3.3	C-13.13	D-1.1	E-10.10	1
14	A-52.64	B-2.3	C-13.13	D-5.8	E- 3.10	1
15	A-53.69	B-1.2	C-13.13	D-4.4	E- 3.3	1
16	A-57.65	B-2.3	C- 1.13	D-1.4	E-10.10	1
17	A-58.64	B-3.3	C- 1.13	D-1.1	E-10.10	1
18	A-59.69	B-3.20	C-13.13	D-1.4	E- 3.10	1
19	A-60.38	B-3.3	C- 3.3	D-8.8	E- 3.10	1
20	A-60.63	B-3.3	C- 1.13	D-1.1	E-10.10	1
21	A-60.64	B-3.3	C- 1.3	D-2.9	E-10.10	1
22	A-60.65	B-2.3	C- 4.13	D-1.5	E-10.10	1
23	A-60.69	B-2.3	C- 1.3	D-1.4	E-10.10	1
24	A-61.65	B-3.9	C- 4.13	D-4.5	E-10.10	1
25	A-62.65	B-2.3	C-13.13	D-1.1	E-10.10	1
26	A-63.64	B-2.3	C-13.13	D-1.5	E-10.10	1
27	A-65.69	B-2.3	C- 1.3	D-1.1	E- 1.10	1
28	A-65.69	B-2.3	C- 1.5	D-5.5	E- 3.10	1
29	A-65.69	B-2.3	C-13.13	D-5.8	E-10.10	1
30	A-68.68	B-2.3	C- 3.9	D-4.5	E-10.10	1
31	A-70.70	B-2.3	C-13.13	D-1.1	E- 3.3	1
Total						31

37 *Mb* 1954

Karyotype	Chromosome constitution					Freq.
1	A- 1.1	B- 9.9	C-13.13	D-1.1	E- 1.1	1
2	A- 1.1	B- 9.13	C-13.13	D-1.1	E- 1.1	1
3	A- 1.1	B-10.10	C-13.13	D-1.1	E- 1.1	1
4	A- 1.1	B-13.13	C- 6.6	D-1.1	E-19.19	1
5	A- 1.1	B-13.21	C-13.13	D-1.1	E- 1.19	1
6	A- 1.3	B- 9.10	C- 6.6	D-1.1	E-19.19	1
7	A- 1.18	B- 9.10	C- 6.13	D-1.4	E-19.19	1
8	A- 1.18	B-13.13	C- 6.6	D-1.1	E-19.19	1
9	A- 1.18	B-13.21	C-13.13	D-1.1	E-11.11	1
10	A- 1.28	B- 9.13	C- 3.16	D-1.1	E- 3.3	1
11	A- 1.38	B- 9.10	C- 3.3	D-1.1	E-19.19	1
12	A- 1.44	B-10.21	C- 6.6	D-1.1	E-19.19	1
13	A- 1.52	B- 7.13	C-13.13	D-5.5	E- 1.1	1
14	A- 1.52	B- 9.13	C-13.13	D-1.1	E- 1.19	1
15	A- 1.52	B-21.21	C-13.13	D-1.1	E- 1.1	1
16	A- 3.51	B-13.13	C- 3.3	D-1.4	E- 1.19	1
17	A-18.18	B- 9.9	C-13.13	D-1.1	E- 1.11	1
18	A-18.18	B- 9.10	C- 6.6	D-3.3	E- 1.1	1
19	A-18.18	B-10.10	C-13.13	D-1.1	E- 1.11	1
20	A-18.18	B-10.13	C- 6.13	D-1.1	E-11.11	1
21	A-18.38	B-10.13	C-13.13	D-1.1	E- 1.19	1
22	A-38.38	B- 2.2	C- 6.6	D-1.3	E-11.11	1
23	A-52.31	B-10.13	C-13.13	D-1.1	E- 3.3	1
24	A-52.52	B- 9.10	C-13.13	D-1.1	E- 1.19	1
25	A-52.52	B- 9.13	C- 3.3	D-1.4	E- 1.19	1
26	A-52.52	B-10.13	C-13.13	D-1.1	E- 3.3	1
Total						26

35 *Bk* 1950

Karyotype	Chromosome constitution					Freq.
1	A- 1.1	B-12.12	C-3.3	D-1.1	E- 3.3	1
2	A- 1.3	B- 2.2	C-3.3	D-1.1	E- 3.3	1
3	A- 1.3	B- 3.3	C-3.3	D-1.1	E- 3.10	1
4	A- 1.18	B- 3.12	C-3.3	D-1.1	E- 3.3	1
5	A- 1.24	B- 2.3	C-3.6	D-1.3	E- 3.3	1
6	A- 1.38	B- 3.3	C-3.3	D-1.1	E-10.10	1
7	A- 1.65	B- 3.12	C-3.13	D-1.1	E- 3.3	1
8	A-18.39	B- 2.3	C-3.3	D-1.1	E- 3.3	1
9	A-24.60	B- 3.3	C-3.3	D-1.1	E-10.10	1
10	A-38.38	B- 3.3	C-3.3	D-1.1	E- 3.10	1
11	A-65.65	B- 2.2	C-3.3	D-1.1	E-10.10	1
12	A-71.71	B-13.13	C-6.6	D-1.1	E- 3.3	1
13	A-72.73	B- 3.12	C-3.3	D-1.1	E- 3.10	1
Total						13

38 *Kt* 1952

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	5	2	7	6	2	1	12	1	10
	3	4	3	2	9	6			10	2
	53	3	13	3	10	2				
					11	1				
					12	1				
Total		12		12		12		12		12

39 *An* 1952

Karyotype	Chromosome constitution					Freq.
1	A– 1.1	B–2.3	C–10.10	D–1.1	E– 9.9	2
2	A– 1.1	B–2.3	C–10.10	D–1.1	E– 9.10	1
3	A– 1.1	B–2.3	C–10.10	D–1.1	E–10.10	1
4	A– 1.1	B–3.3	C–10.10	D–1.1	E– 1.1	1
5	A– 1.1	B–3.3	C–10.10	D–1.1	E– 3.9	1
6	A– 1.38	B–2.2	C–10.10	D–1.1	E– 9.9	1
7	A–38.38	B–2.2	C– 6.10	D–1.1	E– 1.10	1
8	A–38.38	B–2.2	C–10.10	D–1.1	E– 1.1	1
9	A–38.38	B–2.2	C–10.10	D–1.1	E– 1.3	3
10	A–38.38	B–2.2	C–10.10	D–1.1	E– 1.9	1
11	A–38.38	B–2.2	C–10.10	D–1.1	E– 9.9	2
12	A–38.38	B–2.2	C–10.10	D–1.1	E– 9.10	2
13	A–38.38	B–2.2	C–10.10	D–1.1	E– 1.10	1
14	A–38.38	B–2.3	C– 6.10	D–1.1	E– 1.1	1
15	A–38.38	B–2.3	C– 6.10	D–1.1	E– 1.9	1
16	A–38.38	B–2.3	C–10.10	D–1.1	E– 1.9	1
17	A–38.38	B–2.3	C–10.10	D–1.1	E– 9.9	2
18	A–38.38	B–2.3	C–10.10	D–1.1	E– 9.10	1
19	A–38.38	B–2.3	C–10.10	D–1.1	E–11.11	1
Total						25

40 *Ok* 1954

Karyotype	Chromosome constitution					Freq.
1	A– 1.1	B– 1.10	C–10.10	D–1.3	E– 1.11	1
2	A– 1.38	B– 2.2	C– 6.6	D–1.3	E–19.19	1
3	A– 1.38	B– 2.2	C– 6.10	D–1.1	E–14.14	1
4	A– 1.38	B– 2.2	C–10.10	D–1.1	E– 1.11	1
5	A– 1.38	B– 2.2	C–10.12	D–1.1	E– 1.11	1
6	A– 1.38	B– 2.6	C– 6.6	D–1.1	E– 1.11	1
7	A– 1.38	B– 2.9	C– 6.6	D–1.1	E–19.19	1
8	A– 1.38	B– 2.9	C–10.10	D–1.1	E– 1.19	1
9	A– 1.38	B–10.10	C–10.10	D–1.1	E–10.11	1
10	A– 4.38	B– 2.2	C– 6.6	D–1.1	E–19.19	1
11	A–25.38	B– 2.9	C– 6.6	D–1.1	E–19.19	1
12	A–38.38	B– 1.1	C–10.10	D–1.3	E– 1.11	1
13	A–38.38	B– 2.2	C– 6.11	D–1.1	E–19.19	1
14	A–38.38	B– 2.9	C– 6.6	D–1.1	E– 3.19	1
15	A–38.38	B– 2.9	C– 6.6	D–1.1	E– 6.19	1
16	A–38.38	B– 2.9	C– 6.6	D–1.1	E–19.19	1
17	A–38.38	B– 2.9	C– 6.10	D–1.1	E–11.11	1
18	A–38.38	B– 3.9	C– 6.6	D–1.1	E– 1.11	1
19	A–51.38	B– 2.9	C– 1.11	D–1.1	E–19.19	1
20	A–51.38	B– 2.18	C– 6.6	D–2.2	E–19.19	1
Total						20

41 *Eg* 1954

Karyotype	Chromosome constitution					Freq.
1	A– 1.38	B–2.2	C–6.6	D–1.1	E–10.10	1
2	A– 1.38	B–2.2	C–6.6	D–1.1	E–11.11	2
3	A– 1.38	B–2.2	C–6.10	D–1.1	E–11.11	1
4	A– 1.38	B–2.3	C–6.6	D–1.1	E– 2.3	1
5	A– 1.38	B–2.3	C–6.6	D–1.1	E– 3.11	1
6	A– 1.38	B–3.3	C–6.17	D–1.1	E– 3.3	1
7	A–38.38	B–1.3	C–6.17	D–1.1	E–11.11	1
8	A–38.38	B–2.2	C–6.6	D–1.1	E– 3.11	1
9	A–38.38	B–2.2	C–6.6	D–1.1	E–11.11	1
10	A–38.38	B–2.3	C–6.6	D–1.1	E–10.10	1
11	A–38.38	B–2.3	C–6.6	D–1.1	E–11.11	1
12	A–38.38	B–3.14	C–6.6	D–1.1	E– 1.6	1
13	A–38.38	B–3.14	C–6.6	D–1.1	E– 3.3	1
Total						14

42 *On* 1951

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	20	2	9	6	20	1	20	10	20
			3	11						
Total		20		20		20		20		20

43 *Ke* 1961

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	14	2	11	6	14	1	14	10	14
			3	2						
			13	1						
Total		14		14		14		14		14

44 *Sn* 1951

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	6	2	8	6	8	1	10	17	1
	18	1	3	2	10	2			10	9
	54	3								
Total		10		10		10		10		10

45 *Kb* 1951

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	27	1	3	6	27	1	34	17	6
	18	7	2	9	10	7			10	8
			3	22					9	20
Total		34		34		34		34		34

46 *Yc* 1952

Karyotype	Chromosome constitution					Freq.
1	A-1.1	B-2.2	C- 6.6	D-1.1	E-10.10	10
2	A-1.1	B-2.2	C- 6.10	D-1.1	E-10.10	1
3	A-1.1	B-2.2	C-10.10	D-1.1	E-10.10	1
4	A-1.1	B-2.3	C- 6.6	D-1.1	E-10.10	1
Total						13

47 *Ow* 1952

Karyotype	Chromosome constitution					Freq.
1	A-1.1	B-2′.2′*	C-10.10	D-1.1	E- 9.9	1
2	A-1.1	B-2′.2′	C-10 10	D-1.1	E-10.10	5
3	A-1.1	B-2′.13	C-10.10	D-1.1	E-10.10	1
Total						7

* Type 2 and 3 of chromosome B found in *Ow*, *Od (1)*, *Od (2)*, *Kk*, *Nr*, *Ku* and *Fd* population differ in structure of their differential segments from those found in other populations. The difference, however, was so slight as to be impossible to identify clearly. Therefore, the former are designated as 2′ and 3′ in the appendix tables of this paper.

48 *Rf* 1952

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	1	100	1	100	6	7	1	100	9	100
					10	93				
Total		100		100		100		100		100

49 *Od (1)* 1951

Karyotype	Chromosome constitution					Frqe.
1	A-1.1	B-2′.2′	C- 6.6	D-1.1	E-9.9	1
2	A-1.1	B-2′.3′	C- 6.10	D-1.1	E-9.9	1
3	A-1.1	B-2′.3′	C-10.10	D-1.1	E-9.9	1
4	A-1.1	B-2′.3′	C-10.10	D-1.1	E-9.17	1
5	A-1.1	B-3′.3′	C- 6 10	D-1.1	E-9.9	1
6	A-1.1	B-3′.3′	C-10.10	D-1.1	E-9.9	7
7	A-1.18	B-3′.3′	C-10.10	D-1.1	E-9.9	1
Total						13

50 *Od* (2) 1951

Karyotype	Chromosome constitution					Freq.
1	A-1.1	B-2′.2′	C-10.10	D-1.1	E-17.17	1
2	A-1.1	B-2′.3′	C-10.10	D-1.1	E- 9.9	2
3	A-1.1	B-2′.3	C-10.10	D-1.1	E- 9.17	1
4	A-1.1	B-3 .3′	C-10.10	D-1.1	E- 9.9	4
5	A-1.1	B-3′.3′	C-10.10	D-1.1	E- 9.17	2
6	A-1.1	B-3′.3′	C-10.10	D-1.1	E-17.17	1
7	A-1.1	B-3′.16	C-10.10	D-1.1	E- 9.9	1
8	A-1.18	B-3′.16	C-10.10	D-1.1	E-17.17	1
Total						13

51 *Kk* 1947

Chromosome	A		B		C		D		E	
	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.	Type	Freq.
	18	48	15	19	6	9	1	48	9	48
			16	27	10	23				
			2′	2	11	15				
					12	1				
Total		48		48		48		48		48

52 *Mm* 1952, 1954

Karyotype	Chromosome constitution					Freq.
1	A- 1.1	B-15.16	C-10.10	D-1.1	E-9.9	1
2	A- 1.1	B-15.16	C-10.6	D-1.1	E-9.9	1
3	A- 1.1	B-16.16	C-10.6	D-1.1	E-9.9	1
4	A- 1.1	B-16.16	C-10.10	D-1.1	E-9.9	2
5	A- 1.1	B-16.16	C-10.11	D-1.1	E-9.9	1
6	A- 1.1	B-16.16	C-12.12	D-1.1	E-9.9	1
7	A- 1.18	B-15.15	C-10.6	D-1.1	E-9.9	1
8	A- 1.18	B-15.15	C-10.10	D-1.1	E-9.9	1
9	A- 1.18	B-15.16	C- 6.11	D-1.1	E-9.9	3
10	A- 1.18	B-16.16	C- 6.6	D-1.1	E-9.9	1
11	A- 1.18	B-16.16	C- 6.6	D-1.1	E-9.17	1
12	A- 1.18	B-16.16	C- 6.10	D-1.1	E-9.9	1
13	A- 1.18	B-16.16	C- 6.12	D-1.1	E-9.9	1
14	A- 1.18	B-16.16	C-10.10	D-1.1	E-9.9	1
15	A- 1.18	B-16.16	C-12.12	D-1.1	E-9.9	1
16	A-18.18	B-15.16	C-10.11	D-1.1	E-9.17	1
17	A-18.18	B-16.16	C- 6.6	D-1.1	E-9.9	1
Total						20

53 *Nr* 1952

Karyotype	Chromosome constitution					Freq.
1	A– 1.1	B–2′.2′	C– 6.10	D–1.1	E–9.9	1
2	A– 1.1	B–2′.2′	C–10.10	D–1.1	E–9.9	1
3	A– 1.1	B–2′.2′	C–11.12	D–1.1	E–9.9	1
4	A– 1.18	B–2′.2′	C– 6.10	D–1.1	E–9.9	1
5	A– 1.18	B–2′.2′	C–10.11	D–1.1	E–9.9	1
6	A– 1.18	B–2′.3′	C– 6.10	D–1.1	E–9.9	1
7	A–18.18	B–2′.2′	C– 6.10	D–1.1	E–9.9	1
Total						7

54 *Ku* 1952

Karyotype	Chromosome constitution					Freq.
1	A–1.1	B–2′.2′	C– 6.6	D–1.1	E–9.9	6
2	A–1.1	B–2′.2′	C– 6.10	D–1.1	E–9.9	4
3	A–1.1	B–2′.2′	C– 6.12	D–1.1	E–9.9	1
4	A–1.1	B–2′.2′	C–10.10	D–1.1	E–9.9	4
5	A–1.1	B–2′.2′	C–10.11	D–1.1	E–9.9	1
6	A–1.1	B–2′.3′	C– 6.6	D–1.1	E–9.9	1
Total						17

55 *Fd* 1951

Karyotype	Chromosome constitution					Freq.
1	A–1.1	B–2′.2′	C–10.10	D–1.1	E–9.9	7
2	A–1.1	B–2′.15	C–10.10	D–1.1	E–9.9	1
3	A–1.1	B–15.15	C–10.10	D–1.1	E–9.9	3
Total						11