MIURA; Akita, Prov. Ugo, Aug., 1902, E. TOKUBUCHI.

All the species of host plants in this study were identified by Drs. T. MAKINO and M. TATEWAKI, to whom the writers express their hearty thanks.

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The Chromosome Numbers in Cultivated and Wild Angiosperms

By

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METHODS

In the material plants the meiotic chromosomes were observed in pollen mother cells, and the somatic ones in root tip cells. The pollen mother cells were fixed with Carnoy's fluid excepting *Sorghum saccharatum* in which they were observed in Belling's aceto-carmine. The root tips of *Quamoclit* species other than *Q. Mina* were taken from seeds germinated on wet filter paper. In *Q. Mina* and all species of the other genera the same were fixed from pots with soil.

For fixing root tips Flemming's median solution was used for all materials except *Anemone japonica* for which Bouin's fluid was employed. All fixed materials were imbedded in paraffin, cut 15–17 μ thick, and stained with Heidenhain's iron-alum-haematoxylin.

All figures are drawn by the aid of ABBE'S camera using Leitz 1/12 oil immersion and Zeiss × 15 compensation ocular. Magnification is × 2500.

RESULTS OF OBSERVATION

	2n		2n
Quamoclit pennata BOJER.	30 (Fig. 1).	*Quamoclit coccinea* Moench. *var.* *hederifolia* HOUSE. (with 3 parted leaves)	28 (Fig. 4).
Q. *angulata* BOJER.	28 (Fig. 2).	*Q.* *Mina* DON.	28 (Fig. 5).
Q. *coccinea* Moench. *var. hederifolia* HOUSE. (with 5 parted leaves)	28 (Fig. 3).	*Q.* *Sloteri* HOUSE.	58 (Fig. 6).

The haploid number of *Q. pennata* was reported to be 15 by KANO (1929).[1] I observed in the same species 30 rod shaped somatic chromosomes of about the same size. Kano reported that the haploid number in *Q. angulata* is 15. My count in root materials of the same species is 28. According to KANO, *Q. Sloteri* has 30 haploid and 60 diploid chromosomes. I observed in root tip cells of this species 58 curved or rod shaped chromosomes of not equal size. In two varieties of *Q. coccinea* and in *Q. Mina* I counted 28 rod shaped chromosomes in root materials.

It is said by horticulturists that *Q. Sloteri* is a hybrid species formed between *Q. pennata* and *Q. coccinea*. *Q. angulata* may taxonomically be comprised in *Q. coccinea*, or it is closely related to the latter. The somatic number of *Q. Sloteri* stated above is the sum of those of *Q. pennata* (2n=30) and *Q. angulata* (2n=28) or any variety of *Q. coccinea* (2n=28). *Q. Sloteri* may have possibly been formed by chromosome doubling which occurred in F_1 hybrid formed between *Q. pennata* and *Q. angulata* or either one or the other variety of *Q. coccinea*. The similar cases were reported by investigators, for instance, in *Nicotiana* (CLAUSEN and GOODSPEED, 1925),[2] and *Aegilotricum* (TSCHERMAK and BLEIER, 1926).[3] The cytological studies of F_1 plants artificially raised between *Q. pennata* and *Q. angulata* are in progress at present. The results will be reported in later papers.

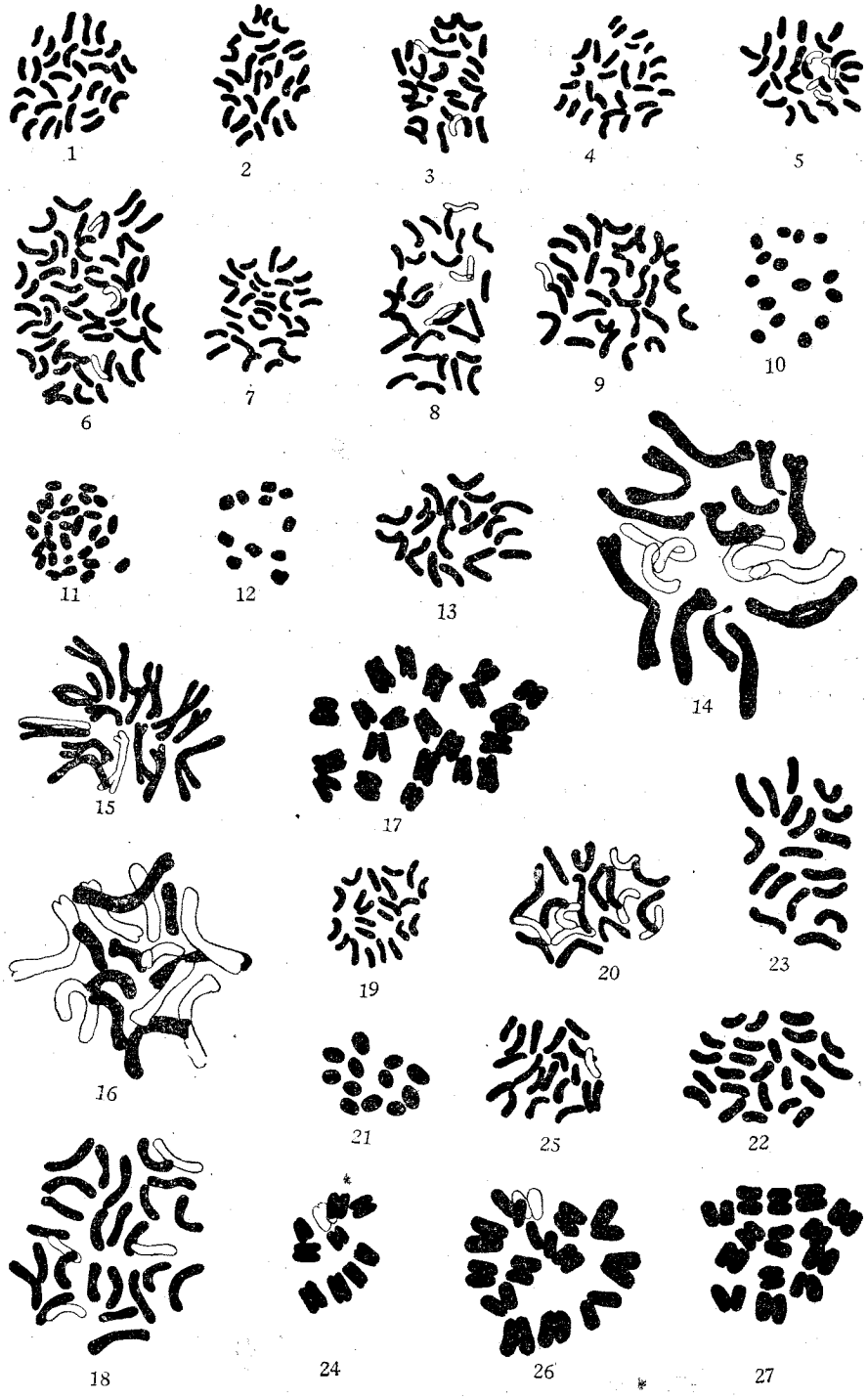
	2n		2n
Ipomoea Nil ROTH.	30 (Fig. 7).	*Ipomoea rubro-caerulea* HOOK.	30 (Fig. 9).
I. Nil ROTH. *var. limbata*, BAILEY.	30 (Fig. 8).	*I. setosa* KER.	15 (Fig. 10).

OHGA (1916)[4] reported the haploid number of *Ipomoea Nil* to be 12–14. The number reported in the same species by YASUI (1928),[5] KANO (1929),[6] and NAGAO (1928),[7] is 15 in haploid or 30 in diploid. I observed in this species 30 rod shaped somatic chromosomes of about the same size.

I also counted 30 somatic chromosomes in *I. rubro-caerulea* and 15 bivalent ones at heterotypic metaphase in *I. setosa*.

	2n
Calonyction aculeatum HOUSE.	30 (Fig. 11).

1) KANO, T.: Proc. crop Sci. Soc. Jap. No. 4. 1929.
2) CLAUSEN, R. E. and GOODSPEED, T. H.: Genetics, Vol. 10. 1925.
3) TSCHERMAK, E. and BLEIER, H.: Ber. d. D. Bot. Gesell. Bd. 44. 1926.
4) Cited from TISCHLER, G.: Tabulae Biologicae, Bd. IV. 1927.
5) YASUI, K.: Bot. Mag. Tokyo. Vol. 42. 1928.
6) KANO, T.: Proc. crop Sci. Soc. Jap. No. 4. 1929.
7) NAGAO, M.: Bot. Mag. Tokyo. Vol. 42. 1928.



Explanation in text

The chromosome number of *C. aculeatum* was reported by KANO (1929)[1] as 30 in diploid. My result coincides with this.

	n	2n
Calystegia hederacea WALL.	11 (Fig. 12).	22 (Fig. 13).

I counted 11 chromosomes of similar size in the homotypic metaphase. In root tip cells 22 curved or rod shaped chromosomes were observed.

	2n		2n
Anemone japonica SIEB. et ZUCC.	16 (Fig. 14).	*Anemone coronaria* L.	16 (Fig. 15).
		A. cernua THUMB.	16 (Fig. 16).

TAKAMINE (1916)[2] reported the haploid number of *A. japonica* to be 8, which corresponds to my counting in the same species. In other two species also the same number was observed.

	n		2n
Festuca elatior L.	21 (Fig. 17).	*Festuca ovina* L.	28 (Fig. 18).

According to LITARDIÈRE (1923)[3] the chromosome number of *Festuca elatior* and *F. ovina* is 14 each in haploid. LEVITSKY and KUSMINA (1927)[4] reported that the somatic number of *F. elatior* and *F. ovina* is 42 and 28 respectively. I found 21 bivalent chromosomes at the heterotypic metaphase in *F. elatior* and 28 somatic ones in *F. ovina*.

	2n
Melothria japonica Maxim.	22 (Fig. 19).

22 very small rod shaped chromosomes of similar size were observed in root materials.

	2n
Passiflora caerulea L.	18 (Fig. 20).

18 slender somatic chromosomes of nearly equal size were counted.

	n
Physalis angulata L.	12 (Fig. 21).

12 nearly spherical chromosomes of similar size were observed in the heterotypic metaphae.

	2n
Primula Sieboldi MORREN.	24 (Fig. 22).
Primula modesta BISS. et MOORE.	18 (Fig. 23).

According to IINUMA (1926)[5] the somatic number in *Primula*

1) KANO, T.: Proc. crop Sci. Soc. Jap. No. 4. 1929.
2) TAKAMINE, N.: Bot. Mag. Tokyo. Vol. 30. 1916.
3) Cited from TISCHLER, G.: Tabulae Biologicae, Bd. IV. 1927.
4) LEVISTKY, G. A. and Kusmina, N. H.: Bull. of. Apl. Bot. of Gen. and Pl. Br. Vol. 17. No. 3. Leningrad.
5) IINUMA, M.: Sci. Rep. Tohoku. Imp. Univ. Vol. 1. 1926.

Sieboldi is 24 or 36 (triploid forms), and the haploid one of *P. modesta* 9. My count in root tip cells of *P. Sieboldi* is 24 and that in *P. modesta* 18.

	n	2n
Sorghum saccharatum PERS.	10 (Fig. 24).	20 (Fig. 25).

I observed 10 bivalent chromosomes of nearly equal size in heterotypic metaphase. 20 rod shaped chromosomes were counted in somatic cells.

	n
Bromus secalinus L.	14 (Fig. 26).

The haploid number was determined at the heterotypic metaphase as 14.

	n
Arrhenatherum elatius MERT. and KOCH.	14 (Fig. 27).

14 chromosomes were counted in the heterotypic metaphase.

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Lycoris 屬植物ノ細胞學的研究 (豫報)

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SUKEO INARIYAMA : Cytological Studies in the Genus *Lycoris* (Preliminary Notes)

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緒　　言

Lycoris 屬植物中本邦ニ産スルモノニ、きつねのかみそり (*Lycoris sanguinea* MAXIM.)、しろばなひがんばな (*L. albiflora* KOIDZ.)、しようきらん (*L. aurea* HERB.)、ひがんばな (*L. radiata* HERB.) 及ビなつずゐせん (*L. squamigera* MAXIM.) ノ五種ガアル。此等五種中自然ノ狀態デ稔性ヲ有スルモノハ、唯きつねのかみそりガ一種アルノミデ、他ノ四種ハ皆不稔性デアル。

Lycoris 屬ノ稔性及ビ不稔性ニ關スル生理學的方面ノ研究ハ德川氏[1]、德川及ビ江本兩氏[2] ニ依ツテナサレテイル。併シ細胞學的方面ノ研究ハ筆者ガ續行スル事トナ

1) 德川義親： 彼岸花ノ種子ニ就テ、植雜、38, 1925, 142.
2) 德川義親及ビ江本義數： Lycoris 屬植物ノ種子形成ニ就テ、植雜、44, 1930, 520.