TABLE II

Polarographic ortho shift (Δ_0) for the reduction of azo group

Sl. No.	R	Δo,V
1.	Chloro	0·030
2.	Bromo	0·020
3.	Methyl	0·060
4.	Methoxy	0·060

gives the values of polarographic ortho shift (Δ_0) for methoxy, methyl, chloro and bromo substitutents. It is clear from the positive value of Δ_0, that ortho substituted derivatives undergo reduction more easily in comparison to *p*-derivatives.

In the polarographic reduction of azomethine group, however, H and 4-Br substituents found to show deviation from the linear plot of $E_{1/2}$ *vs.* Hammett substituent constant (σ). The deviation of these substituents from the regression line can be explained. The substituents are remote from the reduction site (— C = NH) and hence the change in half wave potential was not systematic (Table I). The value of specific reaction constant was found to be 0·09 V, which is in good agreement with the values for similar systems.[6,7]

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FLAVONOL GLYCOSIDES FROM THE LEAVES OF *RHUS PARVIFLORA*

Rhus parviflora Roxb. (family : Anacardiaceae), an indigenous medicinal plant[1], was examined earlier by Bhakuni *et al.*[2], who reported the presence of isorhamnetin-3-arabinoside and quercetin. Continuing our search for new myricetin glycosides[3] and in view of the earlier report of myricetin in *Rhus* species[4] we have examined the leaves of *R. parviflora* : our isolation of three flavonols (both free and as 3-O-rhamnosides) and two aromatic acids is given below.

The hot aqueous alcoholic concentrate of shade-dried leaves of *R. parviflora*, collected from Garhwal, U.P., was partitioned using petrol, ether and ethyl acetate. The flavonols and carboxylic acids of the ether layer separated by means of $NaHCO_3$ were purified by preparative TLC on silicic acid. The three flavonols were identified as myricetin, quercetin and kaempferol by their R_f, UV and IR spectra as well as PMR and MS of their acetates ; the identity of the compounds was also confirmed by co-TLC with authentic samples. The acids were found to be *p*-coumaric acid and caffeic acid by m.p., UV fluorescence and preparing their acetates ; co-TLC with authentic samples finally established their identity.

The flavonol glycosides from the EtOAc concentrate was separated first by preparative TLC (SiO_2, $CHCl_3$: MeOH = 1 : 1), followed by preparative PC (Whatman No. 3 paper, water). The three purified components were subjected to various colour reactions, UV fluorescence, acid hydrolysis and characterisation of hydrolytic products. All of them were found to be 3-O-glycosides and the single sugar was rhamnose. The aglycones were identified as myricetin, quercetin and kaempferol. We could not detect any isorhamnetin in spite of detailed comparative study using authentic sample.

The identity of three glycosides as myricetin-3-O-rhamnoside (myricitrin ; major), quercetin-3-O-rhamnoside (quercitrin) and kaempferol-3-O-rhamnoside (afzelin) by their R_f, m.p., λ_{max} and ν_{max} was also confirmed by direct comparison with authentic samples isolated from *Madhuca indica*[5], *Soymide febrifuga*[6] and *Tilia cordata*[7] respectively.

Our finding of the occurrence of myricetin glycoside as the major flavonoid component in *R. parviflora* is quite justifiable from the point of view of the flavonoid pattern[4] of other *Rhus* species. *R. parviflora* appears to be a good source for myricitrin (yield, *ca.* 1%).

The presence of myricetin (5′-hydroxy quercetin ; hydroxylation) and kaempferol (3′-deoxy quercetin, reduction) in place of isorhamnetin (3′-methyl quercetin, O-methylation) reveals a minor deviation in the later stage of biosynthesis of flavonoids and may be influenced by ecological variation.

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NUCLEAR PHENOTYPE OF *SOLANUM INTEGRIFOLIUM*

CYTOLOGICAL information collected on the nuclear phenotypes (form and structure of chromosomes at pachytene) of parental genomes and the pairing behaviour of chromosomesin the F_1 heterozygotes have been profitably used in the past by different workers in understanding species relationships and evolutionary trends in related taxa. Among the spinous Solanums, many of which are of economic importance, only a few have been studied cytologically to reveal the structure of their pachytene chromosomes[1-3] and their inter-relationships remain uncertain[2,3]. Since furthering our knowledge in this direction is a prerequisite to their better utilization through cytogenetic manipulation, we have been studying the pachytene chromosomes of some members, and their hybrid derivatives. Our results on the chromosome complement of *Solanum integrifolium* Poir. ($2n = 24$) are reported in this note.

Following the customary techniques of fixing the flower buds in 1:3 acetic-alcohol and smearing in acetocarmine, observations were made on PMCs at pachytene. All the 12 bivalents could be traced from end to end in some nuclei and their morphological features ascertained from an analysis of the entire genome. The chromosomes have been identified individually as Ch. 1 to Ch. 12 on the basis of their lengths, and their diagnostic criteria established.

The salient features of the nuclear phenotype in *S. integrifolium* are:

The chromosomes are differentiated into hetero- and euchromatic regions to varying degrees on different chromosomes; the total length varies from about 35 microns for chromosome 1 to about 13 microns for chromosome 12; most of the chromosomes have their centromeres located submedianly with arm ratios varying around 1·4; there is a single nucleolus organising bivalent which is highly eccentric with an arm ratio of 6·3 (sub-terminal), and occupies the tenth position in the complement; the nucleolar body is located terminally on the short arm which is satellited. The diagnostic criteria that enable their identification are: (*a*) Total length; (*b*) Arm ratio, reflecting the position of the centromere, and more importantly (*c*) The extent to which the chromosomes are differentiated into hetero- and euchromatic regions in each of their arms (Fig. 1).

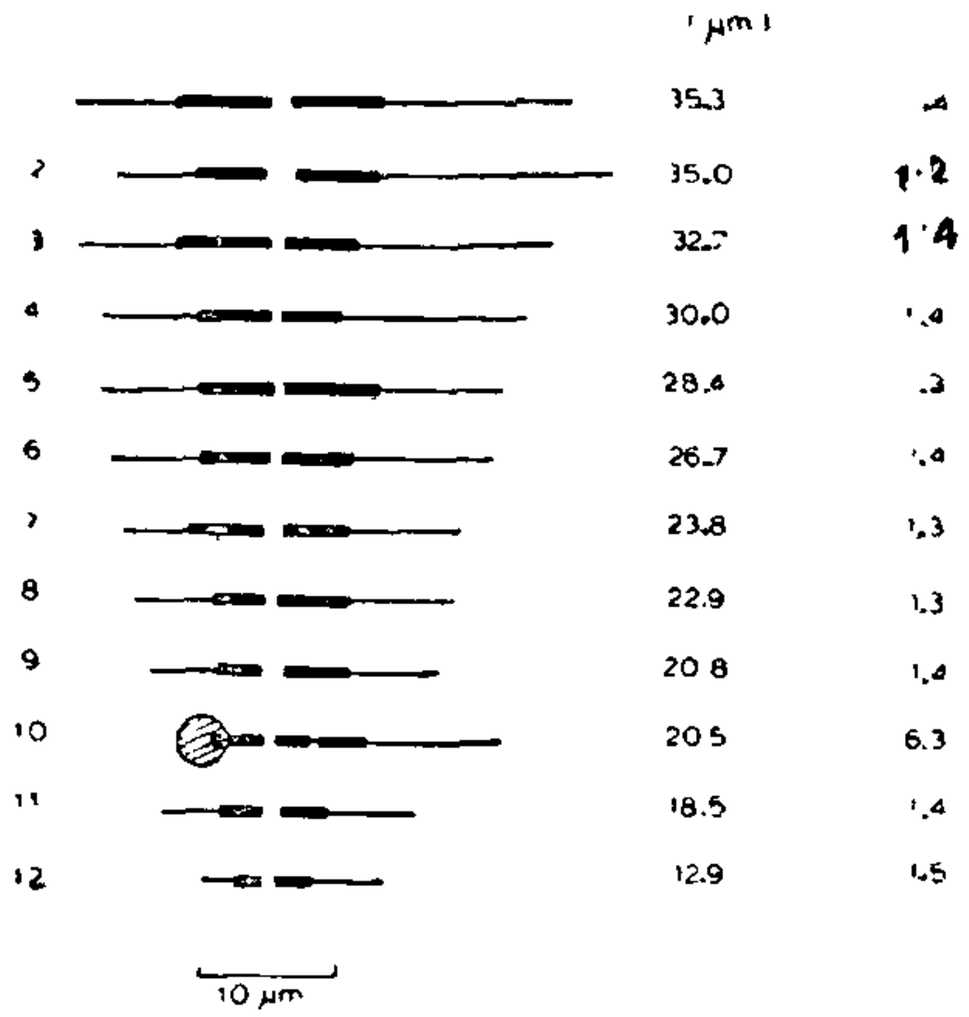

FIG. 1. Idiogram giving the morphological details of the pachytene chromosomes of *Solanum integrifolium*.

The evolutionary significance of these features and the cytological affinities of S. *integrifolium* to other species will be considered elsewhere with similar data for other taxa of the group and the F_1 hybrids involving this species.

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