extraction with ether give on an average 38 per cent. of yellowish coloured oil. The oil, besides its use in medicine, can very well be used to lubricate delicate machinery. On finding that these types of trees are abundant on this side and the oil available would also be abundant, and in view of the above uses, it was thought advisable to carry out the chemical investigation of the same oil.

The oil has a faint pleasant odour and shows the following characteristics:—

Refractive index at 40° C. = 1·4624.
Acid value (in terms of oleic acid) = 2·61.
Saponification value = 189·3.
Iodine value (Wij's method) = 79·25.
R.M. value = 0·57.
P. value = 0·26.
Acetyl value = 23·1.
Unsaponifiable matter = 1·095.

The examination of the component fatty acids of the oil is in progress.

Industrial Chemist's Laboratory,
Baroda, C. B. PATEL.
September 4, 1943.

1. *The Flora of the Presidency of Bombay*, **1**, Part 2, 283; and *Watt's Dictionary Econ. Prod.*, **5**, 275.

VARIATION IN THE MEASURABLE CHARACTERS OF COTTON FIBRES: A NOTE ON THE VARIATION BETWEEN FIRST AND SECOND FLUSH OF BOLLS

IN the Coimbatore tract the normal pickings of cotton end by April. If, however, showers of rain fall in time a second flush of flowers is produced which gives a supplementary picking somewhere in June. It was thought interesting to compare the fibre properties of the pickings made from the two flushes. Seven strains of *G. hirsutum* which were grown at the Cotton Breeding Station, Coimbatore, were utilised for this enquiry. It should be mentioned that in the normal pickings, the quantity of good *kapas* was a large percentage of the total. In the summer picking, however, it formed about a fifth or a fourth of the whole. For the study of the properties only the good *kapas* from the bulk was utilised. The results obtained are given in Table I.

TABLE I
Results (Mean of 7 Values)

Property	Normal	Summer	Difference Normal–Summer
Seed weight (mgm.)	107·4	99·3	+ 8·1
Lint weight (mgm.)	63·1	45·1	+18·0
Ginning percentage	37·0	31·2	+ 5·8
Mean length (inch)	0·924	0·844	+ 0·080
Fibre weight per cm. (10^{-6} gm.)	1·483	1·323	+ 0·160
Standard fibre weight (10^{-6} gm.)	1·753	1·570	+ 0·183
No. of fibres per seed (1000's)	18·39	16·40	+ 1·99
Mature fibres %	56·29	57·43	− 1·14
Immature fibres %	16·00	17·59	− 1·59

It will be seen that the seed weight is higher for the normal picking by 8·1 mgm. on the average which is highly significant. The lint weight and ginning percentage are similarly higher by 18·0 mgm. and 5·8 per cent. respectively. The mean fibre length and the number of fibres per seed are significantly higher for the normal picking by 0·080" and 1,990 respectively. The fibre weight per cm. as well as the standard fibre weight are similarly higher by 0·160 and 0·183 units respectively. The difference in the maturity, however, is not significant.

It will be seen that on the whole the summer picking exhibits considerable deterioration, excepting in fineness and maturity, as compared with the normal picking. This result, it will be recalled, is for the good *kapas* only which forms about a fourth or fifth of the whole picking. Even this good portion shows such a deterioration; the quality of the whole picking should be considerably worse indeed.

The cause for the deterioration noted above appears to be, besides the later age of the plant, the severe attack of insect pests. The reduction in the number of fibres per seed and the standard fibre weight appears to be due probably to the higher temperature under which the fibres are produced, as is shown in another place.*

Cotton Breeding Station,
Coimbatore, R. L. N. IYENGAR.
September 1, 1943.

* Iyengar, R. L. N., *I.C.C.C.*, Second Conference, *Report*, 1941, 145-46.

A CASE OF CHLOROPHYLL DEFICIENCY IN SAFFLOWER (*CARTHAMUS TINCTORIUS* L.)

IN the year 1938-39, in the progeny of a plant of I.P. 7 Safflower, 19 plants, out of a total of 98, were observed in which, although the cotyledonary leaves were normal green, the true leaves were chlorophyll-deficient. The chlorophyll deficiency increased gradually from the first true leaf up to the third or fourth leaf. Thereafter the next few leaves were practically white and very much reduced in size. At this stage these plants died.

The ratio of normal green to chlorophyll-deficient plants, as could be seen from the frequencies (79 : 19), was 3 : 1, suggesting that the parent-plant was heterozygous for the gene pair governing chlorophyll deficiency; this heterozygous condition may have resulted from the mutation of one of the dominant alleles of the pair responsible for the normal green condition, to the recessive state.

In order to test the validity of this assumption, the seeds of six normal green plants, picked at random, were harvested and sown separately in the following year (1939-40). Of the six progenies five segregated in a 3 normal green : 1 chlorophyll-deficient plants and one bred true to the normal green condition. Theoretically, four progenies should have segregated and two bred true to green on the basis that the chlorophyll-deficient condition is a simple recessive to the green. The

frrquencies for the individual aggregating cultures are given below:—

TABLE I

Cult. No.	Frequencies: Normal green	Frequencies: Chlorophyll deficient	Total	Dev. / S.E.
1	65 (60·75)*	16 (20·25)	81	1·09
2	66 (61·50)	16 (20·50)	82	1·15
3	Bred true for the normal green condition			
4	49 (43·50)	9 (14·50)	58	1·65
5	48 (45·00)	12 (15·00)	60	0·89
6	44 (40·50)	10 (13·50)	54	1·10
Total	272 (251·25)	63 (83·75)	335	2·62

* The figures in brackets represent expected frequencies.

Although in each case the fit to a 3 : 1 ratio is good, the fit for the total of all the segregating cultures is bad. This is due to the fact that there is a deficiency in the recessive class in all the segregating families and this deficiency has an accumulated effect in the total.

In order to find out whether it was merely due to chance that all the segregating families were deficient in the recessive class or whether it was due to some genetical or other causes, sowings were repeated with a known number of seeds from each of the above cultures. The data which are reproduced here show that the deficiency of the recessive class in all the segregating families in the initial sowing was merely due to chance.

TABLE II

Cult. No.	Frequencies: Normal green	Frequencies: Chlorophyll dificient	Total	Dev. / S.E.
1	66 (55·50)	8 (18·50)	74	2·82
2	41 (39·00)	11 (13·00)	52	0·64
4	37 (34·50)	9 (11·50)	46	0·87
5	29 (30·00)	11 (10·00)	40	0·36
6	35 (36·00)	13 (12·00)	48	0·33

These results, therefore, indicate that this type of chlorophyll deficiency in safflower is inherited on a monofactorial basis, the chlorophyll-deficient condition being recessive. Further, this condition appears to have arisen as a result of gene mutation and is perpetuated through plants heterozygous for this character.

Imperial Agricultural Research Institute, New Delhi, R. B. DESHPANDE.
August 17, 1943.

FURTHER CHROMOSOME NUMBERS IN THE CÆSALPINIACEÆ

IN this note which is a continuation on the chromosome numbers of Cæsalpiniaceæ,[4,5] the author records the chromosome numbers of the following species as counted during meiosis in pollen mother-cells:—

Amherstia nobilis Wall..
Saraca indica Linn.
Brownea sp. (usually called *B. Hybrida* in the gardens) } $n = 12$

FIG. 1-4

FIG. 1. *Amherstia nobilis*, I metaphase. FIG. 2. The same, II metaphase. FIG. 3. *Brownea hybrida*, I metaphase. FIG. 4. *Saraca indica*, II metaphase.

This number agrees with that reported previously for the genus *Cæsalpinia*,[2,5,7] *Cersis canadensis*,[7] *Cassia fistula*,[8] *C. sophora*,[3] *C. alata*[7] and *C. tomentosa*.[1,6]

The material for this study was obtained from plants cultivated in the Royal Botanic Garden, Calcutta. The author is obliged to the authorities of this Garden for providing all facilities for collection, and to Dr. A. C. Joshi for his help.

Maharaja's College, Vizianagram, J. V. PANTULU.
September 1, 1943.

1. Hus, H., *Proc. Calif. Acad. Sci.*, 1904, III Ser., **2**, 329. 2. Jacob, K. T., *Ann. Bot., N.S.*, 1940, **4**, 201. 3. Kawakami, J., *Bot. Mag. Tokyo*, 1930, **44**, 319. 4. Pantulu, J. V., *Curr. Sci.*, 1940, **9**, 416. 5. —, *Ibid.*, 1942, **11**, 152. 6. Saxton, W. T., *Trans. S. Africa Phil. Soc.*, 1907, **18**, 1. 7. Senn, H. A., *Bibliog. Genet.*, 1938, **12**, 175. 8. Tischler, G., "*Allgemeine Pflanzenkaryologie*, Bd. 2, Abt. 1, Teil. 1, 1921-22.

BAICALEIN FROM THE SEEDS OF *OROXYLUM INDICUM* VENT.

DURING the investigation of the seed-oil of *O. indicum* Vent.,[1] one of us (C.R.M.) reported the isolation of a yellow crystalline substance (m.p. 274°) in a quantity which was too small for further investigation.

This work has been continued, and on careful examination of various extracts, we have obtained another yellow crystalline substance (m.p. 265-66°) from the alcohol, acetone and water extracts. Its carbon and hydrogen values, its specific colour reactions and the study of the properties of its demethylation, methylation and acetylation products, which agree closely with those recorded for them in literature,[2,3] indicate it to be a trihydroxy flavone, $C_{15}H_{10}O_5$, $[C_{15}H_7O_2(OH)_3]$, *viz.*, 5 : 6 : 7-trihydroxy flavone or 'Baicalein'. We have further confirmed our conclusion that this substance is baicalein by means of a mixed melting point determination with an authentic sample of baicalein kindly supplied by Prof. Keita Shibata.

Baicalein was isolated from the roots of *Scutellaria baicalensis* Georgi by Shibata, Iwata and Nakamura,[2] and was synthesised by