My best thanks are due to Dr. K. R. Krishnaswami for suggesting the problem and advice during the course of this investigation.

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[1] Tananæff, *Z. anal. Chem.*, 1935, 100, 394.

Estimation of Gold in Cyanide Solutions

SEVERAL methods are available for the routine control-assays of the gold content of cyanide solutions, but none of them are suited to rapid work.

The following procedure developed in this laboratory is simple and rapid.

A quantity of the cyanide solution containing 50–100 mg. of gold is diluted to 50–100 c.c. and 2–3 g. of thin zinc turnings added. Then 20 c.c. of H_2SO_4 (1 : 1) is slowly added in 5 c.c. portions at intervals of 5 minutes. After the reaction slows down 10 c.c. of H_2SO_4 (1 : 1) is again added and the solution boiled for half an hour to complete the precipitation of gold. The precipitate is washed thoroughly with water by decantation and then digested with 10 c.c. (1 : 2) HNO_3 on the water-bath. The residual gold is well washed, dried, annealed and weighed in the usual manner.

A set of representative results obtained by this method is given in the following table:—

Au taken mg.	Au found mg.	Error per cent.
130·12	130·20	+0·06
130·12	130·06	−0·4
78·00	78·04	+0·05
72·88	73·93	+0·07
50·12	50·09	−0·06

Sets of parallel determinations were carried out by the Chiddy Method observing all the precautions and the results obtained were in good agreement.

The method outlined above is simple and rapid, and sufficiently accurate for most purposes.

In conclusion, I wish to express my grateful thanks to Dr. K. R. Krishnaswami, D.SC., F.I.C., for his keen interest and constant encouragement during the course of this work and for much helpful criticism.

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Chromosome Numbers in Safflower (*Carthamus tinctorius* Linn.)

CHROMOSOME numbers in this species have been reported to be $2n = 20$ in Coimbatore types (Gregory)[1] and $2n = 24$ in Pusa type 24 (Patel and Narayana)[2] and Pusa types 1 and 27 (Gregory).[3]

In the present investigation Somatic Chromosomes on the metaphase plates were examined from the root tips of the following material.

(1) Cawnpore type 39.

(2) Cawnpore type 59.

(3) Local Selection (Central Provinces) No. 1.

(4) Local Selection (Central Provinces) No. 7.

(5) Local Selection (Central Provinces) No. 52.

Twenty-four chromosomes were observed without any exception. Variability within the individual chromosome sets with respect to the size, shape and attachment-constriction of the chromosomes is well marked (Figs. 1 and 2).

Meiotic chromosomes were examined from the permanent smear preparations. The material used in these preparations was the local mixture. Twelve bivalents were distinctly observed at 1 metaphase (Fig. 3).

The senior author is indebted to the Imperial Council of Agricultural Research for financing the Oil Seeds Research Scheme, Nagpur, where this work is being carried out.

FIG. 1

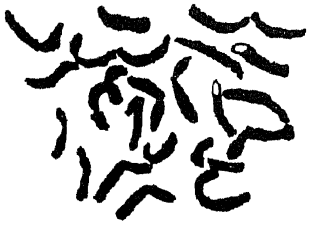

FIG. 2

FIG. 3

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December 8, 1939.

1 Gregory, P. J., *Proc. Ind. Acad. Sci.*, 1935, **1**, 763.
2 Patel, J. S., and Narayana, G. V., *Curr. Sci.*, 1935, **4**, 412.
3 Gregory, P. J., *ibid.*, 1935, **4**, 412.

A Preliminary Note on Interspecific Hybridization and Use of Colchicine in Cotton*

(1) Interspecific Hybridization between New World and Asiatic Cottons

The Interspecific Hybridization work on cotton being carried out at this Station has shown that:—

(*a*) The F_1 hybrids between New World ($n = 26$) and Asiatic ($n = 13$) cottons are possible if large-scale crossing is done. The hybrids are self-sterile as usual.

(*b*) The backcrossing of these F_1 hybrids to New World parents only has given stray success in boll setting on F_1's. Such bolls contain very few seeds and plants raised therefrom give varying degrees of fertility—ranging from sterility to complete fertility.

(*c*) The progeny of these first backcrosses show marked fertility in some cases, with New World plant characters predominating. They, however, possess a few genes from the Asiatic parents, and their behaviour for adaptability together with combination of economic characters under Surat conditions is being further studied.

(2) Experiments with Colchicine

(*a*) Trials were being made to induce doubling of chromosomes in sterile hybrids by various means, *viz.*, callus formation, chloroform treatment, etc., but all proved unsuccessful. At this stage of the work the discovery of colchicine as a potent weapon for inducing doubling of chromosomes was announced by Blakeslee and others. Experiments for the application of this alkaloid to cotton were therefore at once planned to find out the "threshold" value and were carried out in 1938–39 season. These showed that better results could be secured when germinating seeds were treated. Many plants were found affected with characteristic symptoms as described by Blakeslee, and results have been confirmed this year. Another method which has given success this year is the "drop method" of treating growing shoots of young seedlings, wherein it has been found that particular sectors are affected resulting in morphologically different branches possibly of polyploid nature.

(*b*) The characteristic symptoms of the affected plants and branches are:—

(1) Swollen cotyledonary stems, (2) Retardation of growth, (3) Broader leaf-lobes, (4) Prominent leaf veins, (5) Broader bracts, (6) Roughoid appearance with intensification of hairiness, (7) Bigger glands, (8) Bigger flowers, (9) Bigger pollen grain size, (10) Bigger seeds.

(*c*) The effect on various species and their crosses wherein colchicine effect is markedly visible is summarised below (see Table).

(*d*) It has been observed that there is a direct relation of the pollen grain size with the chromosome numbers in cottons and observations in these experiments show increase in pollen grain size due to colchicine treatment.

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