

which flavones can readily be obtained, could be effected with metallic sodium in ether or toluene. It has now been found that sodium ethoxide in alcoholic solution is a still better reagent for the transformation.

The fact that Claisen reagents are effective is probably significant in regard to the mechanism of the transformation, which in the presence of these reagents, may be regarded as an internal Claisen condensation proceeding *via* (a) or (b) according as we assume O-Na or C-Na formation; (c) corresponds to elimination of an alcohol.

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<sup>1</sup> *Curr. Sci.*, 1938, 7, 107.

<sup>2</sup> Cf. Hückel, *Theoret. Grundlag. der Org. Chem.*, 1934, 1, 215.

### The Presence of Cellulase in Potato Sprouts.

LAST month a peculiar case, in which certain potato sprouts bored their ways through cardboard walls of the packages used as potato containers, was observed. A careful examination of the cellulosic material of the cardboard cases showed that the material had been digested and absorbed by the sprouts as there was no indication of rupture due to mechanical force.

This observation was interesting in that the celluloses which are structural substances appear to function as storage materials also in plants. In this connection it was thought that any further evidence regarding the digestive power of potato sprouts would be highly significant. Strausbaugh<sup>1</sup> records a case in which a potato sprout coming in opposition with a tuber in which a wound had been made by a borer continued its growth and emerged on the opposite side of the tuber. The author emphasizes that the storage material was distinctly absorbed as there was no indication of any rupture due to mere mechanical force.

To test the digestive power of potato

sprouts, 20 mg. of finely cut pieces of card-board were moistened with sterilized water and 20 ml. of 5 per cent. ammonium carbonate solution<sup>2</sup> was added drop by drop and thoroughly mixed. About 20 vigorously germinating tubers were washed first with mercuric chloride solution (1:1000) and then with sterilized water and 1-2 fairly big sprouts together with some potato tissue from the bud-end of each tuber were cut and placed in the flask containing the card-board + ammonium carbonate suspension. Some more sterilized water was added and the flask plugged with sterilized cotton wool and was incubated at 30° C. for 17 days. Portions of the cardboard material were taken out at 3-day intervals and analysed for cellulose content by the Norman and Jenkins<sup>3</sup> modification of Cross and Bevan<sup>4</sup> procedure. Xylan was also estimated on isolated cellulose samples. Xylan content is obtained from the furfuraldehyde yield of the isolated cellulose by reference to Krober's tables. Furfuraldehyde yield was obtained by distillation with 12 per cent. HCl and precipitation as phloroglucide. The data obtained in this connection are presented in Table I.

TABLE I.

*Decomposition of Cellulose by Potato Sprouts.*

Time Interval days	Cellulose content gms.	Xylan content gms.
0	12.72	3.23
3	12.01	3.02
6	11.78	2.78
9	11.01	2.47
12	10.87	1.88
15	10.78	1.30

It is evident from the data that a greater percentage of loss in cellulose is attributable to the loss of xylan—a cellulose which is associated with most celluloses. It appears that xylan, being in all probability, less

resistant than cellulose, is mainly, digested by potato sprouts.

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- <sup>1</sup> Strausbaugh, *Plant Physiol.*, 1929, 4, 157.  
<sup>2</sup> Hutchinson and Richards, *J. Min. Agr.*, 1921, 28, 398  
<sup>3</sup> Norman and Jenkins, *Biochem. J.*, 1933, 27, 818.  
<sup>4</sup> Cross and Bevan, *Cellulose* (London), 1918.

### Green-Seeded Gram (*Cicer arietinum* L.) in Central Provinces.

AN exhaustive collection of local grams from all over the Central Provinces and Berar is in progress at the Oil Seeds Research Station, Nagpur. In the samples collected so far, a new type of gram was noticed. It is chiefly characterised by the presence of variable grades of green coloured seed-coat. This gram is reported to have been observed in 1932-33 by one Laharia, a cultivator of the village Bagaspur in Narasinghpur Tahsil, C.P., in a field of D 8 gram (*Gulabi Chana*). Subsequently it was tried on a large scale by one Choudhary Moolchand of Gotegaon and since then the area under this gram has been rapidly increasing due to a very high price it fetches in the market. The estimated area in 1936-37 has been reported to be 1,500 acres in that tract.

During the year 1937-38 this type was tried at the Government Experimental Farm, Adhartal. The seeds obtained bred true in respect of the various grades of green seed-coat. A few seeds of this type were sown during the rainy season of the current year for some experimental purposes at the Oil Seeds Research Laboratory and were observed to be breeding true. The plants were harvested when fully matured and the seeds obtained were healthy and showed cent. per cent. germination. The green condition, therefore, does not represent an early stage of maturity of any gram type.

The chromosome counts were made from the root-tip cells which showed  $2n = 16$  (Fig. 1). In temporary aceto-carmin preparation eight bivalents were clearly observed

at I metaphase in polar view. chromosome number in this species has been



FIG. 1.

Somatic chromosomes in green-seeded gram (*Cicer arietinum* L.).  $2n = 16$ .

reported to be  $2n = 14$  by Rau.<sup>1</sup> Dixit<sup>2</sup> studied the chromosomes of the Pusa types 1, 2, 18 and 25; in the first two types (the "Kabuli" gram types) the chromosome number was observed to be  $2n = 16$  while the remaining two (the "Deshi Gram" types) showed  $2n = 14$ . In a giant mutant form of type 22 the chromosome number was recorded as  $2n = 16$  by Dixit.<sup>3</sup>

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- <sup>1</sup> Rau, N. S., *Jour. Ind. Bot. Soc.*, 1929, 8, 201-206.  
<sup>2</sup> Dixit, P. D., *Ind. Jour. Agri. Sci.*, 1932, 2, 385-390.  
<sup>3</sup> Dixit, P. D., *Ibid.*, 1932, 2, 391-408.

### On the Occurrence of *Isarachnactis* in the Arabian Sea.

EARLY in 1935, Mr. S. Jones, of Trivandrum handed over to me a small collection of a certain larval Cerianthid which he obtained in August 1933, from the neighbourhood of Kovilam on the Travancore coast. Detailed study of these specimens could not then be attempted owing to other pre-occupations. Recently, I have obtained specimens of the same form collected off the coast of Alleppey and Ambalapuzha in Travancore, and with the material gathered from the three localities, I have been able to make a fairly complete study of the anatomy of this interesting Cerianthid,