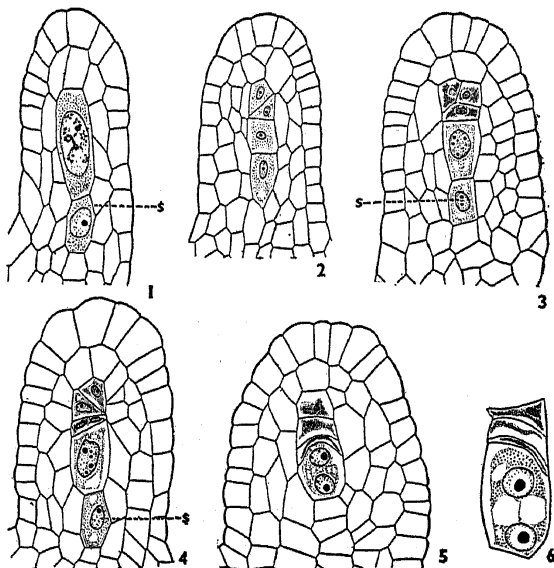


shows both *Fritillaria* and *Adoxa* types, *Tulipa* is similar to *Erythronium* in this respect (Bambacioni and Giombini⁴; Bambacioni-Mezzeti,⁴ Simoni,⁴ and Romanov⁴).



FIGS. 1-6. *Scilla hyacinthina*, Fig. 1. L. S. nucellus showing a megaspore mother cell followed by a sporogenous cell *s*. $\times 155$.

FIG. 2. Tetrad of megaspores. $\times 155$.

FIGS. 3-5. Same, showing functioning megaspore. The non-functional sporogenous cell is marked *s*. In FIG. 4. the third megaspore from the apex shows two degenerated nuclei. In Fig. 5 the nucleus of the functional megaspore has already divided. $\times 155$.

FIG. 6. 2-Nucleate embryo sac. $\times 250$.

It would be of interest to check up other species of *Scilla*.

It is a pleasure to express my gratitude to Prof. P. Maheshwari and Dr. B. M. Johri who suggested the problem and guided the work. Thanks are also due to Mr. H. R. Bhargava (Sagar) for providing the material of *Scilla indica* on which a part of this investigation is based.

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RAPID VOLUMETRIC METHOD FOR THE ESTIMATION OF NICKEL

THE method was tried with stock solutions of nickel sulphate (5 per cent.) and nickel chloride (2 per cent.). The standard solution of dimethyl glyoxime was prepared by dissolving 2.90 g. of the substance in alcohol and the solution was made up to 500 ml. with alcohol-water mixture, sufficient alcohol being used to get a clear solution. 25 ml. of the stock solution was diluted to 250 ml.

25 ml. of the diluted solution was treated with dilute ammonium hydroxide (till a turbidity appeared or a blue solution was formed). It was then acidified with acetic acid (slight excess). Dimethyl glyoxime solution was then run into this solution 1 ml. at a time (pilot reading), the end point being determined as shown below.

A drop of the reaction mixture was filtered through a strip of filter-paper on to another filter-paper. The red precipitate remained on the first filter-paper and a colourless solution was spotted on the second filter-paper. A drop or two of dimethyl glyoxime was placed on this spot and the colour developed was noted. The disappearance of the red colouration showed the end point. For further readings, dimethyl glyoxime solution was run into the nickel solution within 0.50 ml. of the pilot reading. The reaction mixture was then heated on a water-bath for about 3 minutes and further addition of dimethyl glyoxime was carried out (2 drops at a time), noting the colouration as shown above, till the end point was reached. The final readings can be taken accurate to 0.20 ml. The results compared very favourably with those obtained by the gravimetric method using dimethyl glyoxime in the usual manner, the methods giving values agreeing to within 0.2 per cent. on the same solution.

It was also found that the presence of silver, zinc, iron and chromium ions does not affect the accuracy of the method. Because of colour development, the method cannot be used, as it is, to estimate nickel in the presence of copper and cobalt ions.

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