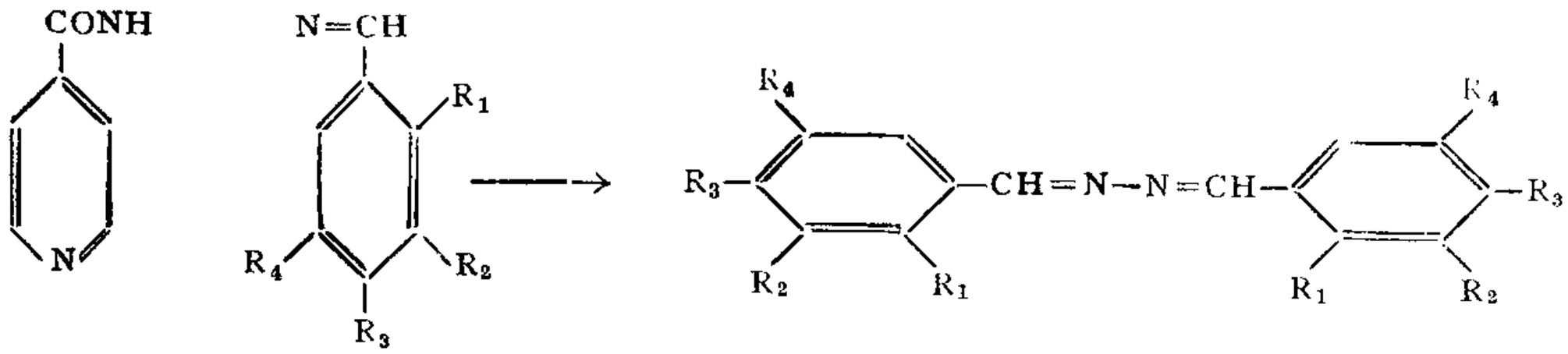

I. $R_1=R_2=R_3=R_4=H$; m.p.[3] 93°.
II. $R_1=R_2=R_4=H$; $R_3=OCH_3$; m.p.[4] 178°.
III. $R_1=R_4=CH_3$; $R_3=OC_2H_5$; $R_2=H$; m.p. 235–36°.
IV. $R_1=H$; $R_3=OC_2H_5$; $R_2=R_4=CH_3$; m.p. 155–56°.

perties (u.v., i.r. and n.m.r.), it was identified and confirmed as benzalazine (m.m.p.). The latter obviously results from the decomposition (NH_3 being evolved during the reaction) of the Schiff's base into isonicotinic acid, hydrazine and benzaldehyde. The last two compounds react together in the presence of alkali to give benzalazine. It was, therefore, of interest to see if in the formation of the latter compound, aluminium amalgam had taken any part. We, therefore, carried out the reduction of the Schiff's base (I) with aluminium amalgam and decomposed the reaction mixture with water and aqueous potassium carbonate in two different experiments. In both the cases, however, the original Schiff's base was recovered unchanged. The formation of benzalazine was, therefore, obviously due to the action of aqueous sodium hydroxide. This observation was supported by the fact that the Schiff's base (I) on keeping with aqueous sodium hydroxide for 30 minutes, at room temperature, yielded benzalazine in 50% yield. At a higher temperature, almost the whole of the Schiff's base was converted into benzalazine with aqueous sodium hydroxide.

This reaction is a general one and the azine derivatives I to IV have been prepared from the corresponding Schiff's bases, by treatment with cold aqueous alkali.

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A NOTE ON THE COLOUR CHANGE OF THE FLOWERS OF *HIBISCUS MUTABILIS*

Hibiscus mutabilis[1] (Family : *Malvaceæ*), commonly known as "changing rose", is grown as an ornamental plant for its large flowers which change colour from ivory-white in the morning to light rose by noon and pink-red in the evening. Based on a preliminary study of its flavonoids, the flower petals have been recorded[2] to contain quercimeritrin, meratin and cyanin. With a view to understanding the chemistry of the sequence in the colour change, a detailed examination of the flowers of this plant has been undertaken and the results are recorded in brief :

Fresh flowers (1 kg.) were collected from the plants at about 8 a.m., 12 Noon and 4 p.m. and separately worked up for the flavone and anthocyanin pigments by conventional method adopted in our laboratories.[3,4] The 8 a.m. batch contained no anthocyanin at all, and the flavonol glycosides (0·2 g.) were identified as isoquercitrin, hyperoside, rutin and quercetin-4'-glucoside in addition to quercimeritrin recorded earlier[2] by two-dimensional paper chromatography and comparison with authentic samples; the free aglycone was identified as quercetin.

The flowers of the 4 p.m. batch contained the maximum concentration of anthocyanins and the pigments were identified to be cyanin (cyanidin-3 : 5-diglucoside) and cyanidin-3-rutinoside-5-glucoside with cyanidin as the free aglycone. The same anthocyanins were present in the flowers of the 12 Noon batch, but the concentration was only one-third. The flavonols of the 12 Noon and 4 p.m. flowers were identical with those of the morning batch both qualitatively and quantitatively and no reduction in the flavonol content was noticed indicating the non-utilization of the flavonol

for anthocyanin synthesis. The change of colour from ivory-white to pink-red through light rose is, therefore, attributable to the absence of the anthocyanin in the morning and the progressive development of the colour due to anthocyanin synthesis as the day passes and its masking the ivory-white colour (due to flavonols) as suggested by Harborne,[5] the concentration of the anthocyanins reaching the maximum quantity by the evening. Both the five-petalled and the multi-petalled varieties had the same flavonoid pattern.

The colour change of the petals has also been observed, in the laboratory, to take place in the case of flowers plucked out of the plants and kept moist at the room temperature as under hydroponic conditions. In such cases, a temperature range of 10 to 40° C. and pH 5 to 9 have been found to be favourable for the anthocyanin synthesis and outside these ranges the morning colour remains almost unchanged.

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[*Note by Referee:* The anthocyanins are not the floral pigments: Vide, *Current Science*, 1969, **38**, 179 & 451.]

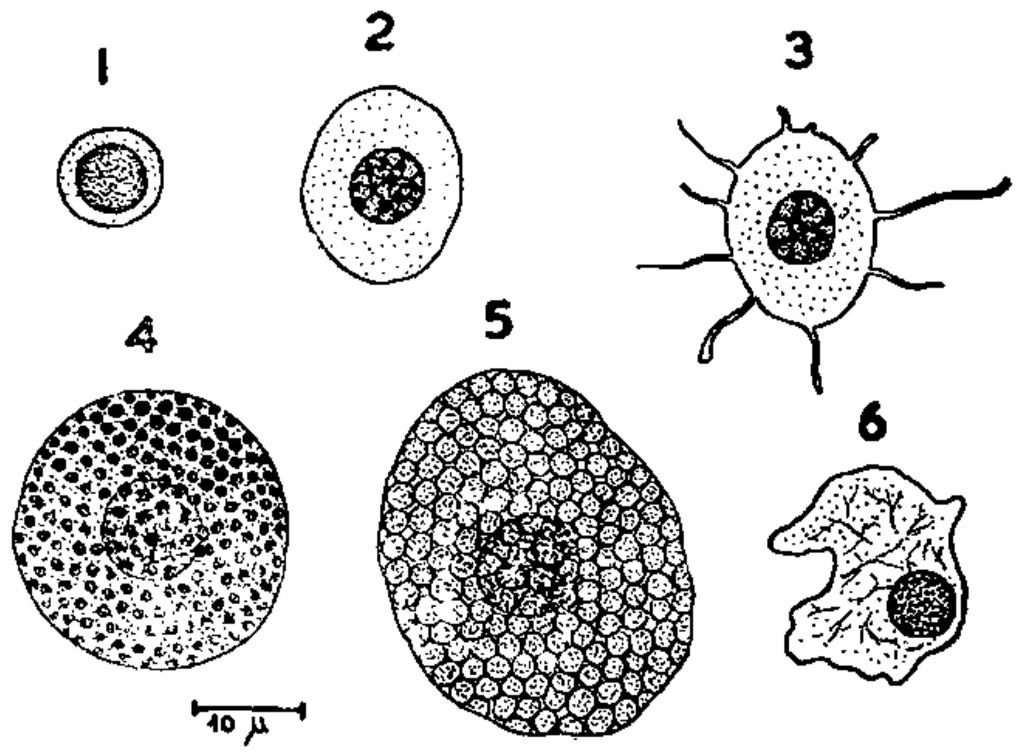
A STUDY OF HAEMOCYTES OF A CENTIPEDE *ETHMOSTIGMUS SPINOSUS* (CHILOPODA : MYRIAPODA)

BUCHERL[1] AND GREGOIRE[2] described two kinds of hæmocytes, amœbocytes and hyaline cells, in *Scolopendra viridicornis* and *Lithobius forficatus*. In addition to these, a third type known as lymphocytes was described from *Scolopendra morsitans*.[3] These authors have taken into consideration the shape of the cells and the presence or absence of granules in the cytoplasm as basis for classification of hæmocytes in these centipedes. In the light of recent observations of Jones[4] and Sundara Rajulu *et al.*,[5] the criteria applied by workers on centipede hæmocytes is of little importance as the characters taken into consideration by these authors are found in more than one type of hæmocytes and are known to be variable in the same hæmocyte during different growth stages.[3] It is therefore felt that a study of the hæmocytes in centipedes in the light of recent observations would be of interest.

The centipedes of the species *Ethmostigmus spinosus*, collected from Alagarkoil Hill region, were the materials used. The methods of collection of hæmolymph and preparation of smears and the stains employed were the same as given elsewhere.[5] The hæmocytes were examined with phase contrast microscope and classified using the nomenclature suggested by Jones.[4]

Five types of hæmocytes are distinguishable from the blood of *Ethmostigmus spinosus*.

Type 1.—These are round cells appearing pale gray and homogeneous (Fig. 1). They



FIGS. 1–6. Hæmocytes of *Ethmostigmus spinosus*
Fig. 1. A prohæmocyte. Fig. 2. A normal plasmatocyte.
Fig. 3. A plasmatocyte with thread-like pseudopodia.
Fig. 4. A granular hæmocyte. Fig 5. A spherule cell.
Fig. 6. An œnocytoid.

measure 5 to 7 μ in diameter. The nucleus is round and occupies nearly the entire cell, leaving only a thin band of peripheral cytoplasm. The nucleus shows evenly distributed chromatin granules. These hæmocytes recall the prohæmocytes of insects.[6]

Type 2.—The hæmocytes of the second type are characterized by their morphological variability. They measured from 15 to 20 μ in diameter. The common variety was ovoid with a large centrally placed nucleus containing many chromatin granules (Fig. 2). The cytoplasm is devoid of any inclusions. In fresh preparations, a few of this type of cells send out minute, thread-like pseudopodia (Fig. 3). These cells ingest indigo carmine particles injected into the blood. These