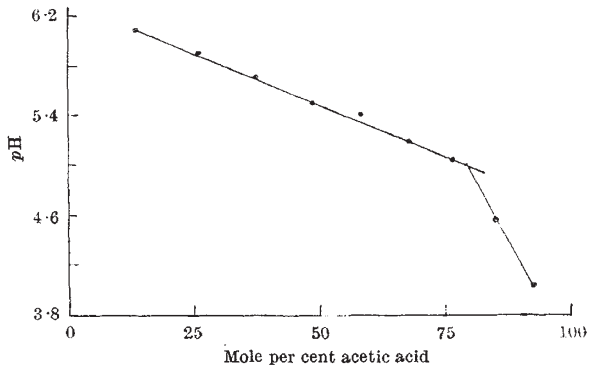

Fig. 1. Graph showing pH of pyridine–acetic acid system

cent pyridine should indicate a minimum at 17 mol. per cent of pyridine, at which composition acetic acid dissociates completely.

We have studied the pH of mixtures of pyridine and acetic acid and the results are represented graphically in Fig. 1. The measurements were made with a glass electrode in conjunction with a saturated dip-type calomel electrode in a Morton's glass electrode assembly unit with a Cambridge pH meter. The values obtained were quite reproducible. Surprisingly, the pH behaviour between 83 and 100 mol. per cent of acetic acid is quite the reverse of our expectation. In this region, for conductance as well as pH, the same downward trend makes it inevitable that the free hydrogen ions left over, due to an insufficient number of pyridine molecules to form pyridinium ions, must be assumed to have attached themselves to undissociated acetic acid molecules, forming $CH_3COOH_2^+$ ions exhibiting the well-known super-acid behaviour[4–6]. The pH curve thus proves the existence of undissociated molecules of acetic acid in the region 83–100 per cent acetic acid, as well as super-acid formation.

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Structure of a Grass Pollen Flavonoid Glycoside

A flavonoid glycoside, dactylin, was found to occur in pollens of timothy and orchard grass in 1931 by Moore and Moore[1]. Until this present study, there existed no complete structural data on dactylin. An abstract by Johnson *et al.*[2] indicated that dactylin was not chromatographically similar to simultaneously processed *iso*quercitrin, quercitrin and quercetin. They also report that spectrographically dactylin aglycon and quercetin, individually and mixed, have identical patterns in three solvent systems.

For the studies reported here[3], dactylin was re-isolated from timothy pollen. It was obtained as a light yellow solid from a 1955 crop of defatted pollen. It was readily recrystallized from water, and paper chromatography revealed only one spot in three solvent systems. The methoxyl content was 3·60 per cent, and the dactylin aglycon (obtained by 2 *N* sulphuric acid hydrolysis of dactylin) revealed 6·93 per cent methoxyl content. Infra-red and ultra-violet spectra and melting-point data suggested the aglycon to be impure *iso*rhamnetin. Acetylation of the aglycon gave 3,5,7,4′-tetra-acetoxy-3′-methoxyflavone that had an infra-red spectrum identical in every respect with a known sample. On admixture with the known sample, no depression of melting point was observed. Methylation of the aglycon with diazomethane gave 3,7,3′,4′-tetramethoxy-5-hydroxyflavone that also had an infra-red spectrum identical in every respect with a known sample. On admixture with a known sample, no depression of melting point was observed.

When dactylin was methylated with diazomethane and hydrolysed, 5,7,3′-trimethoxy-3,4′-dihydroxyflavone was obtained that was identified by mixed melting point and identical infra-red spectrum with a known sample. The reference sample was kindly supplied by Dr. Richard Kuhn, of the Max Planck Institute for Medical Research. Therefore, the structure of dactylin was shown to be *iso*rhamnetin 3,4′-diglucoside and identical with the flavonoid glycoside isolated and characterized by Dr. Kuhn from the pollen of *Crocus* Sir John Bright[4].

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Chromatographic Study of Jute α-Cellulose

A number of papers and communications have been published by different workers in recent years on the chromatographic study of jute α-cellulose, and conflicting views have been expressed regarding its association with different sugar residues. Sarkar *et al.*[1] consider the material to be entirely composed of glucosan, while Das and co-workers[2] contend that it is intimately associated with both xylose and arabinose residues. Adams and Bishop[3] believe that, in addition to these pentosans, jute α-cellulose contains uronic acid residue, the presence of which is yet to be confirmed by the chromatographic analysis.

Although Sarkar and others[1], and Adams and Bishop[3] have employed the same hydrolytic procedure of 72 per cent sulphuric acid, the failure of the former authors to detect pentoses in the hydrolysate appears to be due to interference caused by the presence of a large amount of glucose which has, however, been preferentially removed by the latter authors by the action of an enzyme preparation. Das *et al.*[2], and more recently Adams and Bishop[4], have applied a method of selective hydrolysis with formic acid to identify pentosans in jute α-cellulose, although Mazumdar and Sarkar[5], on using the same procedure, have failed to substantiate this observation.

It was noted, during the preliminary experiments carried out in this laboratory, that only glucose and xylose could be detected on the chromatogram of the jute α-cellulose hydrolysate obtained with the 72 per cent sulphuric acid method. The work described in