dilute NaOH, gives 2·78 per cent. of formaldehyde (estimated by the Dimedone method).

Unlike aliphatic compounds, aromatic bodies with $O-CH_2-O$ groups do not give formaldehyde quantitatively by acid hydrolysis—the phenolic groups combine with the HCHO liberated to give resins; the temperature and concentration of acid employed for the estimation of HCHO being the same as those suitable for resin formation.[4] In the case of piperonylic acid 77·6 per cent. HCHO was obtained—also when HCHO and excess of protocatechuic acid were distilled with 28 per cent. H_2SO_4 very nearly the same percentage was obtainable.

Assuming as Freudenberg does, that only one $O-CH_2-O$ group is present in lignin and also that 2·78 per cent. HCHO represents 77·6 per cent. of theory, the molecular weight comes to 830. Rassow and Wagner[5] determined the molecular weight of glycol-lignin by Barger-Rast method and gave the figure as 840. Freudenberg's formula therefore needs modification.

PULIN BEHARI SARKAR.

Chemical Laboratory,
Dacca University,
July 15, 1934.

Equisetum in Gujerat.

THE occurrence of *Equisetum* at Poona is perhaps the only record of its existence in the Presidency of Bombay.

The writer came across a dwarf (about six inches) but fertile specimen of *Equisetum* in October 1931 at Malsar in the Baroda State. The plant was isolated in a cleft formed by hardened clay in the bed of the river Narbada. It was supposed to be an accidental exotic in a district where ferns are rare or none.

This year at the end of May, I happened to visit a place called Balaram fifteen miles N.-E. of Palanpur. It is one of the outlying hills of the Aravalli range on the river Banas. Here, I found the shady slope of the hill covered all over by *Equisetum.* The fine green plants about twenty-four inches in height on hard limy soil apparently enjoyed the hot weather (115° temp.). They had stout dark rhizomes and a few branches but no cones.

This find of *Equisetum* at two different places about hundred miles apart in Gujerat and that too, one from a place supposed to be arid and sandy is worth noting.

S. C. DIXIT.

Wilson College,
Bombay,
July 1934.

Fluorescence in Wood under Ultra-Violet Light.

WHILE we were engaged on the study of the fluorescence in wood, under ultra-violet light, a short paper by Dalton on 'Woods that shine in the dark', appeared in the *Canadian Woodworker and Furniture Manufacturer*, 1934, p. 9. In this note certain observations have been made which are not in accordance with our findings and we, therefore, take this opportunity to record the results of our preliminary examination, a detailed account of which will appear elsewhere. Dalton remarks that "with the new Argon ultra-violet glow lamps and suitable light suppressing filters a large number of wood specimens were found to possess very definite fluorescent features. In practically all instances, the fluorescence was of a yellowish green colour."

We have examined over a hundred specimens in wood blocks, and in powder form, as well as their extracts in some common organic solvents, under a 'Hanovia' Quartz Mercury Vapour Lamp fitted with Wood's filter. We find that most of the woods fluoresce, the colour of the fluorescence in the block form and in the powder form being practically identical but, in many cases, different from the colour of the fluorescence of their extracts. Furthermore, the colour of the fluorescence in different woods is different, ranging from snuff brown to violet with practically all shades of orange, yellow, green, blue and indigo, between these extremes. The intensity of the fluorescence, however, is not restricted to any particular part of the wood. In some cases, the heartwood fluoresces more brilliantly than the sapwood, and in others the reverse is the case. Then again, in many cases, the colour of the fluorescence in sapwood and heartwood is very different.

In making extracts of the wood powders (100-mesh) we have employed absolute alcohol, acetic acid, ethyl ether, chloroform and xylene. Of these, alcohol and acetic acid extracts showed fluorescence in almost

[4] Bary and others, *Natural and Synthetic Resins*, 118.

[5] *Wochenblatt f. fabrikation*, 1932, **63**, 103.

all those cases where the original wood fluoresces, while in the case of ether, chloroform and xylene extracts, only in a few cases was the fluorescence observed and that too very faintly. Results for some typical cases are recorded below :

Species		Wood Blocks		Powder		Extracts	
		Colour in Sunlight	Colour in Ultra-violet light	Colour in Sunlight	Colour in Ultra-violet light	Alcoholic in Ultra-violet light	Acetic in Ultra-violet light
Acacia arabica	S	YO (B.T.M.)	BV (B.T.L.)	OY_{T_2}	BV (B.T.L.)	VB_{T_2}	VB_{T_2}
	H	O (B.T.D.)	OY	VO (B.T.L.)	OY	YG	YG
Acacia catechu	S	OY_{T_2}	Y	Y_{T_2}	OY_{S_1}	BV (B.T.L.)	B (B.T.L.)
	H	O (B.T.D.)	OR (B.T.D.)	YO (B.T.L.)	R (B.T.D.)	YO (B.T.L.)	Y_{S_1}
Adina cordifolia	S	Y_{T_2}	Y_{T_1}	Y_{T_1}	Y	V_{S_2}	G_{S_1}
	H						
Albizzia lebbek, *A. procera* & *A. stipulata.*	S	WGr	B (B.T.L.)	WGr	B (B.T.L.)	BV_{T_1}	GY
	H	YO (B.T.D.)	OY	YO (B.T.M.)	YO	Y_{S_1}	GY_{T_1}
Cassia fistula	S	YO (B.T.L.)	YO_{S_2}	YO (B.T.L.)	Y (B.T.L.)	GY_{T_1}	Y_{S_1}
	H	OR (B.T.L.)	RV	YO_{T_2}	RV	RV_{T_2}	BV
Cedrela toona	S	YO (B.T.L.)	Y (B.T.D.)	YO (B.T.L.)	Y (B.T.D.)	G_{T_1}	V (B.T.M.)
	H	O (B.T.D.)	O (B.T.D.)	O (B.T.D.)	O (B.T.D.)	OY_{S_1}	OY_{T_2}
Morus alba	S	WGr	V_{T_1}	WGr	RV_{T_1}	V_{T_1}	VB_{T_1}
	H	Y (B.T.L.)	V_{T_1}	OY_{S_1}	YO_{S_1}	BV_{T_1}	BV

Colour standard issued along with Mullekin's "*Identification of the Commercial Dye-stuff*," John Wiley & Sons, New York.

VR—Violet-red
OR—Orange-red
RO—Red-orange
YO—Yellow-orange
OY—Orange-yellow
GY—Green-yellow
YG—Yellow-green
BG—Blue-green
VB—Violet-blue
BV—Blue-violet
V—Violet
RV—Red-violet
WGr—Whitish-grey
S_1—$Shade_1$
T_1—$Tone_1$
B.T. Broken Tones
L. Light
M. Medium
D. Dark
S Sapwood
H Heartwood

Forest Research Institute,
Dehra Dun, U.P.,
July 24, 1934.

S. KRISHNA.
K. A. CHOWDHURY.

Crystal Structure of the Fluoberyllates.

RECENTLY N. N. Ray[1] has observed from solubilities, molecular volumes and formation of mixed crystals that the simple and complex fluoberyllates of metals are completely isomorphous with the corresponding sulphates. Goniometric and X-ray studies of these isomorphous crystals were accordingly undertaken for a thorough investigation.

From goniometric measurements, the fluoberyllates of potassium, rubidium, ammonium and thallium were found to belong to the orthorhombic bi-pyramidal class (V^h) to which the sulphates of these metals are also known to belong. The crystallographic axial ratios of these fluoberyllates, and those of the corresponding sulphates are given in Table I.

TABLE I.

Metallic radical	Fluoberyllates			Sulphates		
	a	*b*	*c*	*a*	*b*	*c*
Potassium	0·5744	1	0·7431	0·5727	1	0·7418
Rubidium	0·5766	1	0·7560	0·5723	1	0·7485
Ammonium	0·5665	1	0·7241	0·5635	1	0·7319
Thallium	0·5638	1	0·7368	0·5555	1	0·7328

[1] *Zeit. Anorg. U. Allg. Chem.*, 1931, **201**, 289.