

TABLE I

No.	Sulphonate	m.p. ° C.	Formula	Sulphone			
				Analyses, %			
				Calcd.		Found	
		C	H	C	H		
1	2, 4-Dimethylphenyl benzenesulphonate	132-33	C ₁₄ H ₁₄ O ₃ S	64.1	5.3	64.1	5.6
2	Phenyl <i>p</i> -toluenesulphonate	'o' 126-27	C ₁₃ H ₁₂ O ₃ S	62.9	4.8	63.0	4.9
		'p' 142-43	C ₁₃ H ₁₂ O ₃ S	62.9	4.8	63.2	4.9
3	<i>p</i> -Tolyl <i>p</i> -toluenesulphonate	130-32	C ₁₄ H ₁₄ O ₃ S	64.1	5.3	63.9	5.5
4	<i>p</i> -Chlorophenyl <i>p</i> -toluenesulphonate	125-26	C ₁₃ H ₁₁ O ₃ ClS	55.2	3.9	55.0	3.6
5	<i>m</i> -Tolyl <i>p</i> -toluenesulphonate	'o' 136-38	C ₁₄ H ₁₄ O ₃ S	64.1	5.3	64.2	5.1
		'p' 151-52	C ₁₄ H ₁₄ O ₃ S	64.1	5.3	64.0	5.5
6	2, 4-Dimethylphenyl <i>p</i> -toluenesulphonate	129-30	C ₁₅ H ₁₆ O ₃ S	65.2	5.8	65.0	6.1

preparation of hydroxydiaryl sulphones. But for these few instances no attempts seem to have been made to prepare phenolic sulphones from aryl sulphonates. It was therefore thought desirable to undertake a more detailed investigation of this method of preparing phenolic sulphones.

In the present study some aryl sulphonates have been subjected to the action of anhydrous aluminium chloride. In contrast to the behaviour of phenolic esters, the isomerisation of sulphonates did not take place to any detectable extent at low temperatures. Heating at 80-160° C. was found to be necessary to bring about the isomerisation of aryl sulphonates to hydroxydiaryl sulphones. Whenever the sulphonate contained no substituents in the *ortho*- and *para*-positions of the phenolic ring, the formation of two isomers was observed. The two isomers are the *o*- and *p*-hydroxysulphonates.

The sulphonates isomerised and the melting points as well as the analyses of the sulphones obtained are recorded in Table I. In those cases where both *o*- and *p*-hydroxysulphonates are formed, they are shown as '*o*' and '*p*' respectively.

Details regarding the elucidation of the structures of the sulphones obtained will be published elsewhere.

Dept. of Chemistry, (MISS) A. A. ALEYKUTTY.
Annamalai V. BALIAH.

University,
Annamalainagar, August 20, 1953.

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ON THE OCCURRENCE OF TWO SPECIES OF *XYLOTRECHUS* ON *CODIAEUM MACULATA*, A GARDEN CROTON

Xylotrechus smei Laporte le Gory and *Xylotrechus subscutellatus* Chevrolat have been found infesting *Codiaeum maculata*, a common garden croton, growing in the Coffee Research Station, Balehonnur.

From the emergence holes existing on the stem as well as from the general weak and unhealthy condition, it was suspected that the plant was infested with stem-borers and hence it was stumped and kept in a cage for observation during June 1953. Two beetles emerged on the 5th and the 6th of August. These were identified as *Xylotrechus smei* and *Xylotrechus subscutellatus*. Subsequent emergences were all of *X. smei*.

Xylotrechus smei has been recorded on 43 species¹ of host plants, but no mention is made of *Codiaeum maculata*. The beetle is 18 mm. long, brown with a greyish pubescence on head, prothorax, and forming spots on elytra. The colour of the markings are grey. There is an apical band; post-median, ante-median and humeral spots.

Xylotrechus subscutellatus has been reported to occur on seven plants, including *Coffea arabica*,¹ but no reference is made to *C. maculata*. The beetle is 17 mm. long, dark brown with a yellow pubescence on the head and prothorax and forming four bands on the elytra.

*X. smei*¹ and *X. subscutellatus*^{1,2} are mentioned as attacking mostly dying or felled trees. The presence of this croton plant in gardens on coffee estates may serve as an alternative host for this pest. The tunnels bored by both the species are packed with excreta and are

very similar to those of the coffee stem-borer, *Xylotrechus quadripes* Chev.

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Coffee Res. Station, H. T. RANGA SETTY.
Balehonnur, H. HANUMANTHA RAO.
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SPOILAGE OF MACKERELS PRESERVED IN OIL

WHILE studying the preservation of mackerels in oil, we came across a type of spoilage similar to "sulfide stinker". Evolution of a stream of bubbles was noticed in less than 48 hours and within a week the fish disintegrated into a pulpy mass. Bacterial counts on sulfite agar were of the order of 10^6 . Twenty-one colonies were isolated and restreaked on Brewer's agar in Fildes jar and the pure colonies examined.

Morphological features showed that all of them were small motile rods, clavate, with terminal spores typical clostridia. The rods were single and in pairs with rounded ends. They all produced gas from cooked meat medium and Holman's medium and blackened the meat with partial digestion. Putrid smell was also noted but indole was not detected. Milk was coagulated but without 'stormy fermentation'. The bacteria belong to the genus *clostridium*, which is known to be the agent for the spoilage of canned foods.^{1,2} The source is suspected to be the guts of mackerels and further investigation on this is continuing.

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Fisheries Technological R. VENKATARAMAN.
Station, Kozhikode A. SREENIVASAN.
June 25, 1953.

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PRELIMINARY OBSERVATIONS ON THE BIOLOGY OF *CHIROCENTRUS* *DORAB* FORSK.*

THE flourishing dorab fishery along the coasts of Palk Bay and Gulf of Mannar in Ramnad District in South India is constituted chiefly of *Chirocentrus dorab*, probably the only clupeoid fish growing to a size of nearly 100 cm. In spite of its importance as a marine fishery resource, very little attention seems to have been paid towards a detailed study of this fish except for preliminary accounts on taxonomy by Hardenberg¹ and Deraniyagala,² general notes by Devanesan and Chidambaram³ and description of eggs and larvæ by Delsman.⁴ Owing to the occurrence of large shoals of dorab in the coastal as well as off-shore waters of Palk Bay and Gulf of Mannar, a detailed study of its biology was taken up at the suggestion of Dr. N. K. Panikkar, as part of the research programme of the Central Marine Fisheries Research Station.

The data collected from weekly samples of fish from fish landing places indicate that the dorab fishery is constituted of individuals ranging in size from 18-86 cm. Specimens in the larger size groups are caught in gill-nets whereas smaller as well as bigger ones are caught in shore-seines. Almost all the individuals landed from gill-nets are either in mature or post-mature stages and those caught in shore-seines possess immature as well as mature and post-mature gonads. An interesting peculiarity noticed in the commercial fish landings was that no male was observed in any of the size groups above 60 cm. Studies on size frequency distribution made for the past 18 months (from October 1951) have shown that the dorab fishery is constituted of individuals from 1-4 year classes. The average sizes attained by the first to fourth year class fishes were calculated to be 28, 44, 62 and 78 cm. respectively. Observations indicate that the first year class individuals ranging in size up to 22 cm. remain in the off-shore waters until the end of first year or the beginning of the second year of their life and that they do not make a significant contribution to the dorab fishery.

The results obtained from size frequency distribution studies were checked by a critical examination of the growth zones on the scales and otoliths of specimens in different year classes. In the scales of fishes ranging in size from 22-

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