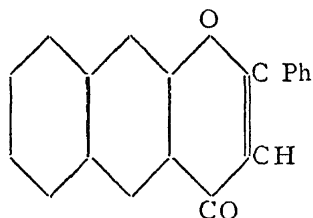
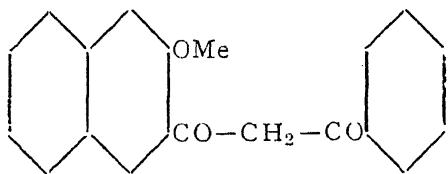


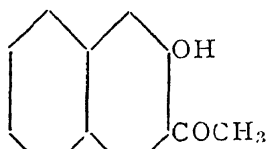
acetonephthone (III) for which a relatively convenient synthesis is thus provided. Compounds in which the phenyl group in (I) is replaced by naphthyl can be obtained similarly.



(I)



(II)



(III)

V. V. VIRKAR.
T. S. WHEELER.

Royal Institute of Science,
Bombay,
September 21, 1938.

¹ Kostanecki and Ludwig, *Ber.*, 1898, 31, 2951.

The Electric Double Layer, an Effective Potential Barrier for the Accumulation of the Solute at Surfaces of Solutions of Capillary-Active Electrolytes.

WHEN the surface of an aqueous solution of a capillary-active electrolyte is allowed to age, an oriented adsorption film is developed in which the ionised group of the capillary-active ion is pointing towards the solution and the hydrophobic part is projecting into the free space above. This brings about a redistribution of the ions in solution giving rise to a diffuse electric double layer on the solution side of the interface. Simple calculations show that the electric double layer presents an effective potential barrier for further accumulation of the capillary-active ions, especially when the adsorption film is of the gaseous type. Thus, when the surface of a solution of a paraffin-chain salt (giving rise to a gaseous adsorption film) is allowed to age, there

should be a sudden surge in the fall of surface tension at start and this should be followed by a slow fall thereafter. This is in accordance with the findings of Adam and Schute.¹ With the capillary-active electrolytes giving rise to a condensed film, the effect of the electric double layer would be comparatively small (though not negligible) in the initial stages and become very considerable when the surface is nearly full. These conclusions are also in harmony² with the data on the rate of accumulation at surfaces of aqueous solutions of benzopurpurine 10 B. The accelerating influence of neutral salts on the variation of surface tension with time, noticed by Adam and Schute also receives an adequate interpretation on the basis of this concept. The slowing down of the accumulation with increase in pH, in the case of benzopurpurine 10 B solutions² is also explained. The details of these investigations, as well as a discussion of the denudation of the solution just below the surface layer observed by McBain³ will shortly be published.

K. S. GURURAJA DOSS.

Department of Chemistry,
Central College,
Bangalore,
September 15, 1938.

¹ Adam and Schute, *Trans. Farad. Soc.*, 1938, 34, 758.

² Doss, *Kolloid Z.*, 1938, 84, 138.

³ McBain, *Nature*, 1936, 137, 659.

Bromination of Aliphatic Ketones.

DIRECT bromination of ketones in the absence of catalysers with excess of bromine does not seem to have been attempted except in a few cases like acetone and diacetyl. Several ketones were brominated by us by the general method of keeping the ketone in contact with excess of bromine for four days. Practically in all the cases the reaction is accelerated, after the absorption of a small portion of the bromine added which requires in some cases 30-45 minutes. The reaction mixture is cooled from time to time by means of cold water. After four days about 300 c.c. of water are added to the reaction mixture and the excess of bromine is removed by blowing air into the mixture. The resulting product, if liquid,

TABLE I.

No.	Name of the ketone	Bromo-ketone	Yield (purified product) %	M.P. °C.	B.P. at 4 mm. °C.
1	Acetone $\text{CH}_3\text{CO}\cdot\text{CH}_3$	$\text{C}_3\text{H}_5\text{O}\cdot\text{Br}_5$	28	72-73	
2	Methylethylketone $\text{CH}_3\text{CO}\cdot\text{CH}_2\text{CH}_3$	$\text{C}_4\text{H}_7\text{O}\cdot\text{Br}_4$	44	54	
3	Diethylketone $\text{C}_2\text{H}_5\text{CO}\cdot\text{C}_2\text{H}_5$	$\text{C}_5\text{H}_9\text{O}\cdot\text{Br}_3$	81	..	90-93
4	Dipropylketone $\text{C}_3\text{H}_7\text{CO}\cdot\text{C}_3\text{H}_7$	$\text{C}_7\text{H}_{13}\text{O}\cdot\text{Br}_3$	78	..	120-123
5	N-dibutylketone $\text{C}_4\text{H}_9\text{CO}\cdot\text{C}_4\text{H}_9$	$\text{C}_9\text{H}_{17}\text{O}\cdot\text{Br}_3$	65	..	121-123
6	Isobutylketone $(\text{CH}_3)_2\text{CH}\cdot\text{CH}_2\text{CO}$ $(\text{CH}_3)_2\text{CH}\cdot\text{CH}_2\text{CO}$	$\text{C}_9\text{H}_{17}\text{O}\cdot\text{Br}_3$	70	..	129-132
7	Capron $(\text{CH}_2)_4\text{CO}$ $\text{CH}_3(\text{CH}_2)_4\text{CO}$	$\text{C}_{11}\text{H}_{21}\text{O}\cdot\text{Br}_3$	65	..	162-165
8	Diacetyl $\text{CH}_3\text{CO}\cdot\text{CO}\cdot\text{CH}_3$	$\text{C}_4\text{H}_6\text{O}\cdot\text{Br}_4$	60	94	
9	Acetonyl-acetone $\text{CH}_3\text{COCH}_2\cdot\text{CH}_2\text{COCH}_3$	$\text{C}_6\text{H}_{10}\text{O}\cdot\text{Br}_8$		181	
10	Pinacolone $\text{CH}_3\text{CO}\cdot\text{C}(\text{CH}_3)_3$	$\text{C}_6\text{H}_{12}\text{O}\cdot\text{Br}_2$	66	69	

is distilled under reduced pressure and if solid, is fractionally crystallised from ether. The analyses of the bromo-compounds were in good agreement and some of them have not been described before. They have a penetrating odour attacking the eyes and are soluble in the common organic solvents. The quantity of bromine taken should be in excess for the elimination of every hydrogen atom in the ketone as hydrobromic acid and replacement of the hydrogens so removed by bromine. The results obtained have been recorded in Table I.

It can be seen that irrespective of the length of the chain and the number of hydrogen atoms, only a few of the hydrogen atoms are replaced by bromine. With ketones containing more than one carbonyl group the number of hydrogen atoms replaced by bromine is much greater. There appears to be an empirical relationship between the number of hydrogen atoms that are replaced by bromine, and the

hydrogen atoms, adjacent to the carbonyl groups. The number of hydrogen atoms replaced by bromine is equal to the number of hydrogen atoms adjacent to carbonyl groups less as many as there are carbonyl groups. We are testing this relationship with a few more ketones.

S. V. SHAH.

D. G. PISHAWIKAR.

Department of Chemistry,
Rajaram College,
Kolhapur,
July 16, 1938.

"Knife Cut" at the Base of the Peduncle of Sorghum.

J. P. MARTIN¹ describing abnormal growths of sugarcane refers to the occurrence in association with stem galls of "Knife Cut"—an extremely interesting symmetrical cut which usually occurs on the internode