

the same extent. This is strong indication of the reality of the effect suggested.

The corresponding variations of the bending constants of the angles is also interesting, as well as translation of the deduced force constants into distances by the method of Badger⁴, but these will be fully given later.

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¹ NATURE, 139, 288 (1936).

² Thompson, H. W., and Linnett, J. W., *Proc. Roy. Soc.* (in the Press).

³ *Ann. Soc. Sci. Brux.*, 55, 114 (1935).

⁴ *J. Chem. Phys.* 3, 710 (1935).

Dipole Moments of some Aliphatic Aldehydes

SEVERAL determinations of the moments of aliphatic aldehydes have been made, but some uncertainty in the values exists.

The results previously published are given below.

Compound	Moment	Temperature	Solvent	Reference
Acetaldehyde	2.72	16°C.	(vapour)	1
Propionaldehyde	2.69	27°-182°	(vapour)	2
<i>n</i> -Butyraldehyde	2.4	—	benzene	3
<i>n</i> -Heptylaldehyde	2.46	18°	benzene	4
	2.56	22°	benzene	5

The values of the moments are given throughout in Debye units

The ease with which these compounds are oxidized and also the volatility of the lower members makes solution measurements difficult, and an accurate comparison of the moments cannot be made, as the results are incomplete. We are therefore reinvestigating these compounds, and preliminary measurements in benzene solution have been completed.

The moments of acetaldehyde, propionaldehyde, valeraldehyde and isovaleraldehyde are, we find, 2.49, 2.54, 2.57 and 2.60 respectively in benzene solution. The compounds were fractionated and measured in an atmosphere of nitrogen and the dielectric constants of the solutions determined by the apparatus described by Martin and Partington⁶.

The physical constants of the materials, and the values of the polarizations and moments determined in benzene solution at 20°, are given below.

Compound	b.p.	d_4^{20}	n_D^{20}	P_E	P_{25}	μ
Acetaldehyde	20.6° C./764 mm.	0.8058 (0°)	1.3437 (0°)	11.5 c.c.	143 c.c.	2.49
Propionaldehyde	48.2° /764	0.8058	1.3639	16.0	153	2.54
<i>n</i> -Valeraldehyde	102.5° /766	0.8105	1.3947	25.5	165	2.57
<i>iso</i> -Valeraldehyde	92.5° /754	0.8004	1.3904	25.5	169	2.60

Further work on other aldehydes is in progress, and the results will be discussed when completed.

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Feb. 13.

¹ Højendahl, Thesis, Copenhagen, 1928; calculated from experimental results of Pohrt, *Ann. Phys.*, 42, 569 (1913).

² Zahn, *Phys. Z.*, 33, 633 (1932).

³ Herold and Wolf, *Z. phys. Chem.*, B, 12, 165 (1930) (result corrected for P_A).

⁴ Hassel and Naeshagen, *Z. phys. Chem.*, B, 6, 152 (1929).

⁵ Errera and Sherrill, *J. Amer. Chem. Soc.*, 52, 1993 (1930).

⁶ Martin and Partington, *J. Chem. Soc.*, 602 (1935); 158 (1936).

Insect Drift over the North Sea

FROM August 5 until August 13 last year, one of us (A. C. H.) was kindly permitted to accompany the Ministry of Agriculture and Fisheries research

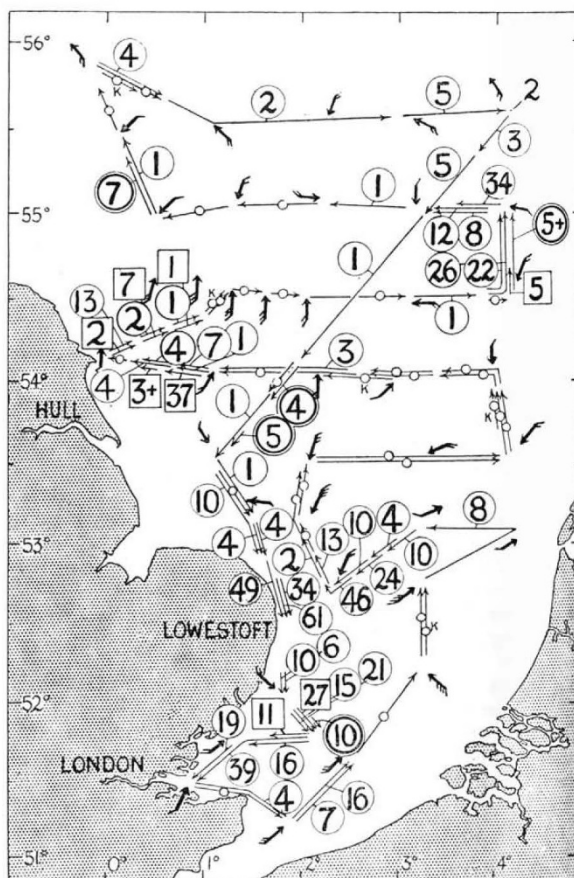


Fig. 1.

CHART SHOWING INSECT CAPTURES OVER THE NORTH SEA.

ship *George Bligh* during one of her routine cruises over the North Sea and, by flying collecting nets either from the mast-head or from kites flown from the ship, to study the drift of insects over the sea. It is hoped that further surveys will be made this year. Whilst a full discussion of the data will be reserved until further evidence is available, the results of this first survey were so unexpected that a preliminary note may be of interest.

Fig. 1 is a chart of the area covered. Each of the fine arrows shows the direction and distance over which a net was collecting. The nets were flown almost continuously, so that by following the arrows one may follow the track of the ship starting from Lowestoft in a southerly direction. A small circle on an arrow indicates a blank haul. Arrows side by side indicate nets collecting at the same time. The enclosed figures against the arrows show the total number of insects taken in each net. Those in circles were from nets flown from the mast-head, about 40 ft. above sea-level, those in squares from nets flown from kites at heights between 200 ft. and 400 ft. Blank kite hauls are marked with a 'K.'