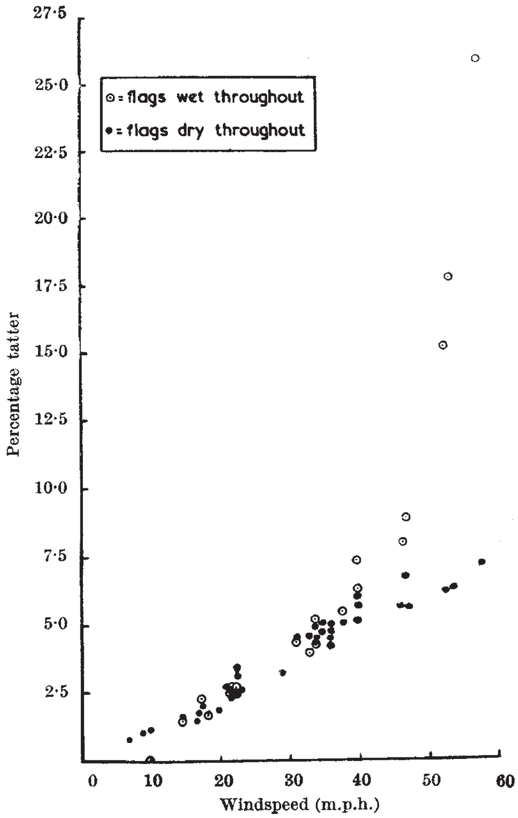

Fig. 1. Flags were exposed over eight successive 90-min periods. For each period a mean was calculated of losses in dry-weight and area as percentages of free flying material in the initial flag. Readings were averaged over successive periods and the resultant means are shown in relation to windspeed

relationship holds between percentage tatter (y) and windspeed (x), the regression line being given by

$$y = -0{\cdot}256 + 0{\cdot}136x$$

This linear regression contrasts with an exponential relationship for saturated flags (a linear relationship $\log y = -0{\cdot}134 + 0{\cdot}024x$ between the logarithm of percentage tatter (y) and windspeed (x) shows that this relation is exponential). When percentage tatter is plotted against run of wind, linear and exponential relationships are again evident.

The regression equation $y = -0{\cdot}256 \pm 0{\cdot}136x$ indicates that, theoretically, winds down to 1·882 m.p.h. cause tattering when flags are dry. In practice flags must fly freely before tattering can occur, and in the case of wet flags of 9 × 14 in., winds of 10 m.p.h. are necessary to allow them to fly freely. Once flags are supported by the air flow, however, they tatter in accordance with the relationships $y = -0{\cdot}256 + 0{\cdot}136x$, and $\log y = -0{\cdot}134 + 0{\cdot}024x$, for dry and wet flags respectively.

These results indicate that under dry conditions the madapollam flag gives a reasonable measure of run of wind and of mean windspeed. Unfortunately, unless continuous records of rainfall and windspeed allow elimination of excess tatter due to water in the flag at high windspeeds, it is evident that the use of flags where high winds accompany rain must exaggerate variation in exposure to wind. If no correction factor for rainfall can be applied to field measurements, no valid comparison of run of wind or mean windspeed can be made between sites or between non-contemporaneous exposures.

Water in the flag is unlikely to exaggerate exposure to wind at windspeeds below 30–35 m.p.h., but if windspeeds exceed this level during periods of rain, and if no correction factor for rainfall can be established, exposure will be exaggerated. Consequently, the use of flags as indicators of exposure in biological studies will be acceptable only where a measure of integrated effects of wind and rain is sought, and where single and integrated biological effects may be described by regression lines similar to those for wet and dry flags. The madapollam flag cannot be regarded as a physical anemometric instrument; it gives a measure of exposure, but only as a function of the interaction of wind and rain with the particular fabric used.

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CHEMISTRY

Preparation and Melting Point of Di-2-phenylethylmercury

The preparation of di-2-phenylethylmercury (I) has been reported by Criegee, Dimroth and Schempf[1], and Nerdel and Makower[2]. Criegee *et al.*[1] prepared (I) by the reaction of 2-phenylethylmagnesium chloride (II) with mercuric chloride and obtained (I) as an oily product, the identity of which was confirmed by its reaction with mercuric chloride to form 2-phenylethylmercuric chloride (III) (85 per cent) and with mercuric acetate to form 2-phenylethylmercuric acetate (35 per cent). The melting-point of (I) was not recorded. Nerdel and Makower[2], using a similar method (reaction of 2-phenylethylmagnesium bromide (IV) with mercuric chloride), obtained a sample of (I) which crystallized at −40°.

In an attempt to clarify these results, the preparation of (I) was carried out by three methods. The first method was a two-stage synthesis in which (II) (0·140 mole) reacted with mercuric chloride (0·154 mole) to form (III), m.p. 164° (Criegee *et al.*[1]: m.p. 165°–168°), and then (III) was caused to react with (II) to form (I). The second method was also a two-stage synthesis in which (IV) (0·11 mole) reacted with mercuric bromide (0·12 mole) to form a 2-phenylethylmercuric bromide (V), m.p. 169° (Hill[3]: m.p. 169°), and then (V) (0·05 mole) reacted with (IV) (0·10 mole) to form (I). The third method was a one-stage synthesis in which (IV) (0·12 mole) reacted with mercuric bromide (0·04 mole) to form (I). The symmetrical mercurial, (I), was obtained from all three syntheses as an oily product with approximate m.p. −44°, which is comparable to the melting-point obtained by Nerdel and Makower[2].

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