this case ten of them survived, with signs of shock present to a much lesser extent, and two of them died.

These experiments indicate that vitamin B_{12} has a protective action on the anaphylactic shock of the guinea pigs. This action reveals itself using doses as low as 60–90 μgm. per kgm. body-weight. It is worth while to mention also that in patients allergic to liver extracts, no allergic reactions to vitamin B_{12} were noticed[5].

Without discussing whether the mechanism of action of vitamin B_{12} or folic acid in the macrocytic anæmias could be the result of their anti-anaphylactic action, it should be pointed out that the liver interfering with their metabolism might exert an anti-allergic action in the organism. Thus it is well known that a disturbed liver function plays an important part in some cases of human allergy.

Another important conclusion is that no other substance is able to protect the guinea pig from anaphylactic shock when used in such small quantities as vitamin B_{12}. For example, if we take the common anti-histaminic drugs ('Benadryl', 'Pyribenzamine', 'Dimetina') their protective dose is 3–10 mgm. per kgm. body-weight[6–9], which is thirty to fifty times greater than the dose required in the case of vitamin B_{12}.

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Effect of Rain in Calming the Sea

IN view of the difference between the results obtained by E. W. S. Ashton and J. K. O'Sullivan[1] and those of C. F. Barnaby[2] for the number of vortex rings formed when drops of water fall into a container of water, we have repeated the experiment.

The apparatus was set up as described by Ashton and O'Sullivan. As a preliminary investigation the experiment was performed using different dyes. It was found that fluorescein gave the clearest results, especially during the first few drops before the top layers of the water became coloured. As a comparison with the dyes used by the above-mentioned workers, we tested the effect of cresyl blue and aniline orange, and in both cases we recorded lower results than with fluorescein, due, we believe, to initial rings being missed. The following results were obtained using fluorescein. At each height, drops of mean weight 0·036, 0·057 and 0·098 gm. were used. Table 1 gives detailed results. The secondary drops mentioned by Barnaby were noticed, and although some produced vortices these only travelled a short distance and hence would have little effect under Reynolds's theory[3].

Table 1

Dropping height (in.)	% No. of drops which formed vortex rings Weight of drop (gm.) 0·036	0·057	0·098
6	80	76	80
65	50	26	54
97	39	17	19
170	5	1	0

We have extended the experiments to investigate the effect of wind on the rain drop and the action of neighbouring splashes on the number of vortices. An 8-in. diameter fan was used to produce an air current; but unfortunately it was only strong enough to have an effect on the drops from 6 in. There was a significant decrease in the number of vortices, as shown in Table 2.

Table 2

Angle of strike (degrees)	% No. of vortex rings formed Weight of drop (gm.) 0·036	0·098
0	80	80
15	38	42
30	4	6

The action of neighbouring drops was investigated by arranging four similar dropping tubes containing pure water at the corners of a square with the funnel containing coloured water at the intersection of the diagonals. As is seen from the results in Table 3, a decrease in the number of vortices compared with the single-drop experiment was found. Only the largest drop (0·098 gm.) was used.

Table 3

Dropping height (in.)	% No. of vortex rings formed Length of diagonal 8 in.	10 in.
6	16	40
170	0	0

From our results, we suggest that rain does not calm the sea by producing vortex rings as suggested by Osborne Reynolds. We have been unable to find any reference to the calming of ocean waves by rain drops in the works of authors on ocean waves[4]. We therefore suggest that the observed calming of the sea by sailors as reported by Reynolds is due to the rainstorm being accompanied by a fall in wind velocity and consequently a decrease in the amplitude of the waves.

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