The nets were of muslin with an opening of 3 ft. diameter, except when occasionally a larger net, 6 ft. diameter, was used (shown by a double circle). A glass collecting tube was fitted to the end of each net; twice these broke, presumably losing most of the catch (indicated by + sign on chart).

Altogether 730 insects were collected, distributed amongst the following families thus:

HEMIPTERA		DIPTERA	
Aphididæ	171	Cecidomyidæ ..	21
Psyllidæ	1	Chironomidæ ..	54
NEUROPTERA		Culicidæ	1
Chrysopidæ	1	Mycetophilidæ ..	53
Hemerobiidæ	2	Psychodidæ ..	20
TRICHOPTERA	1	Phoridæ	3
LEPIDOPTERA		Syrphidæ	7
(Noctuidæ	1)	Acalypteræ ..	355
Micro-lepidoptera ..	5	Spiders	6
HYMENOPTERA			
Chalcidoidea	5	Unrecognizable	
Ichneumonoidea ..	7	(damaged in net) ..	16

The broad arrows on the chart indicate the direction of the wind at points where the ship stopped for marine work, and the number of 'feathers' on the arrows indicate the strength of the wind by the Beaufort scale: 1, 2, 3 or 4. The speed of the ship was approximately 8 knots.

The insects taken in the north-eastern area, mostly Aphididæ and small Diptera but also lacewing flies and micro-lepidoptera, were 120–150 miles from the nearest land.

There is, on the whole, no apparent difference between the number of insects taken at the mast-head and at heights of 200–400 ft. in the kite nets. Considering the small size of the nets used, the number of insects collected indicates a very large population of 'aerial plankton' drifting across the sea. All were taken in the nets except the Noctuid *Plusia gamma* and one Hemerobiid, which flew on board ('2' at north-east corner of chart), and all except the Noctuid must be regarded as too small and weak in flight to be true migrants. All observed in the collecting tubes (the majority) were alive and active; a few were crushed in handling the nets, especially when wet through fog. They were taken both during the day and night, and some in rain or fog.

Distinct areas can be seen in the chart: richer, poorer or apparently devoid of insect life. The barren areas perhaps represent blocks of air which have moved off the land during the night when convection currents are at a minimum.

It appears likely that the study of insect drift over the sea, in giving definite evidence of the distances (minimum when measured from nearest land) travelled by insects, may be of value in understanding the spread of insect pests over the land, in addition to indicating the infection of Great Britain from the Continent and throwing light on the origin of the insect faunas of islands. It is hoped that with the co-operation of steamship lines across the North Sea and Channel, a regular survey may be inaugurated.

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A Comparison of Certain Properties of Timbers from Tropical and North Temperate Regions

EXAMINATION of the results of standard mechanical tests on more than three hundred species of timber reveals a striking difference in the properties of timbers from tropical and north temperate regions respectively. The results were taken from tests carried out in the Timber Mechanics Section of this Laboratory, together with those published by the Forest Research Institute, Dehra Dun, India[1], and the United States Forest Products Laboratories, Madison[2].

Two strength properties of the timbers were considered, namely, the strength in impact bending as measured by the maximum drop of a 50 lb. hammer, and the strength under compression parallel to the grain. When the species-averages of these two properties were plotted separately against specific gravity, it was observed that for both of them the values for tropical and north temperate zone timbers have quite distinct distributions. Although these distributions overlap, it is clear that, for any given specific gravity, tropical timbers are, on the whole, weaker in impact bending though stronger under compression parallel to the grain than north temperate zone timbers.

There appear to be no constant differences in gross anatomical structure between temperate and tropical timbers such as might account for the observed differences in their strength properties, and it would seem that the causes must lie in the composition of the cell walls. A comparative study of thin transverse sections of species from each group indicated that, on the average, the fibres of the temperate zone timbers show a greater affinity for the so-called cellulose-stains (for example, Light Green in a Safranin-Light Green combination), particularly after the sections have been subjected to prolonged boiling in distilled water, whereas the tropical timbers usually show a stronger reaction with so-called lignin reagents (for example, Phloroglucin). Furthermore, a comparison of six English-grown timbers with material of the same or closely related species grown in the tropics revealed a somewhat greater affinity for so-called cellulose stains on the part of the English-grown specimens.

Although the reactions of these microstaining reagents are not closely related to the results of standard chemical analyses of woody tissues, it may be inferred that variations in the concentration of some substance or in the physical condition of the cell walls affect the two strength properties in different directions. It is interesting to note that the positive relation between strength in impact bending and under compression parallel to the grain is an indirect one, since both strength properties are positively related to specific gravity. Mr. E. D. van Rest, of this Laboratory, has demonstrated statistically that the indirect positive relation masks a significant negative relation between the two types of strength.

The investigation so far has been of a preliminary nature and it is hoped to publish the complete results later; the evidence already obtained, however, strongly suggests that the influence of tropical conditions of growth on the composition of wood cell walls is such that, where weight is the primary consideration, timbers of outstanding toughness must be sought in the temperate regions, as they are not likely to be produced under trqpical conditions.

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[1] Limaye, V. D., *Ind. For. Rec.*, **18** (Part X) (1933).
[2] Markwardt, L. J., and Wilson, T. R. C., *U.S. Dept. Agr., Tech. Bull.*, No. 479 (1935).