The normal temperature of a hive in the breeding season should be, as is generally accepted, about 85° Fahr. This is necessary (a) for the hatching of brood, (b) the ripening of honey, (c) the prevention of loss of honey, by the extra amount consumed by the bees in order to keep up their warmth if the temperature falls. In the winter, to which we will for practical purposes at present confine our remarks, the latter only has usually to be considered; but in strict truth it demands our consideration as much as if we had also to provide for the two former. For if the temperature falls below the proper degree, the winter stock of honey is drawn unduly on, the weaker bees get killed off, and the danger of spring dwindling is increased —results which can not be held of less moment in winter, than the non-hatching of brood, and non-ripening of honey in summer.

What then is the exact effect of the wind directed towards the entrance of a hive?

The Langstroth hive contains, after due allowance for the room taken up by the frames, comb, honey and bees, about 1,000 cubic inches of air in each full story (should any wish to estimate the effect on a reduced hive, they will observe that for each inch of reduction, he must subtract about 70 cubic inches), and this we will take as the unit of air to be acted on by the wind.

As to the wind, a scarcely perceptible movement of the air takes place, when it travels at the rate of one mile an hour. A hurricane which would go far towards unroofing houses and a *fortiori* upsetting beehives registers 80 miles an hour. Between these limits lie the ordinary winter winds. Five miles an hour is the rate of a light breeze, ten miles an hour that of a brisk breeze, fifteen miles an hour a strong breeze, and twenty miles an hour a strong wind. Thirty and forty miles an hour are the rates of ordinary violent half gales and gales; but as they are of short duration, we propose confining the calculations to those lighter winds which may be considered to last pretty steadily after the autumn is set in until the spring has well advanced, say for about four months in the North Island of New Zealand, and more or less in higher or lower latitudes; We will then in one moment give the effect of wind travelling from one mile to twenty miles an hour on the unit of air in one body of the Langstroth.

As to the width of the entrance of the hive by which the wind obtains admission to the interior, the ordinary depth of the triangular entrance is ⅝ of an inch, and if the body of the hive be drawn forward so that the width of the entrance internally is rather less than three inches long, then a column or wedge of wind an inch wide and an inch deep could enter if playing directly on the front of the hive. If the internal width of the entrance be that usually allowed in winter, viz., half an inch, then the sixth part (about) of the above wedge of wind could enter.

We can now put in tabular form the approximate number of times in which the total mass of air in one story of a Langstroth hive will be changed by a wind playing at right angles on to the front of a hive; and the calculation is purposely only approximate, as fractional accuracy is of no use to the ordinary beekeeper, nor necessary for our purpose.

The numbers in the diagram denote the number of times in which, assuming no obstacle, the total mass of air inside will be completely changed in one hour. They are all below the mathematically correct figure.

RATE OF WIND PER HOUR IN MILES.	Internal Width of Entrance.			
	3 in.	2 in.	1 in.	½ in.
1 mile	60	40	20	10
5 miles	300	200	100	50
10 miles	600	400	200	100
15 miles	900	600	300	150
20 miles	1200	800	400	200

Of course the above assumes that the internal air can find its way out easily, and that no obstruction is offered by friction with the frames, combs, etc., and that the wind plays fully on the entrance. Allowance of a very considerable percentage must be made for these impediments to the change of air, which however would have to be somewhat discounted by the angular shape of the entrance of the ordinary Langstroth, which tends to gather together the wind and drive it in more than would be the case if a hole in a flat surface were presented to the wind.

But after every allowance is made, even to the extent of 50 per cent, it is a hard fact, that with an entrance of only half an inch, the whole of the warm air in the interior of the hive, where the bees are clustered would be reduced to the temperature of a winter wind about *once every minute* in a very moderate breeze of ten miles an hour. And as it is no uncommon event for a three days' spell of cold, rainy, breezy (if no worse) weather to take place, we leave it to beekeepers who are careless about the aspect of their apiaries and the width of their entrances