that the sides are but § inch in thickness and the whole case is shallower by # nch. The sides are streng thed by battens (which also serve as handholds) through the ends of which, on one side, the thumbscrews are put. The inside measurement in with the super is thus 12 inches into which seven (each holding four sections frames 41 inches by 41 inches) are placed, resting upon the tin rests, as described for The frame ends are the brood-sections. - inches wide and the sections are of The half bee-space the same width. is maintained above and below these frames as in the brood-chamber.

THE COVER.

The construction of the cover will be understood by a reference to the engraving.

From the Australian Bee Journal.

is the Ventilation of Hives Yet Perfected?

HE ventilating arrangements which our architects and builders provide for our houses in general and rooms in particular,

are, from a scientific point of view, far below those of the lowest type of savages as yet interviewed. The escape of vitiated air is left to chance, but every chance, the removal of which does not involve additional expense, is carefully blocked. This is no reason. however. that we should retaliate on bees. Moreover. their paying powers largely depend on proper ventilation, it Leing one of the essential factors in their well-being. In summer, if the ventilation is too little, time is wasted in fanning, and the bees cluster outside. In winter, if the ventilation is too little, condensed moisture is not Carried away and diseases supervene; if too great, bees die off; and in case of winter brood, it gets chilled; in either case spring dwindling ensues. There is, then, no apology necessary for urging that the ventilation should be considered on scientific principles and it common sense puts in a claim as sufficient, be it remembered that common sense, if worth anything, is Only science arrived at in an unscientific way, and that it very soon gets out of its depth.

Let us examine the factors at hand for the regulation of hives, and in so doing let all disturbing influences of the wind be left out of consideration, as having to be dealt with otherwise.

I. The motive power must, from the circumtances of the case, be the common one furnished

by the expansion of air under the influence of consequent difference in and the heat. weight between a given quantity of warm Air expands -+for cold air. and column of air degree.) A hot everv in a tube, such as a chimney or a bee-hive. if surrounded by a mass of colder air. ascends with a rapidity which varies with the difference between the two temperatures, and the height of the column of hot air. The greater the difference between the two temperatures, the greater the rapidity of the upward movement, while a greater height of the heated column slightly retards, although it steadies and gives power to, the total mass within.

Now the heat of the column of air in a hive is, theoretically, a fixed quantity, viz., about 85° F., this being reckoned to be about the temperature at which the blood-heat of the bees keeps a hive if there is no disturbing influence, such as wind, or the excitement previous to swarming. It necessarily follows that on a hot summer's day, when most ventilation is needed, then it is that the motive power is the least and the ventilation least, and frequently nil, because the outside temperature approximates to, or exceeds, he inside temperature; and, secondly, that in winter, and on cold summer nights. when least ventilation is needed, then it is that the motive power is strongest, as the normal temperature inside will be about 85°, and outside 50°, 40°, 32°, or lower. This at once involves the conclusion that if a steady temperature within is necessary for the well-being of bees, it must be controlled artificially.

The principal, and perhaps, practically, the only, controlling power at hand, is the size and number of the apertures left for the passage of the heated air inside. Although exact statistics are of no very grave moment in this matter, yet it may be mentioned that if the formula given in Brand and Cox's Dictionary of Science has been worked out correctly, the column of hot air inside an ordinary Langstroth one storey hive would move upwards at the rate of 6 inches per second if the temperature outside was 80° F., and at the rate of 30 inches each second if the temperature outside was 30 ° F. But this implies a perfectly unimpeded means of entrance and exit, such as is supplied by the open fire-Every inch of place and top of a chimney. glazed mat, or of the superficial extent of the aggregate of the threads of a porous mat, lessens thevelocity of the passage of the heated air, and consequently tends to keep the air in the hive mare and more at rest. Moreover, as the cold air enters, the difference between the two temperatures is lessened, and consequently the rate

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