weeks in a small tightly corked bottle. They needed air and used it. They needed very little, and surely got it. That bees may live for a long period on very ltttle air in just the right conditions is certainly true. It is not true that these conditions are easily secured at will, hence I do not and I guess no other bee-keeper recommends no ventilation. I always leave the entrance to my hives wide open, except for experiment, and would advise the same for others. The fact, however, remains that bees may live for weeks with no air more than is in or comes through the walls of their hive.

Another error which has been taught and is now often believed and urged, is that gases arrange themselves like liquids in strata, the heaviest at the bottom. This is wholly erroneous. Our present physicists know and teach the law of the diffusion of gases. Were it otherwise all wells would be poisonous, as the heavy carbon dioxide would settle to the bottom. As it is only such are poisons as generate the foul gas more rapidly than the law of diffusion can disperse it.

If we fill a bottle with hydrogen and another with carbon dioxide, and connect them with a long small tube, set in air tight corks, the hydrogen bottle being directly above the carbonic acid bottle, soon this law of diffusion of gases will thoroughly mix the two gases in both bottles, even though the hydrogen is 22 times lighter than the carbonic acid. The hydrogen goes down and the heavy carbon dioxide up. What a wise and benificent law this is, else the oxygen, the great supporter of combustion, would separate off in its stratum, and we would have a conflagration that would render the Chicago fire as nothing. Again it causes the pure air from outside to rush through the thousand little often micsoscopic openings into our rooms. And thus we live. The mixing of different gases is the more rapid with greater variation in temperature. How quickly we feel the fresh air in winter when a distant window is opened, though only slightly.

Vapor in the air acts as a gas, that is it mixes thoroughly, and moves as the air moves. Hence as long as a bee-hive is warm enough to hold all the moisture in an invisible state, it will pass out of the pores of the hive and at the entrance the same as the air passes, ever accompanying it. Hence we see how the moisture passes from a hive. Until the air is saturated or the moisture raised to the dew point the moisture passes out as freely as the air. This dew point is raised with the temperature. Thus the air will hold very much moisture in an invisible form so long as the temperature is kept well up. It is probable that moisture does no harm, however much, until the point of saturation is reached, when drops of water or visible vapor will appear, though I am not sure of this.

One more point and I close. Air passes freely through wood, and even through stone or brick walls. Hence our houses or bee-hives are partially ventilated even though closed tight. I have seen the light of a candle extinguished by a person blowing through several inches of hard solid wood.

Thus, to me, it is no surprise that bees in the quietest condition of winter, may live and even thrive when the hive is wholly closed. The ventilation through the hive is doubtless more than sufficient for their needs. Yet we seldom get just this condition for any considerable length of time, so I would advise for indoor as well as outdoor wintering, that the hive be well open at the entrance at the bottom of the hive.

A. J. COOK.

Lansing, Mich.

We are very much pleased with the above able and interesting article. It has enlightened us on this matter. and we always feel, like we presume many others do, when our eyes light on anything in any of the journals from Prof. Cook, that we are about to enjoy a treat, and to us this is an extra *good* one. It is gratifying to have an able authority to whom we can all look with confidence, knowing that whatever leaves his hand should not be questioned by us novices in science. The above facts will account in a great measure for many of the apparently unsolved difficulties and differences in opinion, and especially in connection with the amount of air that bees require.

FOR THE CANADIAN BEE JOURNAL.

THE INDIAN AND COLONIAL EXHIBIT.

AFTER a good deal of corresponding one way and another, the Ontario agents have very kindly sent me a letter, from which I make the following extract.

"As the space is allotted to the Association it will be necessary for your body to act unitedly to prevent confusion. We would suggest that you notify intending exhibitors to send papers etc. through you, and you can notify us as to what you require in the way of labels etc.

The understanding is that your association shall occupy the space asked for with goods to be sent by the end of February, and that you will have the privilege of substituting the crop