Read at the New York State Convention.

## HOW DO BEES BREATHE.

e EES require a breathing apparatus quite as well as ourselvee ish you when I tell you how complicated

it is. In the first place, bees have no langs like a horse or bird. They do not depend pon one organ to supply the oxygen necessary to enable the several parts to perform their functions.

Before going further, let me explain that the Wir we breathe is composed of three gases. one of which, oxygen, is the element that sustains life, as well as the fire which burns in the grate. Life may be called a burning process.

In ourselves, our blood comes in contact with Oxygen within the lungs, and then travels by the Bost delicate channels to every part of our body. In the bee there is a blood pump like our heart. It is called the "dorsel vessel," and resembles omewhat an injector, such as is found on every locomotive, but depends upon the opening and butting of valves, for its successful operation. It leads the blood, received through the several Openings in it, to the head, whence it oozes back through the whole body.

Instead of lungs, bees have what is called a "tracheal system"-a trachea is merely an airtabe-and these air tubes travel in every conceivable direction within the body. They receive the outside air through openings in the body called spiracles. Adult bees have fourteen of these openings. The spiracles open into large sacs. from which branch out the tubes before Poken of. As I before said, the blood does not receive the oxygen from lungs, and hence these ir-tubes must perform this life-giving function. Every part, every member, however small, however delicate, must be reached by these breathing tubes. Bees breathe with a regular notion, but instead of an expanding and contracting of the chest, it is a lengthening and thortening of the abdomen. Watch a tired bee top at the entrance before going in, and you Will see it pant like a tired horse.

Take a good sized pill-box and fill it half full of wax. Catch a worker, and kill it with ether, chloroform or alcohol, and permit the killing anid to evaporate. With a hair pin, heated Over a lamp, make a little bath of melted wax In a convenient spot in the pill-box, and having dipped off the wings and legs of the bee, drop it on its back in the little bath aforesaid. The bee should not be more than half immersed in the wax, which is then allowed to cool. When old, which will be in about a minute, pour Water over the bee until it is covered. In a good

light-say sun light-with a needle knife (made by heating the point of a coarse sewing-needle until red hot, hammering it with a tack ham. mer, on the face of a flat-iron, and after tempering by heating cherry red and plunging in water, sharpened on a hone, and inserted in a match for a handle), and a fine needle inserted in another match, go to work and cut away the under part of the rings of the abdomen, and carefully lift them off.

If you have good eyesight, or if not, by aid of a cheap lense (magnifying glass) of good construction, you will be astonished at the sight before you. There lie the honey-sac. digesting stomach, bile tubes and intestine. Running in all directions, but starting from the sides, you will note fine white tubes branching out into smaller, and these organs into still smaller, until lost to sight. These are the air-tubes I have been talking about, and you will note that they not only encircle the digesting stomach, but are wound around the other parts in sight. If your lense by strong enough, and you have not ruptured it in your dissection, you may find the nerve system, which lies just under, or when the bee is right side up, just over the wax-producing portion of the abdomen, and which runs the whole length of the bee from tail to brain. You will find it composed of two "cords" almost transparent, with occasional bulgings in which the two "cords" are joined. In and about this very nerve system you will find the fine breathing tubes before spoken of. Up into the compound eye, with its thousands of lenses, run other breathing tubes, every lense being supplied with oxygen in this manner, so that its functionsmay be performed.

JOHN ASPINWALL.

From Gleanings.

## FLOATING APIARIES IN EGYPT.

HE following sketch we copy from the Deutsche Illu trierte Bienen Zeitung for ୶୲ୢ The article was November, page 44. written by Mr. T. Kellen, of Luxenberg. W. P. Root, our proof-reader, translates as follows :---

Not long ago I discovered in the city library of this place, Luxenburg, a French work on bees, which for a century had been unremoved, leaves uncut, and was covered with venerable dust and finger-marks. In this work I found a very interesting notice in reference to portable apiaries of that period. The author of the apiaries of that period. The author of the above work, B. E. Manuel, procured some notes of a description of Egypt, and added a few concluding observations of Reaumer thereto. From this and other histories of travels, as well

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