

Ligurian queens is often very remarkable; but with regard to the drones it must be remembered that the first cross does not affect them, so that a hybridised yellow queen may possibly breed even better drones than one which has had a true Italian impregnation. I believe what is left of the white clover and heather when within reach, is nearly all the pasturage that now remains for our bees.—A DEVONSHIRE BEE-KEEPER.]

### BEEES IN JAMAICA INCREASE THE SIZE AND SUBSTANCE OF THEIR CELLS.

I AM very much obliged to your several correspondents for their information in regard to the supposed differences in the bees of Britain. Possibly some few of your readers may be interested in the following case:—The hive bee was introduced many years ago into Jamaica. Having seen it stated that the cells were larger, I procured (through the kindness of Mr. R. Hill, of Spanish Town), some bees and comb. The bees have been carefully examined by Mr. F. Smith, of the British Museum, and pronounced to be the common species. I also secured the hind and front legs, the antennæ and jaws of worker bees from Jamaica and my own stock, and could detect no trace of difference in size or other character. But here comes the remarkable point—the diameter of the cells is conspicuously greater in about the proportion of 60 to 51 or 52 than in our English combs. The wax seems tougher, and the walls, I think, are thicker. The cells in parts of the comb were much elongated, and the whole hive contained a great quantity of honey. It certainly appears as if the instinct of the bee had become modified in relation to its new, hot, and rich home. But it seems to me an astonishing fact that the cells should have been made larger without a corresponding increase in the size of the body of the architect.—CHARLES DARWIN, *Down, Bromley, Kent.*

[The extra thickness and toughness of the wax employed by the bees in the torrid climate of Jamaica render the combs better capable of resisting the heat. The increased size of the brood-cells would better protect the larvæ from the same excessive heat by interposing a wider air-filled space between them and the walls of the cells; for air is one of the worst conductors of heat. If such be the true explanations of the changes adopted by the bees, they are additional instances of instinct approaching closely to the confines of reason.—EDS.]

### BEEES AS CHEMISTS.

I AM very much obliged to Mr. Shearer for his kind attempt to prove what we both believe—viz., that simple syrup is changed by bees before it is stored in their combs, although I am by no means surprised at the result.

I really see no better test of the truth of our opinions than that which I have offered more than once, and which I now beg to repeat. I have some simple syrup in comb, made and stored by bees so late last autumn that all honey-gathering was over at the time, and this I am willing to submit to the Editors of THE JOURNAL OF HORTICULTURE, or such other tribunal as they may point out. If this is not satisfactory to our opponents, I submit that the burden of proof lies with them. Supposing them to be right, and that bees always store their food unchanged, what can be easier than to produce a bit of sealed comb in which simple syrup may be found unaltered? But this has not yet been done, although I offered a good stock of Ligurian bees to any one who could effect it, and I am well assured that it cannot be done. A few weeks ago "A NORTH LANCASHIRE BEE-KEEPER" sent me a bit of comb in which were what he considered to be crystals; but these turned out to be only candied particles such as are constantly to be found in true honey, and from which they did not differ in any respect when examined under the microscope.

The plain fact that no one can produce simple syrup which has been stored by bees in the same state in which it was given to them, appears to me quite sufficient evidence of the correctness of the opinions expressed upon this subject by—A DEVONSHIRE BEE-KEEPER.

[We think our friend is rather unreasonable. The proof is required from those who maintain the affirmative; and the only conclusive proof, we think, would be to hive, in a hive already combed, a swarm—an artificial one for example—and to

confine the swarm in a light room or greenhouse entirely without plants, but with a full supply of sugar syrup, and nothing else. If the bees converted that syrup into honey, the problem would be solved. Mr. Shearer's experiment merely shows that the bee, by the act of swallowing the syrup, does not convert the sugar into honey. It would have been more conclusive if he had allowed the bee to fly about in an empty room for an hour before he emptied its honey-bag.—EDS. J. OF H.]

### NON-IRASCIBILITY OF LIGURIAN BEEES—FUMIGATION—BEEES LEAVING THEIR HIVE.

I THINK the Americans are wrong when they say the Ligurian are more irascible than the black bees. I suppose they judge the bees by themselves, as I believe the two mixed are very irascible, as I nearly always find the bees that come at me are the black ones. I consider the Ligurians are superior to the black; they are prettier, more prolific, and are quicker in finding out honey pastures. I have a queen I got from M. Hermann that swarmed four times in five days. The swarms are very fair and doing well, although we have had bad weather in this part (South Durham); and I observe the bees have not been able to make much honey, and very many swarms have gone back to their parent hives from starvation. Two of last year's swarms (black bees) I took the bees from the other day did not appear to have a quarter of a pound of honey each. I have, therefore, been feeding my hives.

FUMIGATION.—Not being so expert with bees as "A DEVONSHIRE BEE-KEEPER," I have generally adopted it as the only way to get the queen from a hive or a swarm, and if not overdone, do not see that it injures the bees, and certainly seems to be the only plan of joining without fighting. I have a hive of Ligurians to which the black bees were added now nearly two years since by fumigation. I observe many black bees among them, and, therefore, am of opinion that bees live much longer than six months; and those bees do not appear to have suffered from the fumigation.

BEEES DESERTING HIVES I think may arise from many causes. I had two last-year's swarms that appeared doing well early this spring; but as the weather got warmer I did not see so many about, and when I looked found only three or four bees in one, and in the other not more than a dozen or so, but did not see a queen in either. The bees from one I am almost certain joined the next hive; but what became of the bees from the other I do not know. I also had a hive that had swarmed twice last year, and had when brought from the moors 36 lbs. of honey, and was well off for bees in the beginning of the season; but I observed some of the Ligurians found it out, and robbed it: consequently nearly all the bees went with the robbers. About a month since I fumigated it, to see if there was a queen, when I found only about a handful of bees, and after taking out some of the comb observed the queen at the very top of the hive (straw), I therefore returned the bees, and at ten A.M. removed the next hive on another board, and placed this one on its board, since which it seems to be doing well. I have found a great deal of honey candied in three or four hives this last winter; what can be the cause of this? I do not find the Ligurians attack more at swarming than the black ones; but should the weather be windy and wet I think both will do so.—A. W.

[You are mistaken with regard to the longevity of bees. The existing black ones have either strayed from other hives, or are bred by the Ligurian queen. Honey candies by exposure to cold.]

### LIGURIAN BEEES IN AMERICA.

It will be perceived from the following advertisement which we copy from the *Prairie Farmer*, that Ligurian queen bees fetch high prices on the other side of the Atlantic:—"ITALIAN QUEEN BEEES.—We guarantee the purity of all queens, bred by us, and their safe arrival at any express office. Price for a queen of a beautiful colour in a small box with a few workers 10.00dols.\* or 5.00dols. when not warranted to be impregnated by an Italian drone. Ministers of the Gospel are entitled to use 'Langstroth's Moveable Comb Hive' without charge, and can have warranted queens for 5.00dols.—L. L. LANGSTROTH & SON, *Oxford, Butler County, Ohio.*"

\* £2 1s. 8d. sterling