The Arena: Letters to The Editor

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me to make the following experiment. I placed two colonies under as near similar conditions as possible, one being equipped with all aluminium and the other with all wax combs. When time sufficient had passed so that the conditions in the hives should be similar, they were examined and no difference in the location or placement of brood could be seen. During the swarming season queen cells were very plentiful on the aluminium combs, especially where only nine frames were used in a hive. In fact, the bees seemed to prefer them, for in hunting queen cells to start nuclei with, if a hive had an aluminium comb the queen cells would be found upon it. In one yard twenty new colonies were built on aluminium combs. A thing that can be obviated is the sealing of the cells against the metal. I have found that this is caused by the frames being close together. If only nine are used in a hive body, and care being taken to see that they do not come close to the side walls, they will be drawn plenty deep. Three years ago it was my privilege to use some of the first combs put out by the McDonald company. While the bees used these combs, the cells were so deep that the bees would not take to them readily. The shallower combs used in 1920 were very readily accepted by the bees, and the better waxed and braced frames made in Texas in 1921 were accepted almost at once. In handling the large number of combs, I have noticed that the bees would accept those which were heavily waxed more readily than when only slightly so, and I believe that for ease in handling it would pay to have the frames better nailed. I think that the aluminium honey comb is the greatest advance in scientific apiculture since the invention of the movable frame hive."

Books still accomplish miracles; they persuade men.—CARLYLE.

ON THE MITE (*ACARAPIS WOODI*, RENNIE), ASSOCIATED WITH ISLE OF WIGHT DISEASE.

By Stanley Hirst.*

This short paper contains a definition of the new genus *Acarapis*, Hirst, 1921, specifying the points in which it differs from *Tarsonemus*, as follows:—

"Closely allied to *Tarsonemus*, but differing as follows: Second and third legs of larval stage very short (almost rudimentary); and without either claws or pulvillus (whereas in the larva of *Tarsonemus* these legs are about as long as the first and provided with paired claws and a pulvillus). Female lacking the club-shaped pseudostigmata that are present in *Tarsonemus*, and with the fourth leg shorter and wider and provided with more numerous hairs (in this last respect somewhat resembling the fourth leg of *Scutacarus*)."

A detailed description of the mite, with illustrations, follows. These drawings are the best yet published, to the reviewer's knowledge. (Attention should be called, in passing, to a misprint. In fig. 7, p. 518, c and d have apparently been accidentally transposed, so that the second leg of the larva is described as its first, and vice-versa.)

The author states that he has found a single specimen of a male *Tarsonemus* (in the strict sense of the term) in an apparently healthy bee's thoracic trachea; and has also found specimens of *Tarsonemus* on dry specimens of the three Indian species of the genus *Apis*.

It is of course hardly possible for anyone not an ex-

perienced acarologist to express an opinion worth having on such a point; but it seems decidedly doubtful whether there is sufficient ground for making a new genus in this case. The original description of the genus *Tarsonemus* is given by Dr. Rennie in his paper (*Trans. R. S. Edin.*, Vol. 51, Part 4, pp. 768-769), and is as follows (the original is in Italian):—

"Rostrum normal and free. Fourth pair of legs little developed in the female, lacking claws and pulvillus, and terminated by two hairs; first pair of legs in the female only, normal, resembling the second and third pairs, with the difference that they have only one claw. Fourth pair of legs in the male, robust, forming together a clasper [chela], ending in a strong claw. Third and fourth epimeri in the male rather long and strongly-developed, converging together anteriorly. Dorsal surface segmented. The creatures live upon plants."

It will be seen therefore that the generic differences mentioned in Mr. Hirst's definition refer to matters which are not part of the original definition of the genus *Tarsonemus*. Unless and until competent opinion decides definitely in favour of *Acarapis*, it seems to the reviewer that we beekeepers may very well go on describing "our friend the enemy" as *Tarsonemus woodi*.

A. D. B.

Criticism is a disinterested endeavour to learn and propagate the best that is known and thought in the world.—MATTHEW ARNOLD.

AN ANCIENT CRAFT.

SIR.—My books are to me always a source of peace and pleasure, and with such a heritage left to us by the early beekeepers and writers on bees, I often am made aware how greatly it is to be regretted that such an ideal and wonderfully interesting a craft should have fallen from its former eminence to the level of party strife and that a scientific and accurate knowledge of bees should be deemed to be unnecessary. It is suggested that many of the early writers knew a great deal; they certainly knew more compared with their opportunities than do more modern beekeepers with many facilities; in fact it would appear that very little more is known.

With the New Year greeting us I would put in a strong plea for more sincerity. Reconciliation without looking back while endeavouring to understand, to help and to generously appreciate the best in others, together with a desire to be sincere is above all a great and ever present necessity for the future well being of all.

Yours faithfully,

Cambridge.

NOEL VASLET.

1st January, 1922.

BEEKEEPING IN SPAIN.

SIR.—For some years I have been keeping bees here in English frame hives (W.B.C. type) in the hope of getting Spanish beekeepers to adopt this more scientific way of bee culture, up to the present with small success. Last May I wrote a letter to my trade paper, the *Chemist and Druggist*, on beekeeping in the South of Spain, which I note was quoted in the *Bee World* for June, pp. 17-18. Subsequent to this I received two letters from beekeepers on the matter (one from the Isle of Man, the other from Warwickshire) asking me to endeavour to send home some bees.

So far as I know, no infectious or contagious diseases are prevalent among bees in Spain, and hives well populated and

* *Annals and Mag. Nat. Hist.*, Series 9, Vol. 7, p. 503, June, 1921. (Published by permission of the Trustees of the British Museum).

in good condition can be bought at cheap rates, compared with the prices I see mentioned as prevailing at home. In view of the international activities of the *Apis Club*, it occurs to me that perhaps it might interest some of its members to look into the matter.

The main difficulty is the getting of the hives home to England, but as there is a regular line of boats from Seville to London, the *Mac Andrews Line*, even that might be managed.

The bees here are, I believe, related to the Ligurians, but are not yellow like Italians nor so large; mine are fairly docile, and when I get stung it is generally my own fault. They are, compared with pure Italians, great queen producers: I have on one occasion counted fifteen queen cells on one frame, but this is very exceptional. I hardly ever use smoke when taking the honey from the hives, but rely on care and speed in doing what is needful.

I may mention I have here in full working order the original *Wells Hive* made by Mr. Wells, who was a friend of my father and whose son sold me the hive; it is of oak and a very solid ponderous affair. The only special thing about it is that its inhabitants are exceedingly vicious compared with those of my other hives.

All the modern apiarists I have any knowledge of in this country use the *Layens Hive*; one apiary I saw in Madrid had twenty-five hives and the owner assured me he got half a ton (five hundred kilos) of honey a year from them. All these hives had a pane of glass in the back to enable the beemaster to observe progress without opening the hive. Another, living in a little town about twenty miles from here, took nearly eighty kilos of honey from one hive in a year. But the most of them use the old cork skep, which after all gives a good result if quality is not aimed at, and here it is not.

Yours faithfully,
CHARLES E. ROWCROFT.

Zalamea-la-Real,
Huelva, Spain.

A FORMIDABLE BEE ENEMY.

SIR,—Apropos of Dr. Gough's reference (July *Bee World*, p. 45) to the hornets in Egypt which play havoc with bees relying chiefly on force of numbers, may I submit some notes on the terrible hornet in Japan?

The Japanese hornet (*Vespa mandarina*) is perhaps the most formidable in the world and in contrast to the Egyptian hornet distinguishes itself in killing bees not by organised large forces for attack but by the most cruel manner of attacking. It is so large as to measure one and a-half inches in length, and I believe is one of the largest species of *Vespa* known. Specimens accompany this letter for inspection and scientific description.

It is said that *Vespa mandarina* is closely allied to, if not the same as, *Vespa magnifica*, a large species found in the Himalayas. This information was given to me by the late Mr. F. W. L. Sladen some years ago, when I sent him some specimens of our hornet.

Our average hornet season is from about the middle of September to about the middle of November. When attacking, the hornets come in numbers from one to five at a time. It is exceptional to see, say, ten or twenty hornets at a time joining in an attack. Twenty to thirty per day is the number usually encountered.

The manner of attack is as follows: After hovering about in the air, the hornet makes its way towards one of the hives, and alighting on the entrance and catching one of the bees flies again some feet high and bites the bee into bits. Quickly again another bee is attacked and similarly destroyed. With unabated vigour, the hornet repeats its cruel operation without in the least minding the guards, since the hornet's body is too hard for the bees' weapons. The more the bees come out of the entrance, the more the hornet becomes busy. Finally it returns to its nest, only to give the signal for a more terrible attack as other hornets follow. A bee colony thus attacked will have in front of its hive several feet' area covered by the crushed and mutilated corpses of victims. At last the bees may be lucky enough to succeed in swarming out

or are completely destroyed. It takes no more than thirty minutes to get the strongest colony completely wiped out from the moment the first hornet begins the offensive, were the beekeeper not to interfere! You will therefore understand the dread of the Japanese beekeeper and the absolute necessity of destroying the first hornet that launches the battle. The object of the attack is the brood of the bees and not the adult bees themselves, the hornets needing the former for dieting their own brood. So they rush for it once they get their clear way and take it to their nest. Hive after hive is attacked in this ghastly manner, in the absence of protection from the beekeeper.

Some of your readers will perhaps suggest using a guard made out of wire netting, but to our regret we know it will not do, because the bees will not remain idle when they see a hornet striving to attack, but will come out of the entrance for some feet, never to return. We have no solution for this problem other than using a racket with which we hit down the hornet as soon as observed. This means watching our apiaries every minute of every working day during some sixty days or so. Think of it, and think of the damage which this pest does to Japanese beekeeping. Am I wrong in describing it as one of the most formidable enemies, if not the greatest enemy, of bees ever known?

Yours faithfully,
Gifu-Ken, Japan.
YASUO HIRATSUKA.

THE MANDARIN HORNET.

SIR,—I have read with the greatest interest the account of Mr. Yasuo Hiratsuka regarding the activities of this remarkable insect, and especially his description of the organised attacks upon hive bees in Japan. The examination of the specimens, which included two queens, also afforded me much pleasure, and I imagine Mr. Hiratsuka is correct when he describes the species as the most formidable in the world. On enquiry at the *Royal Scottish Museum*, Edinburgh, I was

Fig 121.—Queen of Mandarin Hornet—*Vespa mandarina* (Natural size).

gratified to find two well preserved examples on exhibition there and to obtain the necessary reference to the original description of the species. This was contributed by Mr. F. Smith in 1852, in the *Transactions of the Entomological Society of London*, and a further note was added in 1873, in the same publication. As these Transactions were not readily accessible to me, Dr. James Ritchie, keeper of the natural history collections, *Royal Scottish Museum*, Edinburgh, has kindly made a short summary of the article in question for the benefit of the readers of *The Bee World*, and also supplied a copy of Mr. Smith's original drawing of the queen, which I quote here in full:—

"*Vespa mandarina*, first described by Mr. F. Smith from the mountain region of Tein-tung, near Ning-po-foo, in China, is one of the finest members of its genus known. In

a country such as North China, where wasps are prominent in the insect fauna because of their numbers and variety of kind, this species is conspicuous, and its discoverer, Mr. Fortune, during his travels, found that it also was 'very abundant.' Since its discovery in China, seventy years ago, the Mandarin Hornet has been found in various parts of North Eastern Asia, ranging from North China to Hakodadi and Hiogo in Japan; but so far as I know little is known of its wild habits, except that it builds large globular nests in the top-most branches of trees.

"Of the specific character of so outstanding a wasp little need be said; its size is enough to mark it out, for the queen is 1½ inches in length, and even the worker reaches 1¼ inches. The general impression given by the creature is that it bears a strong resemblance in colour to the English hornet. The thorax is black, but the head is reddish yellow as also are the wings and legs, and the abdomen has the striped rich yellow and brown colours, and half velvety surface, so familiar in the common hornet.

"From the queen the worker differs only in size and in the possession of a ferruginous spot on each shoulder, while the post-scutellum bears the same ruddy colour.

"The species has been called popularly the 'Japanese Hornet,' but the name is misleading since it is abundant in N. China as well as in Japan; a much more satisfactory specific designation would be that given by the original describer in the Latin specific name he adopted the *Mandarin hornet*."

Yours faithfully,

Aberdeen.

J. RENNIE.

Necessity is the Mother of Invention.—Pr.

JACQUET'S BILATERAL—MULTIPLE HONEY EXTRACTOR.†

M. E. Jacquet, of La Chèrîté-sur-Loire (Nièvre), France, inventor and manufacturer of this patent appliance, explains its features as follows:—

We call our extractor *Bilateral*, because it permits of emptying simultaneously both sides of a comb; *Multiple*, because it permits of emptying simultaneously a great number of combs.

Description.—The *Bilateral Multiple Extractor* consists of the following parts:—

(1) A rectangular wooden frame (mortised), supported on four wooden legs, the rigidity of which is ensured by struts of strap-iron. Two of the legs are provided with cast-iron castors, so that the apparatus can be moved about by one person.

(2) A casing of tin-plate, jointed and soldered. The lower part of this casing is supported by and nailed to the frame. It is provided with a draw-off cock with treacle-valve, 46mm. (approx. 1 13-16in.) in diameter.

The upper portion drains into the lower portion. It is surmounted by a gable-shaped lid, provided with a handle, two hinges, and a support.

(3) A spindle of mild steel, passing through the centre of the casing, and supported at the middle of the beams of the frame by means of two ball-bearings (outside the casing and enclosed in tin-plate housings).

(4) Interchangeable *frame carriers*, to hold the frames in the apparatus, attached to the spindle, which carries them round with it when it rotates.

Each frame-carrier is composed of two parallel bars of strap-iron, passing (at their middle points) one on either side of the spindle, regulated as to their distance apart by a notch cut in the spindle, and attached to the spindle by two bolts.

The four ends of these bars are bent and twisted, to form two pairs of diverging arms. At the bend, a stay and two bolts ensure parallelism and rigidity. At the end

Fig. 122.—Jacquet Extractor Dissected. Internal fittings shown.

of each pair of arms a wooden *stop* provided with hooks is fixed by means of two bolts.

Between the parallel portions of the frame-carriers slide four bars of strap-iron, to which are riveted springs equal in number to the fixed stops; on these springs are mounted hardwood *supports* provided with hooks.

(5) A *brake*, composed of a drum keyed to the spindle, a wooden brake-block, and a lever turning about a point on the frame.

(6) A crank *handle* with chain and cog gearing (Vaucanson chain).

Method of Use.—Lift off the upper portion of the casing to adjust the distance of the stops and sprung supports according to the size of the frames one is using, by shifting the movable bars which carry the springs. To do this loosen, and tighten up again, the bolts which hold in place the flanged guides at each end of the bars.

The operator then replaces the upper portion of the casing, opens the lid (which rests on its support), places a receptacle

† Compiled from French literature by Miss Annie D. Betts.