

AL MAWARED AL TABET'EIAH

Periodical Magazine devoted to natural resources.

Published by

The Ministry of Agriculture, Fisheries, Petroleum and Minerals, Sultanate of Oman



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وزارة الزراعة والأشغال والنفط والمعادن بسلطنة عُمان

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BEEKEEPING IN NORTHERN OMAN

By :

M. J. D. Manley

Honey Production

Expert, Directorate General of Agriculture

Introduction:

The bee (Genus *Apis*) is believed to have originated in the area of what is now Afghanistan, 10 or 20 million years ago. Since that time the genus has become differentiated into the four species which are recognised today. Of these four species, two are to be found in the Sultanate of Oman.

The ^{smaller} larger species, *Apis mellifera*, is known locally as 'abu tuwaik' (the father of the little collar) and is a common sight all over northern Oman, hanging from branches of trees on its single combs. This bee is currently the subject of a research project by Mr. R. Whitcombe for the Directorate General of Agriculture.

The larger species, *Apis mellifera* has a larger distribution than any other man - exploited insect in the world. Antarctica is the only continent where the bee is not well established and contributing to the agricultural colonies of the world.

Every year, at least half a million tonnes of honey are produced world-wide from some 50 million colonies of bees (Crane, 1975), and the bees as a pollinating agent are immense: for example, apple or-

chards containing bee hives have been known to produce 35% more fruit than control areas without bees. In fact, the annual value of world crops produced with the aid of insect pollination is over \$ 2,000,000,000. The annual value of the honey is surprisingly little — perhaps \$ 50,000,000 (Crane, 1972).

The exact date of the arrival of *Apis mellifera* in northern Oman is unknown. Historically, however, the bee seems to have been part of the Oman scenery for many centuries.

The aim of the bee-keeping project is to identify and study local methods, to estimate the distribution of bees, to evaluate the economic benefit derived from the bee and to act to increase this benefit. This is to be done by the use and dissemination of advanced bee-keeping equipment, and by the establishment of a workshop/extension centre in Rustaq to help the beekeepers overcome any problems. This report summarizes the work of the first year of the Northern Oman Project.

Activities:

The following activities have been carried out to fulfil the aims of the project:

1. An intensive programme of observation of the local bee has been completed, and its habits and idiosyncracies studied.
2. A small workshop has been built at Rustaq to house the equipment of the project. Rustaq is known to be the bee-keeping centre of Northern Oman.
3. An extensive survey of bee-keepers in the Jebel Akhdar region has been carried out, on foot, by Land Rover and by helicopter. The number of bee-keepers and colonies of bees has been assessed, and the relevant geographical area defined.
4. A programme of identification of nectar source for the bees has been undertaken.
5. A large amount of equipment, sufficient for 200 Langstroth type bee hives, complete with all ancillary equipment has been imported to Oman and is being erected at Rustaq.

Results:

At the beginning of the project, on observation of the Omani bee, it became immediately apparent that it was unlike the commoner sub-species of *Apis mellifera* — *Italia*, *caucasica*, *carniola* et al. In appearance it is smaller than the above sub-species which are found in more temperate climates. This led to the supposition that the bee might be of the *yemenitica* sub-species, but comparison of the bees* from the Dhofar Project under Mr. A. M. Berkeley made this seem unlikely. If any of the bees from

by the Rustaq Project is the unusual distribution of bees in Northern Oman. This takes the form of an enclave, bounded by the wadis Beni Ghafir and Sah-tan to the north and west, and by the Summit of the Jebel Akhdar range to the south as far as Nakhl. From Nakhl a line drawn through Awabi and back to Rustaq completes the outline. Within this area over 2,000 hives have been counted and it is estimated that this may be about half the actual total.

The only exception to this

The Characteristics of the Bee:

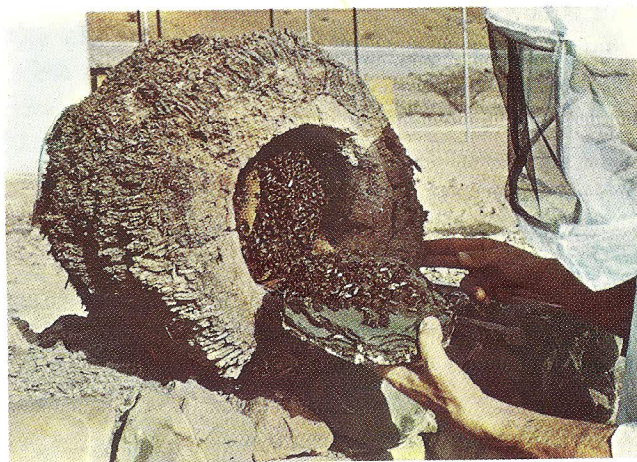
The northern Omani bee is unusually diminutive. Its brood and honey cells are as small as those of *Apis mellifera adansonii*, the tiny African bee, and the volume of its chosen nest is seldom larger than 1,500 c.c.'s.

The bee is excitable, but seldom angers sufficiently to sting. Its flight pattern is erratic, probably to avoid predators such as bee-eating birds (*Merops*).

An extension of this defensive



1. Date log hive and Langstroth hive together.



2. Opening up a date log hive.

Oman should resemble *yemenitica*, the Dhofari bees certainly should; however, the bees from Salalha and those from Rustaq show distinct differences. Accordingly samples were sent to the world authority Dr. F. Ruttner of the University of Frankfurt for the positive identification. Work on this is still preceeding though it appears possible that a new sub-species *Apis mellifera Omanitica* may be in the offing.

Beekeeping in the Jebel Akhdar:
One of the first things discovered

rough outline is the presence of some bees at Mizfah and Al Hamra on the south west side of the Jebal, which will be the subject of a further investigation based at Nizwa in late 1978.

This unusual isolation is the cause of one of the most hopeful aspects of the Omani bee: its total freedom from disease. It must also be largely responsible for the purity of strain and hence its possible acceptance as a new sub-species (see above)

flight pattern is that the bee takes off directly from the inside of its hive and flies straight into the hive entrance on return. On leaving the hive the bee will often turn to face the front of the hive and fly side to side or even backwards for a few seconds, presumably to aid orientation.

One unusual feature is that the bee is quick to reject any mutilation of the queen, especially clipped wings.

The Annual Cycle:

The cycle of the bee here is an exact reverse of that of the temperate climates. In September and October as the temperature falls the queen bees start brood-rearing. The first important nectar source, the Sidar trees (*Ziziphus spina christa*) which blooms in November and December, is met by the young foraging bees raised in the Autumn. The queen sustains egg laying till the flowering of the second major source of nectar, the Simr tree (*Acacia tortilis*) in February and March.

The Simr honey is then used as stores to carry the colony over the Summer months of total dearth, during which the colony only flies to fetch water and the queen ceases laying. In addition to Sidar and Simr, support nectar sources include Sidaf, the various citrus trees, local Alfalfa (where permitted to bloom), garden flowers and incidental flowering shrubs.

Northern Omani Bee-keeping Techniques:

The bee-keepers of Northern

Oman practice bee-keeping in a way which is simple, and reflects the harsh climate and lack of flowers and rain. In some years there may be total drought, in which case the bee-keeper may not even look at his hives for twelve months.

The bees are kept in hollowed out date logs, and the only manipulation carried out is to take the outer transverse combs of honey accessible on removing the stoppers placed in each end of the log (photographs 1, 2 and 3 show the way in which this is done).

The queen lays her eggs out of sight in the central three or four combs, flanked by the pollen required by the bees for protein. The skill of the beekeeper is reflected by the accuracy with which he gauges how much honey he can remove from the hive in a good year without starving his bees.

The honey itself is quite dark and pleasant. It is strongly flavoured as is typical of honey from dry mountain areas.

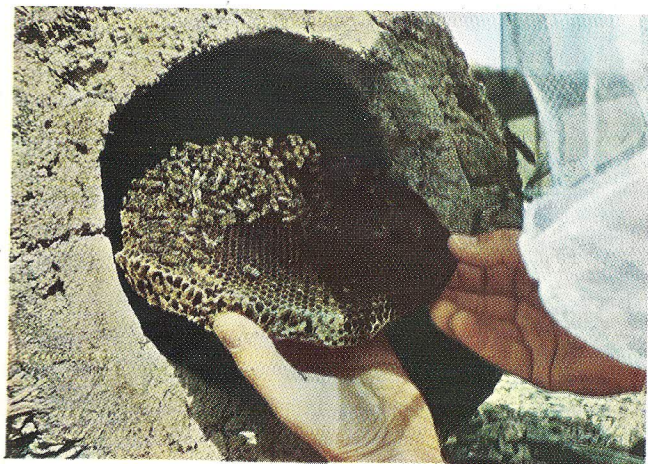
Relevant Advanced Methods:

The bee-keeping techniques which seem most appropriate to northern Oman are adaptations of American/European practice. The main points are the introduction of movable frame hives, and the use of the feeding of sugar syrup to stimulate egg laying in the queen bee.

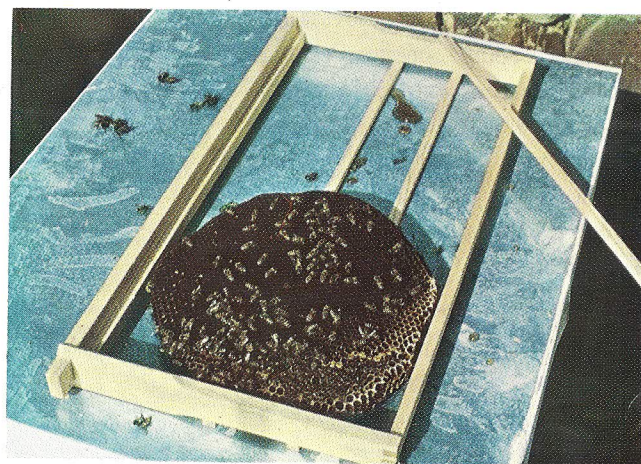
The moveable frame hive is an American design that dates to the 19th century, and is quite simply a hive in which access can be had to the bees at all times (photographs 4, 5 and 6). This facilitates the identification of any intra-hive problems, and the visual checking of egg laying rates, food storage and so on.

Sugar syrup feeding is a major step on the road to increase honey production. The syrup is fed to bees slightly in advance of the first nectar-flow of the year (which in Oman is the Sidar tree, see above), in order that the bees may utilize the early honey flow for storage rather than egg-laying. These stores can then be taken by the bee-keeper for consumption or sale.

Feeding sugar syrup can also



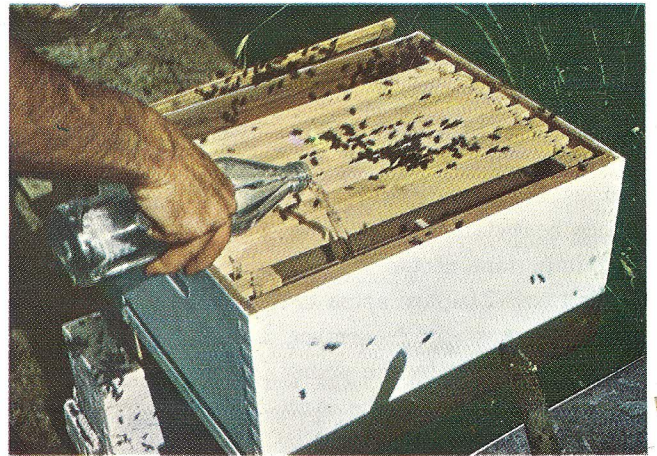
3. Extracting combs from a date log hive.



4. Putting combs into moveable frames for Langstroth hives.



5. Putting frames into the hive.



6. Feeding sugar syrup to the new hive.

banish starvation from the beekeepers' hives in a bad year.

In order to prove the worth of these new techniques, hives of local bees have been 'trans-hived' into the imported equipment. The photographs show six of the stages involved in this difficult operation. The successful transfer of these bees and others like them means that this winter will see the first honey produced by the new methods.

Conclusions:

In a project of this sort, it is always necessary to 'make haste slowly'. As discussed above, the small bee-keeping enclave of the Jebel Akhdar has existed in vacuo for an untold number of years, and not only the technique but the bee itself has evolved as a product of the area and situation. The Directorate General of Agriculture has already recognized this in its far seeing decision to regu-

late the importation of foreign bees into the Jebel Akhdar region, until the local bee has shown its worth.

In order to show Omani beekeepers the worth of the new techniques a great deal of demonstration is required. The method required investment of both time and some money, but none the less, successful modern bee-keeping demands continual attention from the bee-keeper.

Once these techniques have been seen to be worth while, and the project confidently expects to double or even treble the amount of honey produced per unit, there is little doubt that their adoption will significantly contribute to the prosperity of the people of Northern Oman. It is also hoped, through extension work, to take bee-keeping and its benefits to regions of the Sultanate of Oman where they have not been previously present.

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