Management of Apis mellifera scutellata

**BARK HIVES**
The east-africa savannah bee, Apis mellifera scutellata, was originally held in log hives or hives made of tree bark. Because of its defensiveness this bee could not be held close to human habitation. To prevent molest by natural predators the cylindrical hives were hung from trees at the savannah. Important beekeepers could reserve an area for themselves and hang as many hives as they could.

Depending the quality of the surrounding bee meadow (vegetation of use for bees) the hives were occupied by feral swarms. The number of hives effectively occupied depended on the production of pollen in the surrounding area. In times of deearth colonies often absconded for better environments. Seasonally occupied hives were in balance with the seasonal production of pollen. The expertise of the beekeeper consisted of knowing how to make and hang attractive tree hives and of knowing when certain abundant flowering trees allowed the colonies to collect surplus honey. That was the time to go to the savannah, lower the hives from the tree, and harvest honey and beeswax. In principle the beekeeper did not manage bees but beehives. The more hives he could hang the better chance of finding occupied hives during harvest time.

In the past East-Africa was important for its wax production. Honey was mainly for local use. Beeswax for export. The colonial government of Tanganyika even posted a beeswax-officer to promote beeswax production for export. Visiting in the end of last century the library of FAO-headquarters in Rome I could not find any interesting article about honey production in Africa but plenty articles about beeswax.

It was not necessary for the beekeeper to have knowledge about the bees and their living in colonies. I met beekeepers with more than hundred hives who recognized different bees in their hives but did not know the functional differences between drones and worker-bees.
TOP BAR HIVES
A new development came with introduction of topbar hives (TBH). Topbar hives (Kenian and Tanzanian) could be cheaply constructed of local materials. Above all such hives were expected to permit development of stronger colonies resulting in more honey and wax. The hives had to be placed at a safe distance from habitation to be able to open them without disturbing people and their animals. If occupied it is almost impossible to travel with these hives to another site without breaking combs. It is also difficult to provide enough ventilation for the colony to survive the trip. Management is bound to a permanent site. In practice management often consisted in applying the old traditional management as with the hanging tree hives. Harvesting honey and wax at the appropriate moment. A problem arrived when too many TBH were kept in the same site. It resulted in weaker colonies and less honey and wax. Colony management to obtain strong colonies just in time of the main honey flow is rather difficult. Top bars have to be precisely situated in balance with the bee-distance of scutellata. Otherwise the bees build at random and combs cannot be lifted separately. Combs are not strengthened with wires. When full with brood and honey or nectar they break down easily when lifted out of their upright position and examined. It makes intensive management rather difficult and hardly practiced. The honey is harvested by breaking down the combs in chunks and pressing these out. Pressed honey contains much more pollen than mechanically extracted honey. After all the beekeepers working with TBH mainly use them like the hanging tree hives.

MODERN FRAME HIVES
A parallel development in Africa with the TBH was the introduction of modern frame-hives. Mostly the Langstroth-hive. Use of this hive required much investment in material and knowledge of the bee-colony and their relationship with the environment. Often the investment in materials could be obtained through contributions by donors. Hard lessons had to be learned. Training in hive management by European beekeeping “experts” often did not function for scutellata. While in the past the relationship of the colonies with the environment almost automatically balanced now it could easily be disturbed by stronger colonies in modern frame-hives. Weak colonies could become easy victims of ants, hive beetles, wax moths or robbing by stronger colonies. In time a few insisting and smart beekeepers will understand and prevail.

SOUTH AMERICA
In 1957 Professor Kerr introduced A.m.scutellata in a queen breeding experiment in Brazil. The swarms escaped and started taking over existing beekeeping
with the European bees, spreading about 300 km per year, in South-America through Middle-America up to the south of the United States. Experienced beekeepers with Modern Frame Hives had to learn to keep bees again with A.m.scutellata. After casualties in livestock and human population many beekeepers stopped with beekeeping. Some persisting beekeepers kept learning and succeeded to manage scutellata. What were the hurdles they had to take:

- **Defensiveness:** a strong alarm-pheromone causing very quick reaction to disturbances. Also a higher percentage of bees in the colony responds to the alarm-pheromone. It is necessary to work with good hives closed on all sides but the flight opening. If bees have to defend different openings in their hive it is impossible to start work in the apiary without immediately causing tumult. Cutting weed inflames the bees temper. Never combine removing vegetation and work in the bees afterwards. Good protective clothing is a condition. Any carelessness here will be immediately punished by the bees.

- **Swarms:** The large production of queen cells resulting in numerous swarms. Small cavities are easily occupied by swarms and when full produce new swarms. In the humid tropics you’ll find feral colonies everywhere if the environment produces enough food for the bees. The swarming behaviour makes it easy to catch swarms in decoy hives. However it makes it difficult to produce strong colonies at the start of the main honey flow.

- **Absconding:** As a reaction to dearth periods in the environment or to continuous disturbances by wax moths, ants or vibrations the colony absconds. Absconding may also be caused by beekeepers disturbances. Apiaries have to be set up in a way ants cannot reach the hives. Free from vegetation, above water or grease plates. Beekeepers should open their hives not more than really necessary. During dearth periods (heavy rainy season) the bees have to be regularly fed small amounts of sugar syrup to stimulate brood setting and keep the colony in the hive. It is also necessary to keep the brood during that period close to the flight opening to prevent wax moths entering. If necessary with a queen excluder between the first and second brood chamber.

- **Strong willingness to collect:** This quality causes quick robbing actions when a hive in the apiary is opened for inspection. It is advisable to place not more than five or six colonies
together on one stand to prevent uproar by inspections. The collecting attitude is however positive during a heavy honey flow. Due to a shorter reproduction cycle A.m.scutellata colonies are able to stay strong during a heavy honey flow with many worker bees collecting. Remove sealed honey combs regularly to prevent lack of comb space for the bees to store and work on incoming nectar.

**Changes after introduction of A.m.scutellata**

Now the dominant honeybee in South America is the crossbreed of the European bees (mainly ligustica and mellifera) with A.m.scutellata. Numerous stories go round about the effect of the crossbreed in society and in beekeeping.

Beekeeping changed completely from an easy going pastime to a hard job for strong and fit people. Ten years after introduction of the crossbreed in Surinam, with a humid tropical climate, about five percent of the colonies still had the easy behavior of the European bees. About the same percentage of the colonies were however unmanageable. The slightest movement in the vicinity of these colonies provoked an all-out attack. Nowadays the differences between colonies behavior are not noticeable anymore. The crossbreed looks like a homogeneous population of the east-African savannah bee.

Honey production in Surinam with the European bees, fixed stands and many small honey flows, was according old beekeepers, in the past better than with the Africanized bees. However honey production with the Africanized bees traveling from honey flow to honey flow is much better than experienced in the past with the European bees.

The biggest change came in the attitude of society to honey bees. Human casualties and livestock losses caused a sentiment of danger in the vicinity of a bee colony. Everywhere the crossbreed arrived enterprises sprung up to eradicate bee colonies and swarms. In big towns a million dollar business.
Management for honey production

For honey production the beekeeper should thoroughly study where and when honey flows are available. Then he has to consider how he could use the flows optimally to fit in the seasonal development of the colonies and produce excess honey. Of course management should aim at strong colonies at the beginning of the main honey flow. A strong colony means two brood chambers Langstroth format with eleven frames and a honey super of the same format with ten frames.

One method is to use a home yard apiary, manage the colonies through the offseason and travel to the areas with honey flows. Colony build-up should be done on the first possible flow. Swarm prevention by splitting the colonies and remove all but one or two swarm-cells in the hive without a queen. Combine weak colonies before going to the main honey flow. Travel back at the end of the season to the home apiary. This method needs rather intensive management but is optimal/cheap in hive material use.

Another method is to use fixed apiaries in the areas with one or other honey flow and let the bees go their way. Here no feeding or swarm prevention. On an average you lose in this method 1/3 of the colonies in the offseason. The colonies have to build up their strength on the main flow. Keep the amount of colonies at bay by capturing swarms in bait hives. Combine weak colonies at start of the honey flow. This method is less management intensive but much more material intensive. To obtain the same amount of honey you need more than two times the number of hives in an often hostile humid climate. Also maintenance of the fixed stands is more difficult and takes much more effort because the stands are always occupied by defensive bees. After all not much less management.
Beekeeping with A.m.scutellata in coastal plains of Surinam