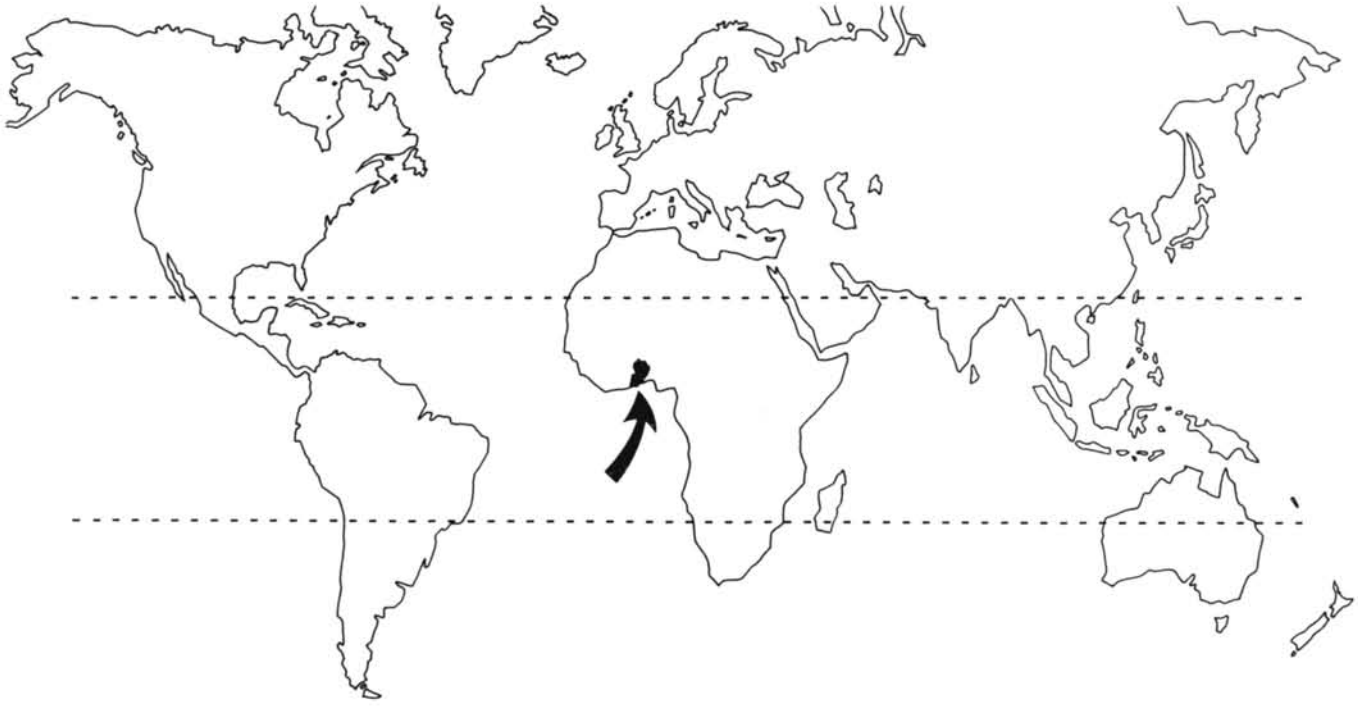

THE BEEKEEPING POTENTIAL IN GHANA - 1962-5

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(This chapter combines two papers. In the first written in 1962, the author speculates on the beekeeping potential of Ghana. In the second he summarizes his experiences three years later, after attempting beekeeping in S.W. Ghana.)

(i - The possibilities for beekeeping in Ghana, The Ghana Farmer, 6(4), 149-150 (1962)
ii - A start in Beekeeping in Ghana, The Ghana Farmer, vol.8, No. 4, 108-114 (1965))

The possibilities for Beekeeping in Ghana

A wild honeybee is indigenous to most parts of Ghana. The bees are most common in the North, and their nests are generally located in cavities in trees. The honey is much relished by the local inhabitants and any bee trees that are found are cut down, using fire to kill the bees, and chopped open to obtain it. No attempt is made to hive the bees so as to have more honey in the future.

This wild honey bee, which is well adapted to local conditions, is very similar to and a close relative of the commercial honey bee of the USA and Europe.

In Ghana, flowers of certain trees and shrubs, for the most part wild, are the major sources of nectar. The flowering of most of these plants is seasonal, and the honeybee stores a surplus of food in the form of honey to carry it through the periods when flowers are scarce. Major flowering periods occur principally at the end and beginning of the rainy season. Extended rainy periods, and conversely long dry periods are unfavourable for beekeeping. If there are two to three months without (or with only few) flowers, the bees use up all their available stores and reach the point of starvation.

What then are the possibilities for beekeeping in Ghana? Due to marked differences in rainfall and vegetation some regions will be much better than others. There is a general correlation between the abundance of wild bee colonies and the suitability of the area for bees. This can be found out by observation but, in the end, there is no substitute for actual beekeeping experience in the particular area.

Past experience in many countries with similar climatic conditions to those in Ghana has indicated that modern, large-scale commercial beekeeping which requires a high capital investment would not be profitable. There is no question that a beekeeping industry would be useful in Ghana. However, it would have to be mainly of the side-line, cottage-type, part-time and

small-scale beekeeping, and be practised by large numbers of people throughout the country. Most of the equipment needed could be produced locally.

Beeswax has a ready international market at a good price, approximately four shillings per pound*, and could be readily exported if the quality was kept high. Much beeswax goes to waste when wild bees are robbed for their honey and the wax discarded. A scheme to collect it would necessitate training in extraction of the wax and a marketing service. This would not be worthwhile to set up for the wax from wild bees alone, but would have to await the time when the production from a few thousand beekeepers is available. About one pound of wax from each hive could probably be obtained in a year.

Many problems remain to be solved before there can be established an extensive beekeeping industry in Ghana, and Ghana could usefully draw on the experiences of Tanzania (1962 ed.).

The wild honeybee indigenous to Ghana is a vigorous bee that defends its home with the utmost valour. Once aroused, the bees will persist for the remainder of the day in attacking and stinging everyone that moves in the vicinity of the colony, and will continue to follow and harass their victim for long distances. The amount of protective clothing needed to be secure from their attack make its use impractical. To a limited extent, the bees can be handled after dark using a light, as they prefer to stay in the hive after sundown.

This sensitivity and instant reaction to any disturbance make this bee unsuited for modern beekeeping practices and manipulation. The commercial bee of the USA and Europe has often been imported into tropical Africa, but has never been able to survive local conditions. What is needed is a hybrid bee combining the ability to survive local conditions of the indigenous bee with the receptiveness to handling and manipulations of the European bee. Hybridization of these bees has already been done successfully in Brazil. Hybrids could easily be produced in Ghana within a short time, although selection of the best strains for industry and gentleness would take years of experience.

Another major problem is the lack of trained people with practical experience in beekeeping. Beekeepers have to be of a certain temperament, and the fear of being stung makes most people unsuited for the purpose. However, training in understanding of bee behaviour could make many of these lose their fear. In the end, selection of genuinely interested students for advance training could rather easily be effected by "baptism under fire", so as to speak, that is by actual willingness to handle and work with bees.

Another fundamental problem is that there have been no successful attempts at beekeeping in Ghana. Experience will have to be obtained on a regional and local level throughout Ghana.

Editorial Note

* This was in 1962. It was reported in Kumasi in early 1978 that beeswax cost over 100 times that amount. (Equal to approximately ¢ 96 or £45 per kilo in 1979).

Beekeeping practices follow local conditions and these would be considerably different in say the Western Division and the Northern Region. Such experience, which is necessary before specific bee-keeping instructions can be given in any region will take many years to obtain.

A Start in Beekeeping in Ghana

Considerable difficulties confronted us in establishing the first colonies of bees. Early in 1963 four attempts were

Obtaining the Bees

made to transfer bees from trees to modern hives. It was found that, if the bees were smoked thoroughly and driven off the combs before they could become aroused, no protective veil or clothing was necessary. The bees would cluster like a swarm, and could be shaken or brushed into the hive. In every case it proved useless to transfer combs, as is the universal recommendation, to the new hive. The bees would not go back on to them. The uncapped brood was allowed to starve, and in a few days the combs were completely infested with hive beetle larvae and had to be removed. All four attempts eventually ended in failure. In two of them the queen was lost, in one the queen did not lay eggs, and so the bees could not reproduce themselves. They died off in a few months. One colony appeared to be established and remained in the hive for a week, making a small amount of comb, and the queen laying a few eggs, but it swarmed and left without clustering.

In another attempt, a five-foot section of tree trunk containing a colony was cut off and set up by the writer's house. The bees left after three days. On opening, the combs were found infested with a red centipede and hive beetle larvae. The combs had become disarranged during cutting and transporting the log; so the bees could not patrol them and thus deserted them when they became infested.

On 1 August 1963, a small swarm in a young coconut tree was brought to the writer's attention. It was hived, and the precaution was taken to use an entrance guard that would allow the workers to pass but not the queen. The bees left the hive twice the first day and once the next day, but since the queen could not accompany them they soon returned. They were fed on sugar syrup and finally settled down in their new home. The feeding was continued for two months at the rate of three pints of sugar syrup (50 per cent by small case volume) per week. In September 1963, two combs of brood with some eggs and adhering bees were taken from this colony; they reared a new queen, and being fed sugar syrup they soon became a strong colony. The original colony was again divided on 14 October 1964, thus giving after one year a total of nine colonies from the original small swarm. This number could easily have been doubled if the three colonies had been used for increase only. Instead they were also run for honey production. No more feeding was done after the original three colonies were established.

In May 1964, a colony was found in a rotten stump by station workers at Aiyinasi (Western Region). They smoked out the bees and took the honey. A hive baited with a small comb of honey was brought, and most of the bees brushed inside it. It was then put on the stump with the entrance in the approximate

location of the old one. A piece of the old entrance was placed on the new entrance to attract the bees. Within a few weeks the bees were well established, and the hive was moved to the writer's house one evening after temporarily closing the entrance. In September this colony was divided into three parts. No feeding was necessary as this took place during a period of honeyflows.

The major swarming season is in June and July after the main honeyflows. When swarming, the bees lose their aggressiveness and do not attack, except that occasionally a few bees may try to sting. In June 1964, five swarms were captured within a quarter of a mile of the writer's house. The cluster of bees was shaken or brushed into a net-bag; the bag was placed in the new hive, quickly untied and the cover of the hive quickly replaced. The frames in the hive were furnished with starter strips of foundation only.

In every case an entrance guard was used to keep the queen from leaving if the bees swarmed again. This was found to be an absolutely necessary precaution even if a well monopolized hive was used. The bees always left the hive several times before finally settling down, after two to three days. One of the above swarms left and did not return,thus abandoning their queen. In July a small swarm was captured and added to a weak colony through a queen excluder. The entire colony swarmed the next day, abandoning combs of brood and honey. As the queen's wings had been clipped she could follow the swarm, and the bees returned.

Two types of entrance guards were used; one was of galvanized screen,5 meshes per inch, covering the entrance, the full width of the hive, the other was made of three parallel wires, spaced 0.16 inches apart. This proved best, as the bees could carry pollen through it, while the galvanized screen acts as a pollen trap. The guards were removed in about five days after the bees had become resigned to their new home. The guards must not be left on permanently as they can become clogged with drones, and virgin queens cannot get out to mate.

While swarms are not dangerous to handle, they do not take readily to confinement. If they decide to take wing after the cluster is placed in the net or hive, and they invariably do, it is impossible to quieten them with darkness, wetting them or feeding syrup. They will keep on trying to escape until all the bees are exhausted or dead.

It was found best to release the bees as soon as possible inside a hive with an entrance guard. The guard slows down the exit of the swarm so that the bees can remember the spot and can return when they miss the queen.

Thus by November 1964, twenty-four colonies of bees had been established. Although it was difficult to achieve the initial start, subsequent divisions have been made easily and rapidly.

Location of Hives and Apiary

Most of the colonies are on strong stands about two feet high under the overhanging eaves on the north and east sides of the writer's house. No special precautions have been found

necessary against ants. On two occasions safari or driver ants have passed over the bee stands without touching the hive; on a third occasion the ants overwhelmed and destroyed a one-frame nucleus of bees. A stream of boiling hot water was poured on several hundred feet of their column, and they have not been seen since. Small sugar ants were a nuisance at first when using the entrance feeder, but a change to the friction-top tin feeder placed on the top bars in the centre of the cluster eliminated this trouble completely. Cobwebs have been swept down occasionally. When lizards become too numberous and start bothering the bees they are eliminated by shooting them with a pellet air gun.

Three of the colonies are inside a small building with entrances facing the outside. These hives can be opened and examined at any time without the danger of persistent attack from large numbers of bees.

This is the best way for anyone to start keeping bees. Up to forty colonies could be kept in one building 9 feet wide and 30 feet long.

The bees do not tend to be vicious; and they mind their own business until disturbed. However, once aroused it is impossible to stay in the open. Colonies have been completely aroused on three occasions in the past year. There was the roar of thousands of bees in the air ready to sting anything and everything in the vicinity. They started hitting door knobs, and any objects they encountered. The bees hit against the window screens in an attempt to get at people inside the room. It took two or more hours for them to calm down. Anyone attempting to approach the house at this time would be seriously stung. Dogs beat a hasty retreat letting out a yelp with each new sting. So as not to risk arousing the bees, the hives are not opened in the day time except for weak colonies or newly hived swarms.

Because of this possibility of the bees becoming angry, they should not be kept near a house or pathways. They should be about two hundred yards away and isolated by a hedge. If bee houses are not used, the recommendation from the Bee-keeping Division of Tanzania is that they should be placed individually on two-foot high stands separated from one another by a distance of about 5 feet.

A good location should be well ventilated but not windy, and should have access to early morning sun and afternoon shade for the hives.

Of course a major factor in selecting an apiary site is the relative abundance of good nectar-producing plants. Often a few miles difference in location can mean a big difference in the amount of honey obtained. A location with all-year-round nectar sources will include nearby swamps (freshwater and/or mangrove) and streams that never get dried up. Some very good locations will be on the northern fringes of the new Volta Lake.

Hives and Equipment

The beekeeper can make his own equipment. Almost all of the hives and equipment used by the writer are homemade. Hives are of standard Langstroth dimensions, except that top bars of the frames are reduced to 1 inch and end bars to 1¼ inches wide. The hive then takes eleven frames instead of the usual ten. Modified Dadant depth supers (6¼ inch deep frames) are used for honey, and often two of these are used for the brood chamber. Floor boards are made to provide ¼ or ⅜ inch entrances only. This entrance is left open the full width of the hive for strong colonies, but it is reduced to 4 inches or less for weak colonies.

If a deep and wide entrance is left at the bottom of the hive, which is a common practice in temperate climates during the summer, a large inside area near the entrance will often not be used by the bees. Comb will not be built in this area and, if introduced, it is gradually torn out, resulting in up to 20 per cent loss in brood chamber space.

A single flat cover, that is essentially an inner cover filled with newspaper and covered with aluminium sheet bent over the sides and tacked in place is used. During honey flows extra ventilation is provided to strong colonies on top by pushing the cover forward about ⅝ inch giving a ¼ inch opening the full width of the hive. For outside hives the covers are made 1 inch longer than the hive. Strips of wood ⅜ inch thick are nailed underneath it along the sides. A strip 1¾ inches wide and ⅜ inch thick is nailed under the front edge and one ½ inch wide under the rear edge. When pushed back, this cover provided top ventilation as well as protection from rain.

It is important that all hives be rot and termite proofed by dipping them in a saturated solution of pentachlorophenol in kerosene. This is allowed to dry, and the hives can be painted in the traditional white colour.

Galvanized wire-mesh screening with 5 meshes to the inch is used for queen excluders. This also tends to keep the bees from storing pollen in the supers.

A honey extractor, and a 15-gallon settling tank and bottle filler, were made with the help of the station blacksmith. The smoker, an absolutely essential item, was made in the writer's own workshop.

Hive stands are of heavy, rough lumber treated with solignum (creosote) against rot and termites. Concrete blocks are also used.

Good protective clothing is necessary for daytime work. This consists of veil, bee gloves, boots, and thick cotton shirts and pants of light colour. For utmost security heavy zippered overalls are needed.

Frames for the hives are wired and fitted with full sheets of wax foundation (factory made) when available. As an alternative a thick line of wax, made by pouring melted beeswax along a soaped wood bar placed along the centre of the top bar, has proved very satisfactory. In fact, this has been more effective

than starter strips of foundation.

Hives and frames, although home made, are made carefully to close tolerances of standard dimensions so as to be interchangeable.

Honey Flows of the Western Region

The amount of honey produced will depend on the nectar-producing flowers available to the bees within a mile or two of the hive. Sources of pollen for feeding the brood are never lacking. The area in which the writer's bees are located has large plantings of oil palm, coconut, rubber, citrus, large areas of essentially virgin jungle and swamp, large areas of secondary bush fallow, interspersed with small farms of maize, cassava, plantains, groundnuts, pepper and other crops. Water is present throughout the year in numerous small streams. It is to be expected that there will be a variation in honey production from year to year, depending on the rainfall. Too much rain and conversely too little rain are both unfavourable.

The main honey flow is at the beginning of the rainy season in March or April and continues to May and June. There is no flow during the heavy rains in July.

The months of August, September and October in 1964 have been drier than normal. Thus there has been a series of small flows during this period that have enabled the bees to build up rapidly and store some surplus honey.

A graph of the honey flows for the year is based on constant observation of honey storage and new comb construction. A hive will be placed on a scale for daily weight measurements to get a more quantitative graph for next year.

Approximately 36 pounds (3 gallons) of honey were obtained from each of two hives in May and June, and 24 pounds (2 gallons) in October, for a total of 60 pounds per colony. This is considered a fair yield, but it is expected that double or triple this amount can be obtained from strong, well established colonies furnished with about three M.D. supers of empty combs.

Plenty of empty comb space enables the bees to take full advantage of short but heavy flows which they could not make full use of if storage space was lacking. It is the writer's opinion, based on previous tropical experience with intermittent flows, that three times as much honey can be obtained from hives if the comb is extracted and returned as if the honey is obtained by cutting out and crushing the comb. Another very marked advantage is that swarming is greatly reduced.

The flavour and quality of the honey depend primarily on the flowers from which it is obtained. The wide range of floral sources in the Western Region gives a number of different flavours of honey from mild to strong to very bitter, and in colour from light to dark. The first honey in March was mild and light coloured, the next was light amber and very bitter, while that of June was dark amber and of a strong but not unpleasant flavour. Even bitter honey, when mixed with some of the other, is satisfactory and one can develop a taste for it, as for beer

or tonic water. The honeys of the late flows of August, September and October were amber and of a strong but pleasant flavour.

Only a small start has been made for identification of the honey plants. The most important ones for surplus honey will be some of the wild trees and shrubs. Bees have been seen working on coconut, oil palm, raffia palm, royal palm, citrus, cassava, Poinsettia, Bidens sp., cucumber and Casuarina (for pollen). During times of shortage bees have been seen collecting from cut ends of sugar cane, ripe pawpaw (papaya) fruits that have fallen to the ground and broken, and the fermenting juice from oil and raffia palms when palm wine is being made from them.