

**ESPECIALLY FOR FIELD COLLECTORS**

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**NOTES ON THE USE OF BUTTERFLY TRAPS IN EAST AFRICA**

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During the last fifteen years increasing use has been made by East African lepidopterists of specially designed traps for catching those spectacular "eagles of the entomological world"—the *Charaxes* (Nymphalidae). These splendid butterflies are normally very difficult to catch with an ordinary net owing to their extreme wariness and swiftness of flight, and their tendency to stay well out of reach of the net at, or near, the tops of the tallest trees. Even when they are feeding at fermenting exudates on trees and bushes, or on rotting fruit or the excrement of certain animals on the ground, they are not easy to approach or to capture, as any sudden movement will send them off in a flash of color to some high vantage point and safety. *Charaxes*, however, will come readily to baited traps, for which they seem to have a marked predilection. They do not encounter much difficulty in finding their way into traps, because in the wild state they are accustomed to making their way through interlaced twigs and branches to get at fermenting oozes resulting from infection of trees and bushes with coleopterous, dipterous or moth larvae. After entering a trap and feeding on the bait, the majority of *Charaxes* will then fly up vertically to the top of the trap, where, after flying about vigorously for a minute or two, they will come to rest with their wings closed. They will remain like this for hours at a time, unless the trap is suddenly shaken or roughly handled, when they will immediately come to life and batter themselves in all directions with considerable violence in an effort to escape, which they will do easily unless the trap is quickly closed.

Although butterfly traps were specifically designed for catching *Charaxes*, they can be used with almost as much success for trapping many other genera of Nymphalidae, as well as some of the Satyridae, Libytheidae and Riodinidae. Also, if they are baited with fermenting fruit and are left out of doors overnight, they can be used as moth traps, since noctuids and other fruit-sucking moths will be attracted to them. Hence, for the butterfly collector in East Africa at any rate, traps have become an important item of his field equipment, for the more traps he uses in the field the greater will be his reward. Furthermore, the use of traps will free him from having to waste his time trying to capture some of the more elusive butterflies and will allow him to

concentrate on the more tractable genera. Another advantage of traps is that they can be left out all day unattended in one's garden or elsewhere, and the butterflies captured by them can be removed at one's leisure at the end of the day. In this way one can go out to work or attend to some other business and still collect butterflies. Although this kind of "armchair" collecting is somewhat limited in its scope, it can, nevertheless, be quite a rewarding one in a country the size of East Africa where, for example, there are more than a hundred species and subspecies of *Charaxes* to be found, apart from all the other many genera of butterflies that will also come to traps. If one travels widely in this area and uses traps in the varying climatic and ecological zones of which the area consists, one should, within a year or so, capture most of the *Charaxes* inhabiting such zones, whereas in the days prior to the introduction of traps it would have taken a life-time to do so. In fact, a new type of collector is beginning to emerge these days, one who seldom if ever uses an ordinary butterfly net and instead only uses traps. Such a person is usually interested solely in the *Charaxes*, and there are good reasons for his being so, as there are still the odd species and a number of geographical races of this interesting genus to be discovered in East Africa, and much information is yet to be acquired regarding their distribution and, in some cases, their food-plants and early stages of development.

Butterfly traps first made their appearance in East Africa a few years after the last war, when two types of traps were introduced more or less simultaneously. These were the East African hanging-trap and the Rhodesian ground-trap. The former was invented by Mr. John G. Williams of the Coryndon Museum, Nairobi, Kenya, who developed his trap between the years 1947-9 from the common or garden fly-trap used by the British Army in the field during the last war. His trap (Fig. 1) consists of a net 30" in length, which is closed above and below. The net incorporates two circular wire frames, 12" in diameter, of which one is at the top of the net and the other is at the bottom of it. A circular wooden or hardboard platform, 14" in diameter, is suspended on four pieces of string from the lower frame of the net, giving a clearance of an inch or two between platform and net. The trap is hung from an overhanging branch of a tree or bush a few feet off the ground by a cord attached to the upper frame of the trap. A bait is placed under the net at the center of the platform, either on the board of the platform itself, or in a shallow receptacle which can be kept in position with chewing gum or plasticine. Butterflies which are attracted to the bait will first alight on the net or the platform of the trap, and will fly or wander around the trap until they have found the entrance to it. The

larger *Charaxes* will force their way into the trap by leaning over side-ways. The trap can be closed by raising the platform with one hand, while with the other hand the thoraces of the butterflies can be pinched through the net from outside it to stun them, after which they can be

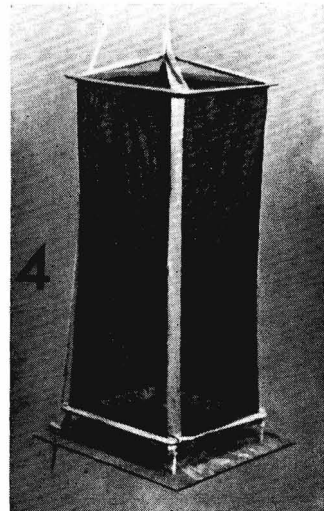
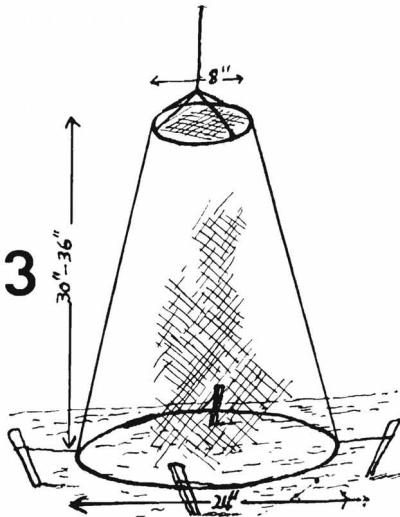
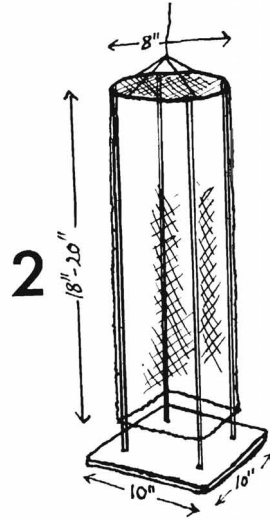
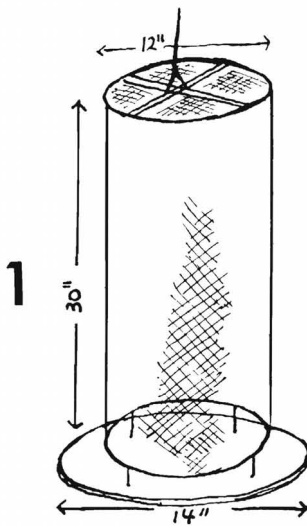


Fig. 1. East African hanging-trap. Fig. 2. Dr. V. G. L. van Someren's hanging-trap. Fig. 3. Rhodesian ground-trap. Fig. 4. The author's trap.

transferred to a killing jar.

The disadvantage of this trap is that one cannot insert a killing bottle into the lumen of the net owing to insufficient clearance between the net and platform, nor can one insert one's hand or forearm into it easily in order to remove live specimens for breeding or other purposes. These difficulties have been overcome by a hanging-trap designed by Dr. V. G. L. van Someren of Ngong, Nairobi, whose trap (Fig.2) is constructed so that the platform hangs on four equal lengths of string or, preferably, plastic-insulated electric flex (which does not rot) attached to the upper circular wire frame. The lower frame has been dispensed with, and instead the net is pulled down the outer sides of the strings or flex, like a sleeve, to within an inch or so of the platform. (The net or body of the trap can also be made of tubular polythene instead of mosquito netting). It is easy to insert a killing jar into this trap as the netting or polythene will move up the strings with the hand or forearm, but while carrying out this maneuver it is necessary to constrict the lower part of the net with one's free hand to prevent the butterflies from escaping from the trap. The dimensions of Dr. van Someren's trap are as follows: the circular wire frame is 8" in diameter, and the length of the net is 18"-20". The platform is 10" square. There is little doubt that this trap is one of the simplest and most effective traps yet designed for catching butterflies and, what's more, it is relatively easy to construct.

But for trapping low-flying nymphalines such as the elusive and colorful *Euphaedra*, *Euryphene* and *Euryphura* (of which there are many fine species in some of the west Kenya and Uganda forests) the Rhodesian ground-trap is hard to beat. This trap was brought to East Africa from Southern Rhodesia by Dr. Elliot Pinhey in 1949, when he took over the entomological section of the Coryndon Museum, Nairobi. It was invented by the late Mr. E. W. Lannin of Southern Rhodesia, who first started trapping *Charaxes* by suspending an ordinary butterfly net over a bait laid on the ground. The trap which was developed from this, and which in fact is simply a modified butterfly net, was described by Mr. D. G. Sevastopulo in the *Lepidopterists' News* (vol.8: p.26; 1954). I was introduced to this trap by Dr. Pinhey in 1950, and will briefly redescribe it for the benefit of readers who have not read the original description of it. The trap (Fig.3) consists of a cone-shaped net which is closed above and open below, and incorporates a circular wire frame 6" to 8" in diameter at the top of the net and a larger one of 18"-24" diameter at the bottom of it. The length of the net is 2½ to 3 ft. This large trap is suspended an inch or two above and directly over a bait laid on the ground, a cord being attached to the top of the net and tied to a branch of a tree to effect this. The trap is anchored in position,

to prevent it from swaying in the wind, by pieces of string tied to the lower rim of the net and attached to pegs or stakes hammered into the ground round about it. I have found this trap to be an effective method of catching *Charaxes* as well as the low-flying forest nymphalines already mentioned. Also satyrines will come to it readily. Occasionally the odd lycaenid or *Acraea* will be captured by this kind of trap if the bait consists of fresh animal dung, and the soil around it is moist or muddy.

The above trap, however, has several disadvantages which hanging-traps do not have. It is somewhat cumbersome to use in the field as it has to be dismantled everytime one wishes to remove a butterfly from it. It also takes much longer to set up than a hanging-trap, and occasionally it is impossible, owing to the nature of the ground, to anchor it properly. If the net is allowed to sway too much in the wind it ceases to function as a trap. Another disadvantage is that the bait, being on the ground, is easily tampered with by other insects such as ants and beetles, etc., and if the bait being used is fermenting fruit, animals such as squirrels, monkeys and baboons will help themselves to it, unless they are prevented from doing so by ceaselessly patrolling and guarding the area.

The trap shown in the photograph (Fig.4) is one which I myself have been using in more recent years. It was developed by myself from the Rhodesian ground-trap with the object of getting the bait off the ground for the reasons stated above. It can be used as a hanging-trap or a ground-trap by raising it or lowering it as required. The net consists of green cotton mosquito netting which is strengthened by strips of khaki sewn along all its borders. All materials used in the construction of the net should, of course, be pre-shrunk, otherwise the net will tear when it gets wet. The net of the trap is 11" square, and incorporates a strong wire frame above and below. The platform is 14" square, and is suspended an inch or two from the lower frame on four pieces of string which are passed through holes in the platform and are knotted underneath it. To catch low-flying butterflies with this trap it is necessary to lower it so that the platform is just touching the ground, and the strings of the platform should be adjusted so that one side of the trap is closed. This will prevent too many of these butterflies from escaping from it, as they do not fly upwards into the trap as readily as the *Charaxes*.

One's success in the field with traps, however, does not depend so much on the type of trap one is using as the kind of BAIT one is using. In East Africa, fermenting banana is mainly used as bait, although fermenting pineapple, wild figs, mangoes and guavas can be used

effectively also. These fruit baits will attract both males and females of the many species of butterflies that are attracted to such substances. Rotting meat, chicken or fish entrails, or the droppings of carnivore animals (including those of field collectors who consume plenty of meat in their diets) can be used for attracting MALE *Charaxes*. Leopard droppings are particularly attractive to the latter, more so than anything else. If one is using bad meat and excrement as baits it is preferable, from a hygienic point of view at any rate, to put such baits on the ground away from human habitation and suspend Rhodesian ground-traps over them. *Charaxes* of both sexes often prefer the ferments of exudates on trees and bushes to fruit bait, and it is sometimes possible to excise a piece of infected bark and use this as a bait in a hanging-trap. Some collectors prefer to use "compound" baits in their traps, composed of fermenting fruit, beer or rum, and sugar with or without the addition of a little tincture of valerian; but experience shows that these baits, apart from being more troublesome and expensive to prepare, are really no more efficacious in practice than fermenting fruit by itself. One incident, however, that happened to me when I was stationed at the British Military Hospital at Mackinnon Road in 1950 seems to indicate that a compound bait, if it contains the right ingredients and is correctly prepared, can nevertheless have a devastating effect on *Charaxes*. I had been advised by Dr. Pinhey to try out a bait made of fermenting mashed bananas, beer and sugar; so, having brewed up these ingredients for three days in a tin, I decided to try out the bait on the *Charaxes* of the arid thorn-bush country in which the hospital was situated. I walked out into the bush and laid my baits in a number of places. (I did not possess any traps at the time.) No sooner had the first bait been laid than the *Charaxes* started wheeling down in large numbers literally "out of the blue". Soon my baits were covered with masses of these wonderful butterflies, battling with one another for footholds on the nauseating brew; many of them became so drunk they were incapable of standing upright or flying. Although I had a net with me, it soon became unnecessary to use it, as all I had to do was to kneel down by a bait and pick up any specimens I wanted in my fingers. The thing that really surprised me about this incident was not the effectiveness of the bait so much as the large number of *Charaxes* that appear to inhabit semi-desert, thorn-bush country. (Mackinnon Road is shown on the maps as being in the TARU DESERT.)

Recently, I have been in the habit of using fourteen traps baited with fermented bananas, and have on a number of occasions come home from a day's collecting with more than one hundred *Charaxes*

"in the bag". I have also on several occasions caught TWENTY different species of *Charaxes* in one day. This is possible if one places traps in a number of different ecological zones, such as at the base of a mountain and up its slopes until one reaches the higher montane forests. The more traps one has out and the larger the area one covers the greater will be one's reward. But collecting *Charaxes* on as massive a scale as I have occasionally been guilty of is seldom justified. Too much trapping by too many collectors in a given area could in a very short time decimate the population of these fine butterflies, and would no doubt wipe out completely some of the rarer, more localized species. Traps must be used judiciously by collectors, and not abused by them.

When traps are placed in open savannah or thorn-bush country, apart from the *Charaxes* inhabiting such places they will attract other nymphalid genera such as *Hamanumida*, *Neptis*, *Byblia* and *Precis*, as well as such satyrines as *Melanitis*, *Henotesia*, *Ypthima* and *Mycalesis*. In forests, however, the following genera will come to traps:

Family NYMPHALIDAE

<i>Charaxes</i>	<i>Ariadne</i>
<i>Palla</i>	<i>Byblia</i>
<i>Euxanthe</i>	<i>Neptidopsis</i>
<i>Cymothoe</i>	<i>Eurytela</i>
<i>Euptera</i>	<i>Kallima</i>
<i>Euryphura</i>	<i>Apaturopsis</i>
<i>Diestogyna</i>	<i>Hypolimnas</i>
<i>Euryphene</i>	<i>Salamis</i>
<i>Euphaedra</i>	<i>Catacroptera</i>
<i>Aterica</i>	<i>Precis</i>
<i>Pseudargynnis</i>	<i>Vanessula</i>
<i>Pseudacraea</i>	<i>Antanartia</i>
<i>Neptis</i>	<i>Lachnoptera</i>
<i>Cyrestis</i>	<i>Phalanta (=Atella)</i>
<i>Asterope (=Crenis)</i>	

Family LIBYTHEIDAE

*Libythea*

Family RIODINIDAE

*Abisara*

Family SATYRIDAE

<i>Elymniopsis</i>	<i>Mycalesis</i>
<i>Melanitis</i>	<i>Henotesia</i>
<i>Gnophodes</i>	<i>Ypthima</i>

From the foregoing it can be seen that the use of traps represents a major "breakthrough" for the field collector in East Africa and has

added a new dimension to butterfly collecting. The modern collector has learned that he must use traps if he is to benefit fully from his efforts in the field. Although in this paper I have dealt with traps in an East African context only, there is little doubt that they could be used with equal success in other parts of the world to catch genera similar to, or closely related to, the ones listed above.

#### ACKNOWLEDGEMENTS

In conclusion, I should like to thank Dr. V. G. L. van Someren, Dr. Elliot Pinhey and Mr. John G. Williams for data regarding butterfly traps and baits, and Messrs. D. G. Sevastopulo, R. T. Evans and B. Barton-Eckett for their advice and help in the preparation of this paper.

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### KEEPING RECORDS

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The lepidopterist first of all is a psychopath of sorts; he needs must be individual and of course his ways of handling data will be diverse — witness the awesome ingenuity he displays in his other gadgetries and techniques of collecting. The nearest thing to agreement on a standard approach to data-keeping probably has been through the medium of personal diaries, at least with the older generation. This habit of chronology soon grows to be an indispensable crutch, a key to lifetime observations, especially functional when need arises to determine the particular housing project or cloverleaf under which lie buried the fields of youth and the butterfly haunts of yesteryear.

Ease and accessibility of recall are prime functions, but they are governed by what is to be recalled and for what purpose. Purpose indeed ranks first in any critique of method — the diary and the computer tape both are means to an end, whether the end be nostalgic or scientific.

The record chart forms recently shown by Heitzman in this section of the *Journal* (vol.17: 44-46; 1963) appear well suited to or adaptable to the needs of a large class of collectors, namely, those who do not happen to own a late-model computer but yet would like to get around some of the obvious defects of the diary-notebook system, aiming toward a better grouping of related data.

But alas, collectors being what they are, it is a safe wager that Heitzman's excellent layout will suffer many a change if it is "copied" at all by other students. Recognizing this fact of life, I shall describe my own scheme of filing data merely with the hope of provoking con-