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NARRATIVE OF A TREK AND OF NATURAL HISTORY OBSERVATIONS IN KASHMIR IN MAY-JUNE, 1942

BY

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(With two plates)

Visiting Bombay with my wife in the early summer of 1942 I found myself with six weeks' leave to spare. For various reasons we decided to spend this time in Kashmir and I applied to the Bombay Natural History Society, of which I was already a member, for advice, this being my first visit to India.

I took with me the minimum necessary equipment for collecting lepidoptera, that is to say I decided to omit setting boards and breeding cages. The lepidoptera I might catch would be papered, a method economical in luggage-space but with certain disadvantages, of which the gravest are the impossibility of comparing what is taken at intervals of more than a few days and the probability of a long delay before relaxing and setting. Although constant movement and the lack of cages made breeding larvae on any scale impossible, in one or two cases larvae were found and bred through to the imago on trek, in order to ascertain their identity.

Before leaving Bombay I read through the article 'Some notes on butterflies and big game in Kashmir' by Colonel W. M. Logan Home (*Journ. Bombay Nat. Hist. Soc.*, XL, No. 1, April 1938). I noted down from this the names of the butterflies which that author took and listed, together with the month and height of their occurrence; for I had no knowledge at all of Indian or Central Asian lepidoptera. To help me with other orders of nature, I also took with me two books: 'Birds of Kashmir' by Samsar Chand Koul and the finer, more costly, 'Beautiful flowers of Kashmir' by Blatter.

Mr. S. H. Prater kindly furnished me with introductions to two naturalists then resident in Kashmir, viz., Sir Peter Clutterbuck, Chief Conservator of Forests at Srinagar and Mr. Ludlow. Thus provided, and also armed with my own paraffin-vapour pressure lamp, net-frames, and some new killing-bottles, pill-boxes and papers, provided by the kindness of Mr. McCann, my wife and I left Bombay in an air-conditioned coupé on the Frontier Express on May 11th, and arrived at Rawalpindi after a most comfortable two-days' trip, which, incidentally inaugurated the second month of our honeymoon.

The trip from Rawalpindi to Srinagar was made in fine weather on May 14th by road, and we did not stop to catch the numerous black and green swallowtail butterflies by the road-side beyond Murree. We saw no more of this kind once we had entered the Vale of Kashmir. Being quite unacquainted with the tropical fauna they were to me exotic creatures; and their absence from the Vale seemed appropriate, for except for the rather numerous paddy fields one might have thought oneself somewhere in Europe; and the butterflies which I eventually took there confirmed the Palaearctic rather

than Indo-Malayan character of the landscape which thus struck me at once.

During the next six days we were on a house-boat off Gagribal Point. We found that heavy rains had made the lakes unusually high for May; our house-boat was moored under some willows whose bases were deep in water, and the only land close at hand appeared to be a well-dug potato-patch. In these circumstances nothing much was to be expected, and sure enough only a very few moths came to light. In June or July however the same spot might prove more productive, those being the months when the rush-feeding marsh-moths begin to hatch in warm climates, and there were rich growths of *Typha* on the opposite bank.

The willows overhanging our boat were crawling with multitudes of Gypsy moth (*Lymantria dispar*) caterpillars, which were constantly falling off and running about all over our abode. I took a few of the larger ones into captivity, where they proved themselves to be nocturnal feeders, like most other Lymantriids. Our house-boat was also frequently entered by a pair of Whitecheeked Bulbuls (*Molpastes leucogenys*), one of which tried to battle with its reflection in our big mirror. Another conspicuous bird in our neighbourhood was a Great Reed-Warbler (*Acrocephalus stentoreus bruiemescens*).

Of the two persons to whom I had introductions, Mr. Ludlow proved to be absent, but I was able to consult Sir Peter Clutterbuck; in his view butterflies were comparatively scarce in Kashmir on account of over-grazing.

Two of my first six days in Srinagar were spent recovering from the effects of an improvident strawberry-tea; and rain and necessary visits prevented entomological activities on three others. However, on the afternoon of May 15th I found time to ascend the hill from Gagribal Point, a prominence which our Moslem boatman called Takht-i-Suleiman (familiar name to one coming from Persia, as I did!), and whose alternative Hindu name I failed to master. There were no cows, sheep or goats on this hill and it was ablaze with flowers and alive with butterflies and other insects. Wild thyme and Moorcroft's *Salvia* were in abundant bloom, and in addition plantations of Iris, fruit-trees, false acacia and other trees showed that others in Srinagar, besides myself, appreciated a botanical sanctuary. On mullein (*Verbascum*) I observed small caterpillars of the Mullein Shark moth (*Cucullia verbasci* L.) (new then to India) but did not take them; larger caterpillars of the same species were also observed elsewhere in Kashmir a few weeks later.

I was unfortunately unable to revisit this spot before leaving for Gulmarg, and on May 20th we arrived at Gulmarg to enjoy the last day of a ten-days' spell of continuous cold and rain. On the third day however the clouds vanished and twelve hours of flawless sunshine were enjoyed by all, man, animal and vegetable alike. A walk in conifer woods on this day revealed many Whites (*Pieris brassicae* and *rapae*), Small Tortoiseshells (*Aglais kaschmirensis*) and Queen of Spain Fritillaries (*Argynnis lathonia issaea*) awaking to renewed life, and odd specimens were also noted of the Swallowtail (*Papilio machaon*) and Comma (*Polygonia c-album*); but the butterflies were still, on the whole, noticeably fewer than on the hill at Gagribal Point, and this I attributed partly to the over-grazing mentioned by

Sir Peter and partly to the less advanced state of the season at this greater height; another probable reason was the more monotonous nature of the biotope, a thick conifer forest, mostly fir (*Picea smithiana* and *Abies pindrow*), but mixed to a small extent with blue pine (*Pinus excelsa*), maple (*Acer pictum*), chestnut (*Aesculus indica*) and bird-cherry (*Prunus cornutus*); the undergrowth seemed to consist here mostly of *Viburnum foetens* and *Skimmia laureola*, but here and there a few barberry (*Berberis lycium*) and buckthorn (*Rhamnus*) bushes were to be seen. The floor of the woods was in places gay with *Primula rosea*, *Primula denticulata*, *Caltha palustris* var. *alba* and *Corydalis rutaeifolia*. At one spot on the circular walk, near Tilwanmarg, we repeatedly came across a company of birds including two or three of the lovely Black-and-Yellow Grosbeak. Upon some fir-trunks an occasional Geometrid moth was to be found, but I noticed that a species of tree-creeper was also actively searching for them. At night only a few moths ventured to the hotel lights, but these included that fine Emperor Moth, *Caligula lindia* Moore.

On May 24th I climbed to Khelanmarg (10,000 ft.) chiefly in order to see how far the season was advanced above the conifer limit. Some flowers, indeed, gladdened the eye up there, including *Gentiana venusta*, and a fine view of the Himalayas, culminating in Nanga-Parbat, was obtained; but sunshine was lacking, and nothing beyond a female Brimstone butterfly (*Gonepteryx rhamni nepalensis*) was to be seen worth running after. The same evening the rain began again, much to our disgust. Before descending I had scrambled up to the lowest big birch trees, which are there at about 11,000 ft., but detected no insect activity at that height. These trees were out in full leaf but the ground at their feet was barely free from snow, and flowerless as yet, except for *Trollius acaulis*, whose admirable yellow here and there brightened the bare earth between the big boulders. The scrub willow at this height was not yet in leaf, but the scrub-juniper relieved the landscape here and there with its deep vivid green.

Two most unpleasant days ensued. Khelanmarg received quite a sprinkling of snow right down to the fir line. On the third night the sky cleared and I took my lamp and sheet into the woods at Gulmarg, but they attracted nothing probably owing to the cold and perhaps also the bright moonlight. A short walk with the lamp through the woods also revealed nothing on the wing.

On May 28th and 29th we visited the Ferozpur Gorge above Tangmarg (about 7,000 ft.) by day and, at the forest's lower limit, we found nature more genial and the flora more varied. On the steep slopes above the trout-stream's bridge the characteristic shrub was *Indigofera gerardiana*. Wild thyme was especially attracting bees and also Painted Ladies (*Vanessa cardui*) and Small Tortoiseshells (*Aglais kaschmirensis*). A Clouded Magpie moth (*Abraxas virginalis* Butl.) was taken flying among firs near the bridge and on the slopes the Treble Bar moth (*Anaitis plagiata*) was as common on the wing as it had been on the hill at Srinagar, and no less difficult to catch. The hazel-like bushes of *Parrotia* were in places quite denuded by thousands of Lymantriid caterpillars (*Euproctis signata* Blanch.), very similar in colouring and form to the English Gold Tail moth's larva (*E. chry-sorrhoea*), but living gregariously in unsightly tents; this caterpillar was

also seen on sallow (*Salix*), willow (*Salix*), and hawthorn (*Crataegus crenulata*) bushes.

In a sunny glade just above these slopes, a glade miraculously inhabited by only two cows, and bright with a carpet of buttercups (*Ranunculus*), wild strawberry flowers, wood forget-me-nots and brake-ferns, a kind of Humming-bird moth (*Macroglossum poecilum*, small variety) was caught visiting among other flowers the blue Thyme-leaved Speedwell; Queen of Spain Fritillaries and Brimstone butterflies were flitting hither and thither, and a fresh hatch of Green-veined Whites (*Pieris napi ajaka*) was observed in some numbers both here and in the gorge below. The two commoner kinds of White already seen were noted again, but in poorer condition. Some moths were also found sitting on damp shady rock surfaces but the most exotic and striking creature, to me, was the first specimen of *Heliophorus bakeri* Evans, with its gaudy underside and, in the male, contrasting upperside.

We were told that no permits to fish trout here were being given, the stream having been over-fished; but we were content to admire nature's other orders, and watched the Plumbeous Redstart (*Rhyacornis fuliginosa*) skimming from rock to rock over the dashing torrent, beneath a cliff where two huge vultures (presumably the Himalayan Griffon) apparently nested; we also saw jungle crows mobbing a kestrel; and while watching a freshly hatched Cicada struggle from his exuvium we were obliged to rescue him from the onset of ants to whom his soft vulnerability at this moment was an opportunity; the buzz of other cicadas in the pines already filled the air. In one spot, particularly lush and well-watered, we discovered a colony of the Marsh Orchis (*Orchis latifolia*), growing quite a thousand feet lower than recorded by Blatter. We were informed that the game warden took two small trout below the bridge that afternoon.

Next morning, our last at Gulmarg, I visited the forest for a thousand feet above Gulmarg, but in spite of the beauty of the spring flowers I found comparatively little insect life. The same Humming-bird moth was here seen visiting *Primula denticulata*, which was also favoured by Tortoiseshell and White butterflies and bumble-bees. The weather seemed now to have cleared up for this was the third consecutive sunny day; but violent brief thunderstorms were still about in Kashmir. Before descending from about ten thousand feet above the sea, I spent a happy five-minutes watching the antics and listening to the single but musical note of a solitary Whitecapped Redstart (*Chaimarrhornis leucocephalus*) among rocks in a torrent-bed. The two redstarts mentioned above became familiar sights to us on our subsequent travels; there was no torrent at which we did not see one or the other, *leucocephalus* haunting higher elevations than *fuliginosa*.

Next day our real travels started and it seemed fairly fine. We passed over the Ferozepur stream by the bridge above Tangmarg, and climbing through pines and firs eventually reached Gogaldor where we camped. These woods were variegated by a series of clearings or 'margs', whose turf was closely cropped by cattle but none the less, like some lawns I have known at this season, constellated with dandelion-flowers (*Taraxacum*), to which congregated Small Tortoiseshells, Painted Ladies, Clouded Yellows (*Colias croceus*) and Small

Whites in abundance. In the pine woods (*Pinus excelsa*) I caught a Pine Carpet moth dancing in a small sunny glade and, near Gogaldor, several specimens of the Large Tortoiseshell (*Polygonia polychloros*); but a three-hour downpour which started at 6 p.m. shattered all hopes of moths coming to light.

Next day we descended to the cultivated foot-hills, passing through a zone of deodars (*Cedrus*) at about 7,000 ft. We looked for breeding Parroquets here but saw none. Amidst the cultivation butterflies were markedly fewer than in the forest and mostly of the commonest kinds (*A. kaschmirensis*, *V. cardui*, *Colias croceus*) and the two commoner Whites. Two, which had not been noticed higher up, and were taken here were the Snout (*Libythea lepita*) and Bath White (*Pontia daplidice*). The poplars and willows here shewed signs of infestation by some Cossid moth but I looked in vain for traces of the larger Aegeriids or Clearwing moths whose galleries may often also be found in the trunks and roots of *Populus* and *Salix*. Old Puss Moth cocoons (*Dicranura* sp.) were observed on the boles. That night at Drang (c. 7,500 ft.) the weather was again stormy but the rain was more showery and permitted the use of a lamp and sheet though not with much success, owing to the cold which followed the showers.

On June 2nd we again spent the morning trekking over the cultivated foothills. I was astonished at the paucity of winged life on the scrubby slopes of the Sukhnag Nullah which we crossed by a bridge. At Hakal in the Rayar Forest (c. 7,500 ft.) several Pearl-bordered Fritillaries (*Boloria jerdoni*) were taken in a wet glade. We camped at Mujpathar (7,500 ft.) beside a torrent at a point where it forked, surrounded by the usual firs, pines and cows. The country here was a picturesque mixture of forest and cultivation, the latter principally Indian Corn. Some of the country lanes resembled closely those of England, and produced several specimens of the Clouded Magpie Moth (*Abraxas virginalis* Butl.). No rain fell, and the evening was warm but no more moths came to light than had come at Drang, viz. one small Geometrid. A nearly full-grown Agrotid caterpillar, resembling that of *Diarsia festiva* was seen at night on a grass stem, but not taken. Cockchafers and Trichoptera were fairly common at the light.

Next day, June 3rd, we trekked through Hajjan as far as Pachatar Bridge over the Dudgangai Gorge and torrent and here I decided to camp in spite of the clamours of the pony-men who would have preferred Yus Maidan, a mile further on and 500 ft. higher up. This wild, wooded and craggy gorge, where we now camped, had to me one great virtue,—an absence of cows; it was visited only by a few goats and sheep. The rough western slopes somewhat resembled those of the Ferozepur Gorge, though less varied in flora and without *Parrotia* bushes. It proved more productive of lepidoptera than the more gently inclined hills, covered with pines and firs and with clearings like golf-greens, so characteristic of Kashmir. The Fritillary (*жерdoni*) was seen again at Hajjan and Pachatar, and a delightful little Orange Footman moth (*Asura discisigna postica* Moore) was taken flying in the sun on the scrubby slopes of the gorge. The torrent itself was quite as large as the Ferozepur trout-stream, and besides a pair of Plumbeous Redstarts (*Rhyacornis fuli-*

ginosa), we also saw a pair of Himalayan Whistling Thrushes (*Myiophonus temminckii*) hopping amidst its spray and boulders. The evening was again fine and warm, but again, for the first half-hour after night-fall, nothing except cockchafers came to the sheet. But I could now see that this was because the moths were avoiding the sheet rather than because there were none on the wing. Taking the lamp and net therefore I strolled along the track and soon observed plenty of moths among the undergrowth of the forests and the clearing; this undergrowth here consisted of *Viburnum foetens* and a large umbellifer (*Aralia cachemirica*). Another show of light at about 9.45 p.m. only drew a couple of moths to the sheet. It was clear therefore that in Kashmir, at least at this season, light was not attractive, and moths must be sought out. The commonest were *Diarsia stictica* Pouj. and *Stenoromia ablunata* Guen.

Our horses had fed since noon on the rather dry grass of the clearing below Pachatar bridge, and during the afternoon many began to dribble, but they all continued to graze, though some were blowing bubbles and salivating profusely. The pony-men attributed this phenomenon to white clover, but all the other clearings we visited had their share of white clover. We let them however take the horses away to a more normal clearing, about a mile back, for the night. Was the blessed absence of cows at Pachatar perhaps due to this local peculiarity of the pasture?

Next day we passed over Yus Maidan on our way down to Nilnag and rejoiced that we had not spent the night there. This long clearing resembled an undeveloped Gulmarg. Only flags were needed to turn it into a golf-course, thanks to the diligent cattle; lawn-mowers would have been hardly necessary!

Rising over the ridge on the track to Nilnag we had a fine panorama of the whole length of the Pir Panjal Range's snow-peaks. On the wooded slopes above Nilnag we found the Pearl-bordered Fritillary (*Boloria jerdoni*) fairly numerous in glades, and close to the lake itself (6,900 ft.) the Snout butterfly (*Libythea lepita*) reappeared.

Nilnag itself was the lowest of our camping grounds on the Pir Panjal Range, the others being all above 7,500 ft. and above the *Parrotia* limit. It was a mixture of forest (pine and fir) and cultivation (wheat and Indian corn); it certainly did not lack cattle. The undergrowth was *Parrotia jacquemontiana*, *Viburnum* and *Aralia*. Fruit-trees, willows, and hawthorn (*Crataegus*) accompanied the cultivation. We spent two nights here, but the first was quite spoilt by the rain which began about noon as we arrived and only really ceased at noon the next day. A few minutes of hot sunshine after all this rain sufficed to call forth numbers of the little Pearl-bordered Fritillary butterfly (*Boloria jerdoni*) in their favourite glades.

The second evening was fine, but once again only by walking with lamp and net along the forest-edge, or penetrating into it, could one obtain moths; indeed they seemed rather to try and avoid the light. The *Viburnum* bushes seemed to attract many species of moth, which rose reluctantly as one approached and could be netted if one was quick.

On June 6th we said good-bye to the Pir Panjal middle heights, and spent the morning walking down to Nagam, where a conveyance

for Srinagar met us. Our path took us through corn-fields until we dropped below 6,000 ft., and we entered the plain proper, with its poplars, willows and majestic oriental planes. While on the foot-hills amongst the corn, we saw many butterflies, especially *P. brassicae*, *rapae*, *P. daphidice*, *V. cardui*, and *C. croceus*; indeed, for this stretch of the road and whenever one looked up, at least a dozen white butterflies met one's gaze. The Pale Clouded Yellow and the Small Tortoiseshell were more occasional. The grassy bridle-path was bordered with multitudes of Scotch Thistles, which attracted this plebeian throng of butterflies; some of the thistles, I noticed, were covered with pretty Swordgrass Moth caterpillars (*Xylena vetusta*).

Once amid the paddy-fields and villages of the plain a new sight met our gaze: swarms of Gypsy Moth caterpillars, (*Lymantria dispar*), now full-grown, infesting the willows. The trunks were often black with huge dark larvae resting or seeking new quarters; one or two had already pupated; around Baidpur and Nagam the species appeared to have become a serious pest among the numerous large willows, one in three of which were completely stripped of every leaf, with the bark bitten off the tenderer branches. Taking a chrysalis or two from the trunk of a willow, I discarded the caterpillars which I had been carrying around with me, and, when possible, feeding, ever since leaving the house-boat.

From Nagam we returned to Srinagar by bus. After consulting Sir Peter Clutterbuck I decided that our next trek should be to Gurais (Kishenganga Valley), a part of Kashmir where grazing was less intense and flowers more plentiful.

Discussing the deforestation of the plain of Kashmir, Sir Peter informed me that until only two thousand years ago the level of the lakes was much higher; in fact the whole Vale of Kashmir was one vast lake until a break-through at Baramulla occurred, which exposed a great deal of the present plain. Probably the new dry land was invaded by forest, and not cleared till centuries later, as the population increased.

Leaving Srinagar by boat on June 10th, we reached Bandipur on the morning of the 11th, and Tragbal the same evening. On the steep slopes below Tragbal there were plenty of butterflies and moths to catch, including a Ringlet (*Callerebia nirmala daksha* Moore) at 8,000 ft.; other Satyrids were also out now; I had seen none earlier on the Pir Panjal Range. However, I missed many good things on these rugged slopes, since I chose, for once, to ride most of the way up (a climb from 5,000 to 9,000 ft.).

Above Tragbal there was noticeably less on the wing. Except for a couple of swallow-tails, the ridge (10,000-11,685 ft.) only produced the common ubiquitous sorts though the wild flowers were a joy to see. We had to cross several extensive snow-banks before dropping down into the forest again. At its top limit the Humming-bird moth (*Haemorrhagia rubra* Hamps.) was taken coming to flowers of *Bergenia stracheyi*. As we came down into the tree-zone, we found that, on the precipitous sides of deep gorges, the birch-trees were more intermingled with the conifers and reached lower limits than I had previously noticed; in fact at Taobat they came down to 7,400 ft. on the banks of the Kishenganga. Thunder and rain marred the evening of June 12th. Close to our camping place we saw a whole

treeless hillside overgrown with the showy and fragrant *Eremurus himalayicus*.

Next day we dropped down, past Koragbal, to Kanzalwan (7,645 ft.), overlooking the wide and turbid Kishenganga with its dark sands. A new feature in the landscape was now provided by *Artemisia maritima*, whose silvery leaves made whole mountain-sides pale. At noon rain again set in, and the thunder rolled, so that we were glad not to have a longer march that day. It rained all night. Heavy showers fell on the following day, too, but we were able to ascertain that the treeless, wormwood-covered, southward-facing slopes were a good place, especially for small moths of a sort not found in the forest that densely clothed the valley's northward-facing slopes. This forest, predominantly fir and pine, sheltered a greater variety of deciduous shrubs and small trees than I had noticed on the Pir Panjal Range.

We stayed three consecutive nights at Kanzalwan; it rained on all of them, and only on June 15th was there any sunshine worthy of the name. On that day we spent the morning on the treeless slopes opposite the village or on the flowery shelf behind Upper Kanzalwan. The treeless slopes provided a very pleasant walk and also produced some good Blues, *Polyommatus stoliczana* being common. The exposed convexities here were mostly overgrown with *Artemisia maritima* and *vulgaris* (though these were not yet in flower) but the more sheltered and moister concavities were more shrubby, and not quite treeless; one found there walnut, and various bushes including rose, honeysuckle and buckthorn and also brake-ferns, *Geranium rectum*, *Dictamnus albus* and forget-me-not.

A curious feature of the Kishenganga Valley at Kanzalwan was the high shelf some hundreds of feet above the river-level; this shelf was highest above Kanzalwan, and what I call 'Upper Kanzalwan' was perched upon its edge here, separated by steep wooded slopes from our camp and the lower village. One could trace this shelf, continuing down the main river-valley on the same descending plane towards Bagtor. I supposed it to represent the former floor of the valley before the Kishenganga cut out its present gorge-like course. The shelf had been cleared and, in places, crudely drained and slightly terraced for agriculture; there was however far less intense cultivation and grazing around Kanzalwan and Bagtor than at Gurais, several miles higher up the river.

In the afternoon, then, we mounted onto this shelf at Upper Kanzalwan and pursued a stream up to its source (c. 8,000 ft.) which was at the foot of what seemed to have been an avalanche of some years ago. It was also a perfect camping site. On either side of the copious limpid stream were meadows of flowers whose terrace formation indicated that formerly cultivation had been higher and more extensive than now. The most attractive, to insects, of these blooms was undoubtedly a purple *Nepeta* at which we took some specimens of the Bee-hawkmoth, *Haemorrhagia saundersii* Walk., the same Humming-bird Hawkmoth taken a few days earlier at 10,000 ft. (*H. rubra*), *Papilio machaon*, and others. In these meadows, for the first time on my trek, it could be said that *Colias erate* was as numerous as *C. croceus*. Above the spring, amid shambles of snapped-off pine trunks and huge prostrate birch-trunks,

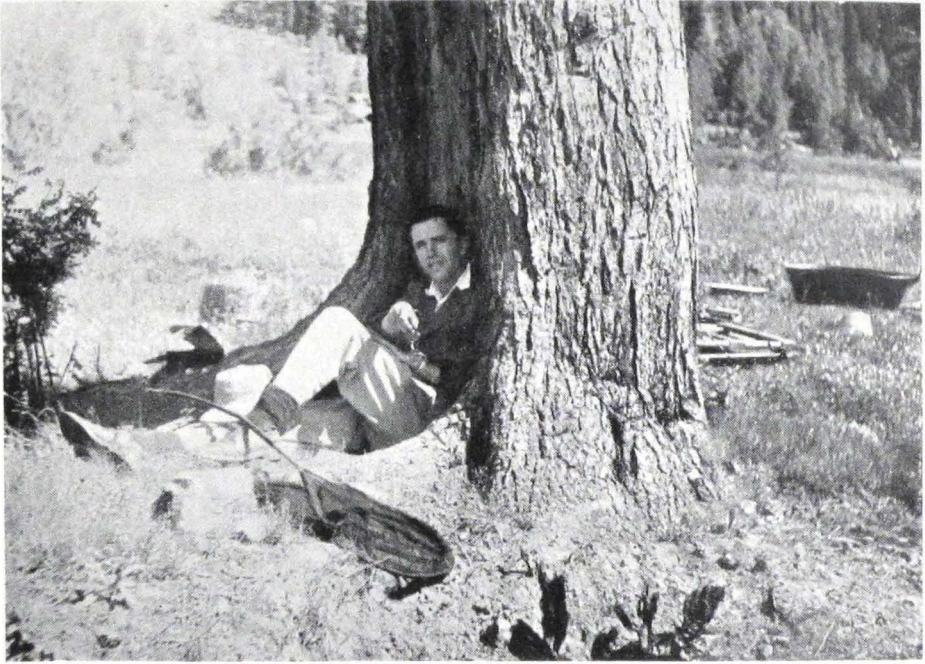


Kishenganga near Bagtor



Author

Inclined sheet of snow on right bank of Kishenganga, showing the bridge, "too mobile for comfort" in the background



The author, on the "flowery shelf" of Upper Kanzalwan



Author

On the pass to Tragbal from Koragbal; old birches growing at the upper tree-limit

whose descent from the slopes above it was not pleasant to imagine, a few young pines were reasserting themselves. Far above, the course of the avalanche, descending from a 12,000 ft. mountain, was indicated by a wide swathe-like clearing in the conifer forest, now green with densely growing young birch trees.

On June 16th we trekked down the left bank of the Kishenganga in fine weather; between Bagtor and Taobat, especially, the scenery was of striking grandeur, and in places the road, steep, narrow and muddy, after three or four days' intermittent rain, was quite difficult. We also had to cross a wide inclined sheet of snow covering a gully on the right bank of the river; the steep sloping snow tilted straight down into the turbid river. But this place was on the right bank which we reached by a bridge, too mobile for comfort, a few miles upstream from Taobat. Odd *Cryphia* (or *Bryophila*) moths, one of which proved new to science, were found sitting on rocks along this sector of the trek. Some of the Himalayan members of this pretty genus, whose larvae feed on rock algae and lichens, are larger and more strikingly coloured than their European or Middle Eastern counterparts, and this seemed appropriate in such wonderful scenery, so rich in crags, mosses and lichens. In the forest before Taobat, where we camped on the very banks of the big river, we saw *Boloria jerdoni* again. The glades of the forest here sheltered by dizzy precipices, were stifling in the afternoon sun, but close to the river a cool breeze refreshed us. In the early morning it was uncomfortably cold. The usual conifer forest was here plentifully mixed with tall walnuts (*Juglans*) and *Acer pictum*, and more occasional elms, bird-cherry and another tree. Along the river banks were giant poplars (*Populus alba*) here and there. The characteristic undershrub was still *Viburnum foetens*. Among the flowers, *Anemone tetrasepala* was abundant at Taobat. No more sea-wormwood however was to be seen here on the treeless slopes, though we were only 250 ft. lower than Kanzalwan but its almost equally aromatic congener, *Artemisia vulgaris*, grew under steep cliffs, and from it a second specimen of a handsome Emerald moth was flushed, the first having been taken at Kanzalwan. Both sides of the valley were steep and thickly wooded except where cleared to some extent just around Taobat. The river flowed here almost due north. Our cook's boy insisted on calling the Kishenganga the 'male Jhelum', and would have nothing to do with its name as given on the map. We did not however quite know how much credit to give him, since he invariably said 'Good morning' to us last thing at night. Incidentally a similar good-night greeting is in use among Arabs in Iraq; it is a forward-looking expression of good wishes; so perhaps the lad was translating a similar Kashmiri greeting into English as well as he knew how.

Work on a new bridge was in progress just above our camp. When completed it would obviate the difficult stretch on the right bank of the Kishenganga above Taobat which we had just negotiated after crossing the 'mobile' bridge.

That evening a drizzle began at sun-down and we feared that for the fifth night running rain would spoil our moth-hunting; but fortunately these fears were vain, and we had some success. A few moths came to light but most were distinctly shy of it and had

to be taken with the net. One of these included the unique type of the new species *Busseola hirsuta* Boursin. But, not unexpectedly in a forest, most of our catch consisted of Geometridae, of which *Scopula moorei achrosta* Prout was the commonest. We decided to spend two nights at Taobat before returning upstream.

Next morning,--June 17th,--we walked down to Taobat and then turned right up the wide torrent which there enters the Kishenganga from the right. Not only was this walk the furthest point from Srinagar to which we penetrated on our trek but it was, to me at least, the climax. Coming from Persia, of which country the pretty and puzzling butterflies of the genus *Melitaea* are the crowning glory, I had kept a special look-out for them in Kashmir; *arcesia* was the only species recorded from here, but that was only known from the Himalayas and Central Asia and was a great prize! The only clue I had to its habitat was Col. Home's laconic record from (I think) Sonamarg:--'one only, 8000 ft., May.' It was now mid-June and my hopes of finding *M. arcesia* were very low, especially since I fancied I was at too low an altitude for it. But to my surprise and joy, as we followed the torrent up to a place where it divided, or rather where two torrents met to form one, I netted a perfect male *arcesia* as it flitted by on the narrow path. A little further on, another male was spied by my wife settled on a buttercup under some giant poplars. A few steps further on we discovered their breeding-place, and took a small series of both sexes in absolutely fresh condition. The rich colouring of the females, with their dark suffusion, was particularly admirable, and the males, with their lighter, fiery red, were also fairly variable, the variations consisting in the completeness of the inner chevron; a minority had it reduced to a series of dots. Doubtless this was subspecies *balbita* which Home recorded from Sonamarg. Since the habitat of *arcesia* has never, to my knowledge, been described and differs strikingly from that of its congeners in the Middle East, I here describe it in greater detail. Its breeding place was a swampy meadow, hardly half an acre in size, protected from cattle by a stout wooden fencing, and full of grass and flowers growing shin-high (a rare sight in Kashmir!). The little field was full of Marsh Orchis (*Orchis latifolia*), *Geranium rectum*, buttercups, plantain, and, in places, yellow violets (*Viola biflora*). I did not ascertain the foodplant as an approaching thunderstorm drove us from the spot, and the hatch seemed so fresh that I doubt whether egg-laying had begun yet. Besides buttercup, the males visited the beautiful *Geranium rectum* so common in Kashmir. I could not help wondering what would happen to this colony if the owner should choose to take down his fence and permit herds of cattle to munch and trample all over his half-acre!

On our way back, we were suddenly startled by howls and screams from the opposite side of the torrent which was precipitous and wooded. The cries were taken up and echoed by men and women working in the fields we were passing, and all started running towards the torrent, or down-stream. A man appeared on the further bank, having slid down a most head-long piece of ground from the path, hidden in the fir-trees above; he beat his head and his breast, and bellowed. Those on our side did likewise. We thought that at least his son or old father, had slipped down and been killed; but

it transpired that the lamentations were on account of a pony that had fallen off the path into the torrent. So rapid was the stream that the unfortunate animal was carried down and out into the big river without any chance of rescue or salvage. The men and women of Taobat continued wailing and beating the breast for some time, only interrupting their laments to inform us briefly but with a smile that it was only a pony that had been lost!

We decided to spend a third night at Taobat, partly in order to ascertain whether *arcesia* was really as stenocous as had appeared from a first visit. Subsequent search shewed it to breed in one or two other similar places, but to be very local. We discovered it in two other swampy spots close to the original locality, and, on the way back on June 19th, a third locality a mile or two below Bagtor (7,500 ft.). Besides the flowers already mentioned, it was seen sipping also at *Caltha palustris alba* and white clover. All the females seen were indulging in this pastime instead of performing their domestic duties. The foodplant may be plantain, but this is no more than a guess. It was accompanied in its haunts at Taobat by an uncommon Green Copper butterfly, *Lycaena kasyapa* Moore.

Our last two evenings in the woods at Taobat were both fine and clear, but were far less productive in moths than had been our first, which had started with a drizzle. Perhaps this was because clear nights are colder than cloudy nights. On the 16th thirty-three individuals had been taken, mostly with the net; on the 17th, ten were taken, of which eight came to the sheet; and on the 18th, when I only illumined the sheet for an hour, eight came, among them *Habrosyne fraterna* Moore.

We returned to Kanzalwan on June 19th and camped this time on the flowery shelf behind Upper Kanzalwan, at about 8,000 ft. It is not often, I think, that meadowsweet, edelweiss, and *Myosotis arvensis* (Forget-me-not) may be found growing together, but there they were, at our tent's front door, the latter making a blue carpet all around us, variegated by the bright yellow of buttercups. We took a couple more Bee-hawks at *Nepeta* just before tea; after tea we strolled over some rough ground below the spring, or rather several springs, and there, amid the white Marsh-marigolds and purple Marsh Orchises was our friend *arcesia* again! I think it was not out yet on our previous visit here.

A cloudless evening and a quiet night; this time, the moths were abundant: in fact, for the first time since our trek began, we saw more than we could catch and the evening compared with my best evenings in the Middle East or England. Many were taken with the net approaching or avoiding the lamp; others were boxed in a drugged condition on the sticky yellow flowers of an umbellifer with pinnate leaves. *Agrotis duosigna* Hampson, a Kashmir endemic species, was especially common.

On June 20th we trekked upstream as far as the lowest point of the little plain of Gurais (Gurez). Most of this plain has been cleared and is either tilled land or pasture, and is a tiresome stretch; but camping at Badwan we were situated between the steep mountains, wooded with fir and pine, and a park-like wood of tall poplars (*Populus alba* and *ciliata*). This wood degenerated, close to the river, into what one might describe as river-island scrub, consisting of sea-

buckthorn (*Hippophthoe rhamnoides*) which grew into graceful little trees, tamarisk and willow. At the village of Gurais itself the only new feature I observed was the pencil juniper tree (*Juniperus macro-poda*) growing in a torrent bed. The wet pastures of Gurais were too much grazed for *arcesia*.

At Badwan, under the tall poplars and pines on the edge of the swift river, we found that strange flower, the Lady's Slipper (*Cypripedium cordigerum*) at a height of only 7,900 ft.; in view of Blatter's record, 'Tosh Maidan, 11,000-12,000 ft., rare', this occurrence may be worth mentioning here.

Our tent was pitched on the grassy verge of a gentle trout stream whose crystal clear waters allowed one to see distinctly every stone on the bottom and every spot on the sides of the trout which hunted there, head upstream and motionless until a fly settled, when one would often strike and leap into the air. For the first time on my trek I wished I had brought a rod and permit with me—not because I could bear to devote several weeks' attention to but one species of animal, but because trout are so good to eat, and it was tantalizing to glance down from our dining-table, on which reposed the eternal and none too tender chicken, and see such good fare, so plentiful and so inaccessible, but five yards away. In a creek a little downstream we saw a small shoal of large plump blue fish and wondered what they might be.

Our camping-site produced the Pearl-bordered Fritillary, *Boloria jerdoni*, the Green Copper, *Lycaena kasyapa*, and one or two other welcome little butterflies who settled on the undergrowth in the sunny glade at the foot of the cliff; it also produced at night a good assortment of moths, mostly geometrids. Every night now saw new and striking species appearing, and this was a contrast with the day's butterflies.

After two nights at Badwan we trekked back past Kanzalwan to Koragbal (c. 8,750 ft.) where we camped above the Rest House by a torrent, whose sunny side, where not cleared, was pleasantly overgrown with walnut, birch and bird-cherry, and whose shadier bank with birch and conifers. On a craggy slope behind Koragbal, covered with thyme and with the yellow-flowered umbellifer mentioned at Kanzalwan, and only traversed by a trickle of water, several *Melitaea arcesia*, including one female were taken. In this situation they were more lively and hard to catch than on their earlier-observed breeding-grounds. In the torrent, which issued from under colossal snowbeds just above Koragbal, we observed a brown bird completely submerging itself in the rushing waters and presumed this to be the White-breasted Dipper (*Cinclus cinclus cashmeriensis*). Koragbal was now besieged by huge flocks of cattle and sheep, which had recently crossed over the pass; according to our information, many of the steers that we saw were proceeding to Gilgit.

On June 24th we crossed back over the pass to Tragbal. The extensive snow-drifts on our path had now disappeared. Hundreds of sheep were pouring over the ridge and running across the remaining snow-strips towards the green shooting herbage. The path was frequently blocked with oxen. The gentler mountain-slopes above the tree-line were wickedly grazed; only among crags and cliffs (c. 11,000 ft.) was there still a fine show of alpine flowers. Upon

these crags we observed a tantalising red and black butterfly. Its habit was to sit or walk on almost vertical cliff faces, some twelve feet above the road. Occasionally it spread its wings and fluttered up, or down, according to its whim. Clouds, hanging over the mountain, perhaps made it more reluctant to move from its perch. At any rate only two were seen, and of these one was at last caught after a wait of twenty minutes and several misses! (It proved to be *Erebia kalinda* Moore ssp. *kasuriana* Tytl.).

Dropping down to Tragbal (9,000 ft.) we caught a small day-flying Tiger-moth (which later proved most difficult to identify, there being nothing like it in the British Museum) and observed again the now familiar Pearl-bordered Fritillary (*B. jerdoni*) at the top limit of the forest (c. 10,000 ft.).

I could not help reflecting on the lamentable state of the Kashmir mountains above the tree-limit compared with the Persian mountains. Persia has about a third of Kashmir's rainfall, and a considerable pastoral population, but none of its high mountains present the cruelly cropped appearance so common in Kashmir. The explanation, of course, is that the more deserts climate of Persia makes the country incapable of supporting so dense a population as in Kashmir, hence the less spoilt state of the mountain pastures, as regards wild flowers, etc. On the other hand, Kashmir protects its forests well, and the forest zone of Kashmir is a fine sanctuary for wild life.

That night at Tragbal, our last night on trek in Kashmir, (June 24th) two examples of a Geometrid moth came to light which had also been the first species of Heterocera seen at the beginning of our collecting in the forest zone (on May 20th at Gulmarg, 8,900 ft.). This led me to conclude that little significance could be given to the date on which any of our catches were taken, and that all might well be recorded as flying 'in May-June'. True, most of them were taken in June, but in view of the abnormal rain and lateness of the 1942 season I should think that most could be taken also late in May in normal years, if not earlier, in the forest zone.

The 'marg' or clearing at Tragbal, grazed down to quarter of an inch from the turfy soil, positively swarmed with *Agrotis segetum* and *Nomophila noctuella* after sunset. The special catch of this last night, however, was when my wife netted a peculiarly beautiful Swallow-tail moth, the only one of its kind which we saw.

Next morning, in warm, hazy weather, we descended to Bandipur, and thence proceeded by lorry to Srinagar. On the way down from Tragbal two more examples of the Ringlet, *Callerebia nirmala shakra* were secured in good condition at 8000-9000 ft.; the steep slopes were overgrown with *Indigofera* and grass tufts in the open spaces between the pine trees. Below 8000 ft., *Parrotia* bushes reappeared. I had seen neither of these two kinds of bush north of the Tragbal Pass. The most numerous butterfly on the way down was no longer the Painted Lady (*V. cardui*) but *Pararge shakra* Moore especially between 8,000 and 6,000 ft. At the mountain's lowest slopes, before reaching the plain with its paddy-fields, the Tailed Blue (*Lampides baeticus*) and another species of Blue were active among the beautiful blooms of *Indigofera*. On the undersides of overhanging rocks by the track-side, odd specimens of two kinds of *Gnophos* moth, a female

Dysauxes hyalina kashmirensis Roths., and *Bryophila modesta* Moore were picked up, in passing.

Thus ended our trek; its early part had been rather spoilt by rain, but in compensation its last week had been almost too hot and cloudless. We left Srinagar on June 28th. Our one regret was that our holiday could not continue a little longer. The moths were only just emerging in their full numbers, and might be expected to continue in full force and to be reinforced by the arrival of the midsummer species throughout the next month or two; and as for the autumnal species (always the least known and the most likely to contain new species, in an insufficiently explored region)—but it was better not to think of what there might not still be among these to discover! If the butterflies were disappointing on the whole (it had really been too early to try for the peak-species) the moths had provided excellent compensation.

On the car-trip between Srinagar and Murree the scarlet *Phaуда flammans* Walker flew into the car and was taken. The specimen was compared later with Walker's type and appeared to be a remarkable record for Kashmir, and to be the westernmost capture. The conclusion of our trek coincided with the emergence of the earliest Gypsy moths (*Lymantria dispar*) from the pupae taken off the willow-trees at Nagam.

Duplicates of the specimens taken were deposited with the Bombay Natural History Society. The identification of the material, for various reasons, could not be undertaken until years later. The above narrative, however, written at the time of the trek, will I hope give a general picture of the wild life, and in particular the lepidoptera, of Kashmir at the forest zone—5,000-10,000 ft. in early summer; the only alterations in the original narrative have been the insertion of the corrected names of various species mentioned as examples of the fauna. The narrative makes no attempt to mention all species seen by name. For these, those interested must refer to separate articles by the author or his collaborators.