

The mine of *mulleriella* is indistinguishable from that of *quercifoliae*, and both species pupate in a translucent cocoon edged with frass; when held up to the light, the cocoons appear to be placed in an elongated black "U". In this aspect they differ from some of the other oak-feeding Phyllonorycters, which encase their cocoons completely in black frass. Ford (1949) states that *mulleriella* is "reputed to feed on leaves at the top of a tree". This seems to me like an aetiological theory to explain away failure to find the mine; at any rate, the mines I found were within easy reach of the ground.

I recommend collectors to gather mines of the type I have described and in the localities such as those I have mentioned, and it may well transpire that *mulleriella* is not such an elusive quarry after all.

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Albarracin and Vicinity, Spain, in July 1973

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The following is an account of a 2-week entomological holiday spent in Spain in the regions of the Sierra de Albarracin and Valencia between 20th July and 3rd August 1973. We flew from Heathrow to Valencia, collected two hired cars at Valencia airport and then drove via the City — in which we found it only too easy to get lost — up the coastal road to Sagunto and thence inland on a metalled road with many hairpin bends in a N.W. direction to Teruel (elev. 916 m) where we stayed at the excellent Parador Hotel, situated in pine woods just beyond the town on the Zaragoza road, in all a 150 km drive. The bedrooms and public rooms were excellent, the meals attractive and well served, the staff cheerful and most helpful. Albarracin (elev. 1182 m) is about 25 km W.

of Teruel on a minor road and we spent the next 7 days collecting mainly in the mountains to the W. of Albarracin, up to an elevation of 1855 m. Except for a storm on our last night in Teruel the weather was almost uniformly fine and hot.

The first village reached on the Albarracin road is Gea de Albarracin; beyond this the road climbs up through a rocky valley, and on the 21st July we collected on uncultivated rocky ground between the roadside and a stream about 5 km above the village. Butterflies were plentiful and pale *L. albicans arragonensis* were particularly conspicuous, being mainly males in fine condition. More than 40 species were caught or noted in this area. *M. daphnis* was not uncommon and one dark female was netted as well as several males.

On the 22nd July we drove further, past Albarracin to Noguera, resisting the temptation to stop and collect at likely places en route; at Noguera we took the road to the right and climbed the steep ascent towards Bronchales. Just before the summit we stopped at a bend in the road where there was a damp area and an abundance of flowers and there we saw for the first time *P. apollo* and *B. hecate*. About 1 km further up the road, near the summit, the countryside opened out into flowery meadows between pine forests, and in this area *H. semele* and *H. alcyone* were abundant and we took *M. russiae cleanthe* also. Then, turning left before actually reaching Bronchales, we drove along the road to Greigos until we reached clearings in the pine forests and ultimately well watered open meadows. It was in this area that we found in abundance *L. coelestissima* in fresh condition but only males. *A. damon* and *A. fabressei* were flying, too, but in lesser numbers. On the way back to Teruel we walked up a dry river bed near Albarracin and found *C. prieuri* and *S. actea* both in fresh condition and almost all males. *S. actea* we later found to be widespread in dry rocky localities but *C. prieuri* we found only in this single locality.

On the 23rd July we drove via Albarracin to near the village of Moscardon. This is an upland area of flowery slopes and pine forests, with a stream dammed to give ponds, where cattle were watered. Butterflies were generally abundant, particularly the satyrids, *M. galathea lachesis*, *H. semele*, *H. alcyone* and *B. circe*, with lesser numbers of *M. russiae cleanthe*. In one area *C. iphioides* was plentiful in fine condition and we found for the first time a few male *A. arethusa*, and quite numerous *H. lycanon*, again almost all males. *B. hecate* was the commonest fritillary and it was flying in the company of *B. ino* and a few *M. parthenoides*.

On the 24th July, another brilliant and hot day, we revisited several dry river valleys between the Gea de Albarracin and Albarracin and this time in addition to *H. semele*, *H. alcyone*, *C. briseis*, *C. prieuri* and *S. actea* we came across a colony of *P. fidia* in fresh condition. Then we drove once more to Moscardon. Butterflies were abundant as before: *L. coelestissima* were plentiful on open grassy slopes and *A.*

arethusa appeared more abundant and were presumably just emerging.

On the 25th July we explored an area south of Albarracin. This proved to be on the whole less productive: the terrain was less mountainous and more arid and was partly cultivated and no particularly interesting or "new" species were noted. On the 26th July we paid a return visit to the mountains above Noguera and Griegos and spent most of the day looking in likely clearings in the pine forests for *E. zapateri*, but none was found. Butterflies were, however, generally abundant and many *P. apollo* were seen. Three "new" species were noted: *P. napi*, in one locality only, and a single female *H. alcipron* and one male *P. nivescens*.

On the 27th July it was cloudy in the morning and we explored the pine-covered heathland in the vicinity of the hotel. Several fresh male *H. statilinus* were caught and two *P. c-album*. On the 28th July we made our final trip to the mountains beyond Albarracin, visiting the locality between Noguera and Bronchales where we had stopped on the 22nd July. This time we found a small colony of *L. nivescens* at the margin of a pine forest and in the same area one *N. polychloros* was caught, the only one seen in the whole trip. In the afternoon we re-visited the Moscardon area and caught two more *P. nivescens* and also two *M. daphnis*, one a brown female. There was still no sign of *E. zapateri* and we concluded that the species had not yet emerged.

On the 29th July we left Teruel and drove towards Valencia. We stayed at a hotel on Monte Picayo which rises steeply from the narrow coastal plain approximately 21 km north of the city. This is a new hotel, modern and expensive in contrast to the very reasonable charges of the Parador but beautifully situated on the hillside with spectacular views over the plain to the sea. About two-thirds of the way from Teruel to Segorbe en route to the coast the road descends through a steep escarpment. We halted here and collected briefly at its base on the way to the small town of Pina in a rather dry area of heathland and pine trees. *P. fidia* was quite common as were female *S. actaea*, but *L. albicans arragonensis* was probably the most common of the dozen or so species flying. In this area, as well as in Teruel we were struck by the many signs of the fierce fighting in the civil war 35 years ago.

On the 30th July we explored the neighbourhood of Monte Picayo and spent most of our time walking up the road which wound through rather arid pine-covered hills above the Monastery Sancti-Spiritu. This appeared to be an area of natural forest but some of it was being developed and houses built. About 20 species of butterflies were noted. *P. fidia* was common and some females were seen, but *H. statilinus*, although present, was less frequent. A few almost fresh *E. tages* were seen, presumably members of a second brood.

On the 31st July we drove up the Teruel road and explored a valley running North near Segorbe where a river had been dammed. About 22 species were noted in this area including *L. bellargus* and *P. malvooides* neither of which we had seen previously, and we were rather surprised to catch a single male *P. nivescens* at this relatively low altitude (approx. 360 m.).

On the 1st August we again drove towards Segorbe but this time we branched North up the Vall de Uxo road before reaching Segorbe. On rough ground near Azuebar we found *H. statilinus* to be common and we noticed a single rather worn *L. bellargus*. We left the Vall de Uxo road, and drove via Azuebar and Chovar towards Eslida, the road climbing and twisting steeply through wooded hills. About 3 km beyond Chovar the road crosses a stream and following a track winding up a narrow valley we came across for the first time *Q. quercus ibericus* in quite large numbers flying around the tops of cork oak trees, and in the same area *C. argiolus*. By the roadside in this area we saw several *P. pandora*, again for the first time.

On the 2nd August we drove south to Valencia and then inland to the small town of Pedralva, finally taking a by-road North which led us eventually to Segorbe on the Teruel road. The countryside varied from agricultural to wild rocky hills and pine-covered heathland, and we collected at several likely places. By the riverside at Pedralva we found *Z. knysna* and *S. pirithous* in quite large numbers flying low over lush vegetation, but in rather poor condition. (One *Z. knysna* had been caught in a damp place just below the hotel on Monte Picayo the previous evening.) These captures suggest that *Z. knysna* extends further North up the Mediterranean littoral than had been thought. Finally, on our way back to the hotel we called in briefly, rather late in the afternoon, at the place where we had seen *Q. quercus ibericus* and *P. pandora* the previous day. Several more of these species were seen as well as *M. didyma* in fresh condition. The following day we returned to London after a thoroughly enjoyable and successful trip.

In all 95 species of butterfly were noted. Moths were not numerous, in spite of regular inspections of the hotel lights, and relatively few were disturbed during the day. The entire area was very sparsely populated so that for hours at a time we saw no other human beings apart from light traffic on the roads. On one occasion two other collectors were seen in the Albarracin area but were not near enough to speak to them.

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LIST OF SPECIES CAUGHT BETWEEN 21st JULY AND 2nd AUGUST 1973

Papilionidae (3 species): *Papilio machaon* L., a few only, scattered. *Iphiclides podalirius* Dup., widespread, but not common. *Parnassius apollo* L., plentiful in the Sierra de Albarracin.

Pieridae (10 species): *Pieris brassicae* L., a few only seen, near Valencia. *P. rapae* L., widespread and common. *P. napi* L., a few only in one locality near Noguera. The form is closely similar to, if not identical with, *dubiosa* Röber; and the black spot in S3 in the male is unusually large. *Pontia daplidice* L., widespread and quite common. *Aporia crataegi* L., a few only, near Albarracin. *Colias crocea* Geoffroy, widespread and often common; many f. *helice*. *C. australis* Verity, widespread and quite common. *Gonepteryx rhamni* L., widespread but not common. *G. cleopatra europaea* Verity, widespread but not common. *Leptidea sinapis* L., widespread but not common.

Nymphalidae (19 species): *Limenitis reducta* Staudinger, scarce, in the Sierra de Albarracin. *Nymphalis polychloros* L., one only, in Sierra de Albarracin. *Inachis io* L., scarce. *Vanessa atalanta* L., scarce. *V. cardui*, widespread and quite common. *Aglais urticae* L., common in the Albarracin area. *Polygonia c-album* L., a few only, scattered. *Pandoriana pandora* D. & S., one locality only, near Segorbe. *Argynnis paphia* L., widespread in the Albarracin area. *Mesoacidalia aglaja* L., widespread and often common in the Albarracin area. *Fabriciana adippe chlorodippe* H.-S., often common in the Albarracin area. *F. niobe* f. *eris* Meigen, one only, near Noguera. *Issoria lathonia* L., widespread in hills. *Brenthis hecate* D. & S., common in colonies in the Sierra de Albarracin. *B. ino* Rott., common in Sierra de Albarracin, often flying with *B. hecate*. *Melitaea phoebe* D. & S., a few worn specimens in Sierra de Albarracin. *M. didyma occidentalis* Staudinger, fairly common and widespread near Valencia. *Mellicta deione* Geyer, only one, near Segorbe. *M. parthenoides* Keferstein, scattered in Sierra de Albarracin, mostly worn.

Satyridae (23 species): *Melanargia galathea lachesis* Hb., generally common in Albarracin area. *M. russiae cleanthe* Boisd., quite common in Sierra de Albarracin. *Hipparchia alcyone* D. & S., common and widespread. *H. semele cadmus* Frühst., common and widespread. *H. statilinus* Hufn., widely distributed but not on the whole common. *Pseudotergumia fidia* L., widely distributed and locally quite common. *Chazara briseis* L., locally common in the Albarracin area. *C. prieuri* Pierret, one locality only near Albarracin. *Satyrus actea* Esp., quite common in the Albarracin area. *Brintesia circe* F., locally common in the Albarracin area. *Arethusana arethusa* D. & S., local in Sierra de Albarracin. *Maniola jurtina hispulla* Esp., widespread and common. *Hyponephele lycaon* Kuehn, widespread in Albarracin area. *Pyronia tithonus* L., widespread and common. *P. cecilia* Vallantin, locally common in

dry places. *P. bathseba pardilloi* Sagarra, widespread but worn. *Coenonympha pamphilus* L., scarce. *C. dorus* Esp., widespread and quite common but worn. *C. arcania* L., a few only in Sierra de Albarracin, worn. *C. iphioides* Staudinger, locally common in Sierra de Albarracin. *Pararge aegeria aegeria* L., widespread; common by hotel at Monte Picayo. *Lasionhata megeda* L., widespread, but not common, worn. *L. maera* L., few only in Sierra de Albarracin, worn.

Lycaenidae (25 species); *Quercusia quercus ibericas* Staudinger, one locality only, near Segorbe. *Nordmannia ilicis* Esp., common in the Albarracin area but worn. *N. esculi* Hb., probably common in Albarracin area but worn. *Strymonidia spini* D. & S., scattered in Albarracin area; a few fresh. *Lycaena phlaeas* L., widespread but scarce. *Heodes alciphron* Rott., scarce in the Sierra de Albarracin. *Lampides boeticus* L., widespread but not common. *Syntarucus pirithous* L., near Valencia, locally common. *Zizeeria knysna* Trimen, at Monte Picayo and near Pedralva. *Celastrina argiolus* L., near Segorbe and at Monte Picayo. *Plebejus argus* L., few, Sierra de Albarracin. *Lycaeides idas* L., few, Sierra de Albarracin. *Aricia cramera* Eschscholtz, widespread. *A. allous montensis* Verity, widespread and quite common in Sierra de Albarracin. *Cyaniris semiargus* Rott., near Albarracin, few only. *Agrodiaetus damon* D. & S., locally quite common in Sierra de Albarracin. *A. fabressei* Oberthür, widespread in Albarracin area. *Plebicula escheri* Hb., few in Sierra de Albarracin. *P. nivescens* Keferstein, scarce in Sierra de Albarracin: one near Segorbe at lower altitude. *P. thersites* Cantener, widespread and locally common. *Meleageria daphnis* D. & S., two colonies in Albarracin area. *Lysandra albicans arragonensis* Gerhard, widespread and often common in Albarracin area, and also near Valencia. *L. caelestis sima* Verity, locally plentiful in Sierra de Albarracin. *L. caelestissima caerulescens* Tutt, scarce in Sierra de Albarracin. *L. bellargus* Rott., two small colonies near Segorbe. *Polyommatus icarus* Rott., widespread and often common.

Hesperiidae (15 species): *Pyrgus malvae malvoides* Elwes & Edwards few only, near Segorbe and Valencia. *P. serratulae* Rambur, one only Sierra de Albarracin. *P. cirsii* Rambur, widely distributed in the Albarracin area. *P. onopordi* Rambur, scarce in the Albarracin area. *P. fritillarius* Poda, scattered in the Albarracin area. *Spialia sertorius sertorius* Hoffmannsegg, widely distributed and quite common worn. *Muschampia proto* Ochs., widely distributed and quite common. *Carcharodus alceae* Esp., widely distributed but not common. *C. lavatherae* Esp., one only, near Teruel. *C. boeticus* Rambar, quite common, Albarracin area and near Teruel. *Erynnis tages* L., a few near Valencia, quite fresh. *Thymelicus acteon* Rott. widespread but not common. *T. sylvestris* Poda, widespread. *Hesperia comma* L., scattered in Sierra de Albarracin. *Ochlodes venatus faunus* Turati, widespread but not common.



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