

## Critical Commentary upon M. V. Brian's and A. D. Brian's "Observations" <sup>1)</sup>

by

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Just as Dr G. KRUSEMAN pointed out (1950, Ent. Ber. 13 : 52), this paper will not only interest specialists, as it tries to clear systematical problems with biometrical methods. My own entry into taxonomy having been dictated by analogous efforts with another *Myrmica*, I sympathize enough to allow myself some critical remarks.

1. This is not the first time that biometrical measurements are used to establish the limits of species. With *Myrmica*, biometrical numbers are introduced to systematics by STÄRCKE as early as 1927 ("If") and, — although with a snarl in my direction — accepted by SANTSCHI 1931. Perhaps there are still earlier examples. In fact, some measures, given in exact numbers, were given by LINNÉ already. And to cite a contemporary author, KARAWAIEW in his numerous works always gives the dimensions of all the appendices in micra, which may seem somewhat excessive, since the probable error of each single measurement is a multiple of a micron, but which, notwithstanding, is better than the records of FOREL c.s., who mostly had no time for exact measurements.

2. The name *M. rubra* L. for *M. ruginodis* Nylander. The Authors follow SANTSCHI, who pointed out that one of the *Myrmica*-species distinguished within *M. rubra* L. has to bear the name *M. rubra* L., which, *M. laevinodis* having been the first new name, has to be *M. ruginodis* Nylander. Now, this thought having occurred to me some years before, at that time I requested Mr DONISTHORPE to clean the Type-Specimen of *M. rubra* L. in Burlington House and to make out which species it was. He kindly did this, found the Type Specimen very dirty and difficult to identify, and wrote that it seemed to be perhaps *scabrinodis* Nyl.

As in several cases *scabrinodis* Nyl. cannot be distinguished from *M. sabuleti* Meinert without the male (and this is certainly so when the specimen is dirty and damaged), this result can only have the consequence, that the Type Specimen in this case does not enlighten us a bit. Only it pleads against the probability of the *rubra-ruginodis* identity.

As the original description is also clearly insufficient, and the words "pessimum nostratum pungit" (which would indicate *M. laevinodis* which stings more fiercely than *ruginodis*) were added in the 12th edition of 1767, we remain wholly uncertain as to what species *M. rubra* L. is.

I conclude that a. the description is insufficient, b. the Type Specimen cannot be identified with any certainty, so that the name *M. rubra* L. remains an uncleared homonym and it were best to drop it altogether and maintain the well-known names of NYLANDER. If its function as a type-species-name of the genus prevents this, there should be chosen a neotype, found in Upsala, and readily to be identified with either *ruginodis* or *laevinodis*.

Not that I should like to lay much stress on it. In a time, in which

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<sup>1)</sup> BRIAN, M. V., and BRIAN, A. D., 1949, Observations on the Taxonomy of the Ants *Myrmica rubra* Linné and *M. laevinodis* Nylander (Hym. Form.), Trans. R. ent. Soc. London 100 : 393—409.



politics is called, what in daily life would be named fraud, treachery and dirty tricks, there is no reason to make fuss on a name.

3. B. & B. give the value of one division of the used ocular-micro-meter in a hundredth of a micron. This could be an example of pseudo-exactness since the probable error of each single measurement and the probable error of the mean must have much higher values. In my lay-opinion it could be allright if those p.e. had been mentioned, but I failed to find them.

4. The width of the head has been measured immediately behind the eyes. This gives a much larger probable error than to measure the width with the eyes included, (as STÄRCKE 1927 did). The difficulty that all the heads have to be measured in the same position will be less inconvenient because the necessity of seeing the circumference of two eyes sharply at the same time, facilitates the controll of the right and equal positions of the heads.

5. B. & B. take one point of difference between *ruginodis* and *laevinodis* viz. the relative length of the epinotal spines. When the results are represented graphically (fig. 2) there seems to be little or no place for transitions. These belong to *laevinodis*.

But fig. 2 is slightly deceiving for the superficially attentive reader! For the intermediates are only represented apart (as circles) as far as they belong to the category that is nearer to *ruginodis*; the category that is nearer to *laevinodis* is not represented apart, but either not represented or represented by the same symbol as *laevinodis*! So it is not a great wonder that the impression is made that the intermediates "fell in the *laevinodis* group"!

Perhaps the intermediates sent by DONISTHORPE, which all showed the relative spine-length of *laevinodis* were not numerous enough to measure samples comparable with the other ones. The sentence that colonies can be identified either with *ruginodis* or with *laevinodis* is based on 26 *laevin.* colonies. That number seems too small for a decision. DONISTHORPE mentions 2 intermediate colonies and I have also seen several ones which consisted of intermediate individuals, that is, individuals that could not be ranged without much doubt into one of the two species. Perhaps they may prove blends.

The taxonomical criterion is not only the length, but also the shape of the spines. *Laevinodis* possesses spines that have vertically much larger dimensions at their roots and are more abruptly pointed. B. & B. discuss and table also the correlation of another character that distinguishes the two species from another viz. the smooth resp. wrinkled condition of the integument between the spines. But I did not find a much more important difference discussed, the character that is expressed in their nylanderian names. The profile of the back of the petiolus is curved in *laevinodis*, clearly broken in *ruginodis*. The back of the nodes is rather smooth in *laevinodis*, rather sculptured in *ruginodis*. There are short-spined specimens with rather *ruginodis*-like nodes, long-spined specimens with intermediate nodes, and every other combination, not only in individuals but also in peoples, though it may be true that in that case different combinations occur in the same people.

Again, since B. & B. did not include this very important character in their distinctions of "transitions" it is not a great wonder when the result of the measurements was a sharp distinction without transitions



between *laevinodis* and *ruginodis*! This, however, does not prove their nonexistence, it only proves that the character chosen to be measured is not proper to decide in this question, and that the material sent by DONISTHORPE consisted of short-spined individuals! (Though, in their own fig. 2 there are at least four cases of clear transitions recorded). Transitions exist, and are even numerous. If the numbers speak contradictory, then their relation with reality has more or less been lost. I am prepared to admire a beautiful statistical study on the wings of the angels, so far as it gives us something to think about or to conduct experiments, but I shall not be directly convinced if their result says that they must be blue.

SANTSCHI and I have observed several mixed nuptial flights between these two species. Some doubts may even arise about their rank in systematics. Probably of course the intermediates are not a variety as FOREL classifies them. It is not wholly impossible that some transitions are blends and that crossing is so frequent where they both occur, that they should be called subspecies. If they are subspecies, they are biotopical subspecies, just as *Lasius alienus* and *L. niger* may be. Still in my list of 1944 I listed them as good species. But since that time, above all by the lecture of the magnificent book of DOBZHANSKY I have understood that a taxonomical form at some place may behave as a variety, at another place as a subspecies or a species. Though their geographical area is almost the same, they are seldom found in the same biotope, and thereby undergo a certain grade of isolation.

In that way Red-hairyness in Man generally behaves as a variety, that is, it dives up here and there, shows a marked heredity, but tends to reappear into the majority of the population. But in some parts of Ireland it has developed itself to a majority, and has got the character of a subspecies. Our knowledge about this difficult subject is still too incomplete.

6. The spine-length has one rather well-fixed end, viz. the point of the spine. The difficulty lies in the proximal end. What is the proximal end of a spine? There is a gradual transition towards the epinotum. So a rather subjective point or line has to be chosen as the proximal limit for the measurements. The fig. 1 of B. & B. represents the length of the spine recorded. It is clear that the distance between the parallel lines AA and BB depends greatly from their direction. There is not given one indication as to how they have been fixed. Only the fig. shows it as a tangent to a curved line that pictures the border edging of the epinotum. This line, picturing the area between the spines, is given as a real line. In reality it is only a profile-projection of a saddle surface, and highly dependent of the point of view. Moreover, the spines diverge and their divergence differs greatly between the *Myrmica* species and even individually. This is a third difficulty with reliable measurements of the spine-length. Their probable error is enormous. I met with the same difficulty in my own measurements and had to conclude that only very considerable differences could be significant. This is perhaps the Achilles' heel of the conclusions of B. & B.

7. B. & B. distinguish two systematical entities of *ruginodis*, which they label var. *macrogyna* var. nov. and var. *microgyna* var. nov. As these forms include the whole of the examined specimens, one of them must be called *M. ruginodis* Nyl. (or *rubra* L. if you like) i.sp. The other one could be a variety. But I am not convinced that they are not "for-



mae", phaenotypically modified by the surroundings. Careful rearing-experiments with the two forms under changed conditions will be necessary to ascertain this point. It is an analogous case as with the diverse "varieties" and "races" distinguished by GÖSZWALD in *Formica rufa* Nyl., which I think are comprehensible as "formae", modifications according to the surroundings, to the age of the people, the age of the dome, the rule of TOXOPEUS, and the vital factor  $\frac{3}{r}$ .

Resuming: The application of biometrical measurements to taxonomical problems must be applauded, provided that the probable error is well kept in eye. But they do not justify some conclusions of B. & B. Intermediates between *laevinodis* and *ruginodis* occur. This has to be taken as a reality. Their nature is open to discussion, but their occurrence can only serve as an issue. If measurements conclude to their non-existence, then there is something wrong with the measurements.

Résumé. Le Réf. fait quelques objections contre les conclusions des Auteurs, tout en louant l'application des méthodes biométriques à la taxonomie. Des intermédiaires entre *Myrmica laevinodis* et *M. ruginodis* se trouvent assez souvent. Voilà une réalité que peut servir pour point de départ, mais qui ne pourrait pas être niée. Les variétés nouvelles, proposées par les Auteurs, pourraient bien être plutôt des "Modifications", (tout comme les formes de *Formica rufa*, proposées par GÖSZWALD) et plutôt attribuables à l'âge des peuples et des coupes (resp. nids), au microclimat de l'entourage, aux autres conditions extérieures, à la règle de TOXOPEUS et au "facteur vital"  $\frac{3}{r}$ .

Zusammenfassung. Der Ref. erachtet das Vorkommen von Mischformen der *Myrmica laevinodis* und *ruginodis* eine gesicherte Wirklichkeit die nur als Ausgangspunkt dienen könnte.

Ihre Natur dagegen steht noch zur Diskussion. Der wahrscheinliche Fehler sei bei Messungen der Epinotaldorne besonders gross, wodurch der Schluss der Autoren nicht genügend gesichert erscheint.

Nach Ref. sind die Mischformen wahrscheinlich zum Teil als Bastarde, zum anderen Teil als "Modificationen" aufzufassen, von Umgebungseinflüssen, vom Alter des Volkes, und des Nestes, von der TOXOPEUS'schen Regel und vom Vitalfactor  $\frac{3}{r}$  abhängig, (s. St. 1940).

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