MICROLEPIDOPTERA PALAEARCTICA

EDITOR'S NOTE.—Announcement of one of the most ambitious projects in the history of the study of Lepidoptera, the projected series *Microlepidoptera Palaearctica*, has recently been made by Dr. H. G. Amsel of the Landessammlungen für Naturkunde, Karlsruhe, Germany. The following English translation of the preface to the work is presented in order to acquaint lepidopterists throughout the world with the scope and aims of this magnificent project.

According to present plans, the various families of Palearctic Microlepidoptera will appear in no fixed order or succession. Families or subfamilies will each be published as a volume, to be prepared as authoritative specialists are available. The first volume comprises Dr. Bleszynski's monograph of the Crambinae, consisting of some 800 pages of text, about 890 text figures, and 444 colored figures. Volume 2, scheduled for publication early in 1965, will contain Dr. Sattler's study of The Ethmidae. A treatment of the Tineidae by Dr. Petersen is projected as the third volume in the series.

Persons desiring further information or wishing to subscribe to the work should contact Dr. Amsel, or Verlag Georg Fromme & Co., Spengergasse 39, Vienna 5, Austria.

PREFACE

The death of Edward Meyrick in 1938 was a turning point in the study of Microlepidoptera, signifying more than the passing of a famous and respected author. In 420 publications Mevrick had described some 16,000 species of Microlepidoptera, thereby putting in the shade, from a purely numerical point of view, the descriptive work of any single person in the biological sciences. His breadth of scope was as amazing as the volume of his work: he alone envisaged the Microlepidoptera Fauna of the entire world, of which he formed a single collection numbering about 100,000 specimens, and in most cases his sure eye pointed the right way. But already during his lifetime it had become clear that the science of Microlepidoptera would enter a blind alley sooner or later unless new methods of study were found. The volume of new description increased to such a degree that gradually the comprehensive mastery failed, which at the beginning of our century still resided in a few such brains as Meyrick, Walsingham, and Rebel, and it became clear that, more exact, and indeed, in some groups, extremely refined methods of investigation were already in use, so in Microlepidoptera too a completely new system need be developed.

Although at the turn of the century authors were still to some extent able to work generally and independently, the volume of the literature and material made obligatory a strong specialisation, which naturally led to co-operation. The methods which are now scientifically requisite intensified this process, if only because of the time involved. But the decisive step forward was made when the value of the genital morphology was appreciated as being of fundamental importance. From year to year it became more generally recognised that the current method of taxonomic

work was not merely inadequate but must inevitably lead to incomprehensible chaos. Meyrick's view that a species could be so clearly described that it could be recognised from the description of the external features proved to be a serious error. Numerous species can only be distinguished in the morphology of their genitalia, and indeed the depiction of the genitalia almost always provides the truly unambiguous method of recognising a species. In particular the works of many authors, which have appeared since World War II, have shown that systematic revisions of groups furnished a quite new picture of the situation. For instance, Petersen established, in the relatively small Palearctic Tineidae group, the existence of sixty synonyms, and made such generic changes that hardly one stone of the old system remained on another. In the Crambinae, a comparatively small subfamily of the Pyralidae, Bleszyński proved that sixty-seven species, from various regions, belonged to quite different subfamilies or even families, and also established countless synonymies.

In view of this situation, the present author was forced more and more to contemplate a new and fundamental work on the Palearctic Microlepidoptera, and his decision to publish "Microlepidoptera Palaearctica" was reached nine years ago. After protracted negotiations with authors, publishers, and scientific institutes, it was finally possible to overcome the almost insuperable difficulties in the path of this undertaking. Not the least among the reasons for this final success was a particularly favourable combination of circumstances such as have rarely occurred in biological literary history. Never before was so large a number of internationally outstanding specialists of East and West available simultaneously to undertake such a task; never before had there been a Microlepidoptera-specialist such as Dr. Gregor, combining the highest scientific and artistic qualifications; seldom, too, had a publishing firm been prepared to issue so comprehensive a work, at the same time so specialised and so wide in scope, and with the barest prospects of profit; never before had the happy circumstance occurred, to find as a leader of a great and capable printing works such a person as H. Reisser, who being himself an experienced lepidopterist, was delighted to give his personal and unremitting attention to such a project. Finally, both the German Exploration Corporation and the Baden-Württemberg Ministry of Culture evinced an extraordinary comprehension for our efforts and enabled the almost insuperable financial difficulties to be overcome. Many others played a valuable role, but it would take too long to mention them all by name.

At the XIth International Congress of Entomology at Vienna the meeting of a large number of contributors to "Microlepidoptera Palaearctica" was first possible, and the plotting of the general scheme which the enterprise was to follow. This scheme was the subject of further prolonged correspondence, with the following result:

1. All scientific work on the Palaearctic Microlepidoptera will be coordinated into the framework of "Microlepidoptera Palaearctica"; such co-ordination has hitherto been lacking, and this lack was one of the main causes of the present impossible situation in the systematic field. In the course of this co-ordination, individual authors will be enabled to work through respective groups as represented in the greatest museums and also the principal European private collections.

2. The study of each species will begin with an examination of the type specimen or series.¹ Specific determinations, hitherto made on the sole basis of literary studies have often led to the most grotesque mistakes. An investigation of types will provide an indisputable proof of what is really meant by a described species. The synonyms and uncertain species can be compared and their identity resolved, thus providing a sober foundation for all future scientific work. All purely compilatory work is to be avoided; instead all conclusions will rest on material that has been currently investigated.

3. In order to achieve the indisputable identification of all the species, the study of each one will begin with the establishment of the genitaliamorphology of both sexes, with due regard to all the characters of systematic value. Black and white drawings of the genitalia, coloured reproductions of water-colour drawings of the right side, made from the actual specimens, with pictorial representation of systematically important details (e.g. neuration, antenna, frons, or palp-formation) should provide a maximum of comprehensibility. Vague uncertain statements about the palp-form antenna-ciliation, or cornutus-length, such as "end segment of palpus long" will be replaced by unambiguous statements, e.g. the length of the third segment will be related to that of the second, and the length of the entire palp to the diameter of the eye, thus: "3 palp-segment, 1/3" means that the last segment is one third the length of the second; and "palp 3" means that the palp is three times as long as the diameter of the eye. Likewise for the antenna-ciliation, "antenna ciliation 2" means that the cilia are twice as long as the breadth of the antenna shaft, relating the longest cilia to the broadest part of the shaft. Similarly, "cornutus 1" means that the cornutus is as long as the aedeagus. Thus even a beginner will be enabled to work in a new field of study: and institutes of applied entomology will be provided with a rapid means of orientation.

 $^{^{1}}$ As far as ascertainable, the data of the labels of the types will be quoted *verbatim* with a special indication at the relevant place of the work.

4. The clearing up of synonymies and systematic errors will result in the final termination of nomenclatorial chaos. We urgently need durable names, names that will remain valid for all time. By applying paragraph 23b of the International Rules of 1961 for Nomenclature, the preservation of established names can be achieved, and the principles of Priority and Continuity can be intelligently combined. Such a result is of great importance, especially for applied entomology.

5. The specific description will be as brief as possible, and preferably should give what the illustrations leave out, e.g. variability, comparison with neighbouring forms, and stressing of the diagnostically important characters. Data regarding larvae and imagines' phenology and ecology, foodplants, and biological peculiarities, are part of the description of the species. On the other hand, the larva will not be described, as such descriptions are only of use if scientifically exact, that is if they not only give the chaetotaxy but illustrate it too. As the larvae of 90% of all Palaearctic Microlepidoptera are still unknown, only a reference to the literary sources for the chaetotaxy of such larvae as are known, need be given. An exception, however, may occasionally be made to this rule (e.g., economically important species).

6. Neuration indications should follow the Comstock system, with a subdivision into Costa, Subcosta, Radius, Media, Cubitus, Analis and Axillaris. The technical terms for genitalia-parts are so different from group to group, and the question of homologies, etc., so disputed, that a special explanation should be given for each systematic group.

7. Distribution data will be given after the specific description, all countries and districts being named from which the author has seen material, and special value being accorded to the limits of the distribution, and also, in disjunct ranges, to the accurate definition of the localities inhabited. These data will thus definitely be reliable. The author may then add the names of the countries in which he knows of the occurrence of the species from literature only, and only in these cases need the references be cited. Doubtful literary records can be marked with a "?". or a critical remark. Localities will be rendered as given in the literature and specimen-labels, for instance the name Sarepta will be given rather than Krassnoarmeisk. Political conceptions, of which the boundaries vary more or less according to the political developments, should as far as possible be avoided and replaced by geographical conceptions. The general zoogeographical heading will, in principle, contain only verified facts about the distribution of the species, genera, or groups; as a consequence, there should be no reference to faunistic elements, and similarly the probable origin of the species should not be discussed as most publications about such are more or less speculative. The aim of "Microlepidoptera Palaearctica" is to provide only indisputable scientific facts.

8. The principles mentioned under 1 & 7 above will greatly simplify the problems of literary citations. It is evident that the method hitherto often used, of mentioning the entire literature on any one species, is superfluous, as it occupies much too much of the author's time and takes up too much space. It is now sufficient to give the original citation, followed by the synonyms, and thereafter only such references as provide more information than will be found in the text or the illustrations of "Microlepidoptera Palaearctica". For instance, such additions might be the illustration of the species in its resting position, biological data, chaetotaxy, illustrations of mines, pattern of eating, etc. On the other hand, if an imago is somewhere illustrated or described in the usual way, it is superfluous to cite the reference, as the "Microlepidoptera Palaearctica" illustrations are at least as good as any previous figure. Superfluous too are all references to the distribution of a species, if the author, on the basis of his own studies, is able to give the same information. For individual species, only a minimum of prior literature need be cited to supplement any gap in the data provided. The alphabetical general literary index at the end of every volume, on the other hand, should in addition give the reader a view of previous literature and at the same time indicate what the author has found especially valuable as a source.

9. In order to avoid the possibility that any author might overlook something which already appears in literature, the editor is pleased to put his own card-index at the disposal of all collaborators. This covers all literature since 1901, i.e. since the appearance of Rebel's Catalogue of the Lepidoptera of the Palaearctic Region. The possibility will thus be virtually ruled out that any important literary source will be overlooked.

10. Determination keys for the genera and species will guide the reader downward to the species, but in certain cases, when it has been proved that a systematic unit cannot intelligently be forced into any key, these may be omitted.

11. In accordance with the recommendations of the International Commission for Nomenclature, all abbreviations of authors' names will be avoided. Abbreviations will only be used as a distinctive mark in the Indices and Tables. In the course of the systematic text authors' names will be entirely omitted, except where this would cause obscurity.

12. Every specimen painted by Dr. Gregor will be distinguished with a label "Painted by Dr. Gregor for Microlepidoptera Palaearctica", as in future it will be useful to know which specimen served as a model for the published picture. The data of all such examples will be given in the explanation of the plates, and particularly the place of custody. In principle, the typical series will provide the specimens used as models for the painter. In cases, however, where, owing to poor preparation or preservation, the type by itself does not suffice for the satisfactory reproduction of the appearance of the species, the painting may be adjusted for esthetic reasons, as long as this does not involve scientific inaccuracy. Here particularly, in cases where an abdomen is missing, the artist may add the missing part, observing the correct proportions by reference to the holotype and other typical material. In all cases where such a procedure was necessary, the fact will be mentioned in the explanation of the figures.

13. In order to show as exactly as possible all the individual characters, the coloured illustrations of the moths are reproduced on a scale larger than life-size. However, in order to show the relative size of congeners, species belonging to the same genus will be, as far as possible, shown on the same scale. The actual scale will be indicated in the explanations of the plates. Deviation from this rule, however, could not be avoided in a few cases for various reasons, and where this occurs the figure in question is always marked with an indication of the variant scale of magnification. The scale mainly used for the genitalia illustrations, being that suitable for most of the drawings, is stated on the intermediate titles before the genitalia plates. If a few figures deviate particularly from the general scale of enlargement, this is indicated beside the figure in question.

It is well-known that the scale of enlargement is fairly unimportant in genitalia illustrations because the preparations are usually examined at different powers of magnification.

14. Limits of the Region. The following districts will be the Regional frontiers: Canary Is., Madeira, Iceland, Sahara and Arabia as far as about latitude 20 N. West Pakistan as far as and including Karachi, the High Himalayas down to about 3,000 m, the Yangtse-Kiang and Japan. Disputed frontiers such as Sikkim, Bhutan, or the further Chinese frontier, may be entirely included or excluded. For instance, if a tropical genus is only represented by one species in Sikkim, it may be omitted, but all species in Sikkim belonging to Palaearctic genera will be included. In many cases the inclusion or exclusion will be at the author's discretion. In districts with distinctly more than 50% Palearctic species, all species occurring should be included, even including the tropical species. Where, on the other hand, a transitional area has distinctly less than 50% Palearctic species, all tropical species will be omitted. The south border of the Sahara appears to be partly inhabited by Palearctic species, and parts of Arabia far south of the tropic seem likewise to be Palearctic. The boundary is for that reason fixed at 20 N latitude, while in the East Asiatic region the boundary will be distinctly further north, being far less distinct and more complicated than in the African-Arabian region.

15. The work will consider all Monotrysian lepidoptera as Microlepidoptera, with the sole exception of the Hepialidae, which have been already studied in the works dealing with the Palearctic Macrolepidoptera. In addition all Ditrysian families usually considered the Microlepidoptera, and so treated in the Rebel 1901 Catalogue, will be included, with the addition of the Psychidae. This addition is made because in this family particularly, the division between Macro- and Microlepidoptera has had the most unfortunate results. Furthermore, a new work dealing with the Microlepidoptera will doubtless lead to general changes of views on systematic definitions. But as the new picture of the systematic definitions will only emerge after a decade or two, it is best to continue for the present with the usual division into Macro- and Microlepidoptera, despite its being scientifically unsatisfactory.

16. Numbering and other references will be made on a system that will reduce the need to refer to indexes considerably, and so greatly lighten the task of any reader using the work.

17. As the work will appear in German, each part will be preceded by a table giving the most important recurrent technical expressions with their meanings in English, French and Russian. We are convinced that this will enhance the international usefulness of the work.

18. An alphabetical list of the less-known localities and geographical terms, and a general map of Central and Eastern Asia, will be given to assist geographical orientation.

With the above aims, we hope to give a new impulse to microlepidoperology; we believe that not only will "Microlepidoptera Palaearctica" be a revision of all that exists in this field of science, whether in literature or collections, but we are convinced above all that a sure foundation will be laid down for all future work in this field. We anticipate further through this work and the application of its principles, microlepidopterology will achieve a new power of attraction which will lead to a deepening and widening of our fair science. To this the water-colour drawing of Dr. Gregor especially will contribute, constituting a unique event in entomological history. Not only might one say of them what was said of the great models of Ter Meer, that each drawings is at one and the same time both type and individual, but the drawings are, in most cases a first documentation of an unprecedented kind. Text and illustration merge to form an unity, serving to open to a wider public what threatened to become an obscure and specialised corner of the entomological field. At present it is virtually necessary for one specialist to concentrate on one taxonomic group, and we find but one worker qualified to determine the species of that group, with the result that there is but one person to whom

to entrust all material of that group for determination. Hereafter, however, this state of affairs will undergo a radical improvement, at least as far as concerns the Palearctic Microlepidoptera. Every entomologist capable of scientific work will be able relatively quickly to determine his own material. The separate volumes of "Microlepidoptera Palaearctica" will enable him to find his way with speed and accuracy, and will also be of particular assistance to all branches of applied entomology. The works in this field have hitherto been grievously hampered by the want of a simultaneously organised systematic reference work; by the constant changes of nomenclature, and the impossibility, without reference to specialists, of determining the pests with which they are dealing. But this case will cease to be so, owing to the remarkable clarity of "Microlepidoptera Palaearctica" with its combination of coloured figure of imago, black and white drawings of all important morphological details, and text summary of the facts.

The publication of the first volume of this work marks the completion of the first step towards this scientific goal, and I feel a particular need to thank all those who have served in this enterprise. First and foremost I thank all my colleagues who joined me in launching the project and provided the prerequisite conditions for the co-ordination which the work will evince. The decision to proceed with this enterprise fell lightly on none of us, as in most cases it amounted to an obligation extending over many years, indeed in many cases for a whole decade, or in the case of Dr. Gregor, for a whole life-time. To him therefore are due the greatest and deepest thanks: without him "Microlepidoptera Palaearctica" would have been unthinkable. Further I thank Herr Hans Reisser of Vienna, whose great and many-sided initiative and practical counsel on many matters helped the work forward, and who, for his part, obtained the consent of publishers George Fromme & Co. to publish it. I thank the publishers for their great understanding and also for the care devoted to the printing and setting up of the work; in such an enterprise this is of the utmost importance. In particular I wish to express my gratitude to Professor Carl Wurster of Ludwigshafen, who devoted his constant efforts towards the success of the project. Without him, it must be duly said, it would not have been possible to overcome all the difficulties involved in the planning of so great and unusual a work. "Microlepidoptera Palaearctica" can consequently be said to be his work too. Mr. Kurt Schäfer of Ludwigshafen, Professor Martin E. Hering of Berlin, Dr. Walter Forster of Munich, Dr. Obraztsov of New York, Messrs. Charles Boursin of Paris and E. P. Wiltshire of Geneva, and my friend Dr. E. Oberdorfer, Director of the Museum of Natural History at Karlsruhe, have all stood by my side and assisted me.

Dr. B. Rossicky of Prague was also of great assistance to our enterprise; and lastly, the German Institute of Exploration and the Baden-Württemberg Ministry of Culture gave from the outset such support to all our efforts that finally the foundations of the work were successfully laid with the issue of the present Volume I. My greatest thanks to all!

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ANOTHER U.S. RECORD FOR OENEIS MACOUNII

On 20 June 1964 Dave Pearson, Ray Glassel, and I were collecting in Lake and St. Louis counties, Minnesota. We stopped at McNair, Lake County (about 20 miles north of Two Harbors), to look for red-disked alpines, *Erebia discoidalis* (Kirby), a species we had caught there about a month earlier. The morning was cool and sunny but no alpines were seen.

The first butterfly we saw was sitting on a rock, inclined toward the sun, and thus casting very little shadow. We quickly captured it and another one nearby which was behaving similarly. Both were typical Macoun's arctics, Oeneis macounii (Edwards). Macy and Shepard $(1941)^1$ list the only Minnesota specimen as having been taken 2 July 1935 near Duluth, St. Louis County. We thus have the second Minnesota record. Ehrlich and Ehrlich (1961)² list only Minnesota and Michigan as the U.S. localities for this species. The Michigan record is most likely the Isle Royale record cited by Macy and Shepard. Therefore we suspect that we may have the third U.S. record for *Oeneis macounii*. Since Isle Royale is much closer to Minnesota than to Michigan, this species seems to occur in a very limited area in the U.S., just above the north shore of Lake Superior. We currently think of northern Minnesota as relatively uncollected for insects and one of our projects will be to try to establish the exact status of this and other "rare" species in the near future.

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¹ Ralph W. Macy & Harold H. Shepard, *Butterflies* (Minneapolis: University of Minnesota Press, 1941), p. 87. ² P. R. Ehrlich & A. H. Ehrlich, *How to Know Butterflies* (Dubuque: Wm. C. Brown Co., 1961), p. 102.