

Special Review

THE GENERA FILE, A MAJOR ACHIEVEMENT IN PALYNOLOGY — A REVIEW

Genera File of Fossil Spores and Pollen. J. Jansonius and L.V. Hills. Special Publication, Department of Geology, University of Calgary, Calgary, Alta., 1976, 3287 filing cards, Can.\$ 130.00 (institution), Can.\$ 60.00 (individual), supplements 1977, 1978, 1979.

The tremendous development of palynological investigation over the past two decades has brought a corresponding growth in the number of form-genera established to classify the extremely varied pre-Quaternary record of dispersed spores and pollen grains. Whatever the current criteria for distinguishing and naming such form-genera, they are being established principally as arbitrary and artificial categories, invariably claimed by their authors to serve as practical and convenient tools in palynological research.

However, any analysis of palynological literature immediately reveals that current palynological systematics is far from being practical and convenient. At present no two systematic treatments by any two specialists would agree in all respects as to the generic nomenclature applied.

Apart from the influence of different morphological and taxonomic philosophies, the principal drawback in overall systematic palynology is imposed by the fact that many individual workers have an incomplete basic knowledge about generic nomenclature applied in areas of research which are not directly related to their own stratigraphically and/or geographically restricted investigations. Although it is generally recognized that morphologically similar types may often occur in palynological assemblages which are widely separated both in time and in space, identification in terms of taxa from "far away" is only infrequently and inconsistently practised. Any search for such taxa is always a very time-consuming procedure; tracing the relevant literature being the main obstacle.

Already in the years of publication of the successive parts of Potonié's *Synopsis der Gattungen der Sporae dispersae*, it gradually became an almost impossible task to compose a complete and up-to-date list of the genera published. Any compilation was seriously hampered by the cumulative flow of new generic names, published throughout the world in various languages and often in publications which have limited distribution outside the countries where they are issued.

After Potonié's attempt, no comparable work has been published. Compilations remained taxonomically, stratigraphically and/or geographically restricted

rather than covering the whole scala of pre-Quaternary spores and pollen grains. Also the many card-indexes developed for internal use in various palynological institutions usually remained concentrated on specific stratigraphical or geographical interests.

In the seventies, however, one of such indexes for personal use developed into an ambitious project of compiling an annotated file of genera of spores and pollen grains in a publishable format. Thus, like many other palynologists throughout the world, in 1976 I was looking forward to the *Genera File of Fossil Spores and Pollen* composed by J. Jansonius and L.V. Hills. I had heard it was underway and I suspected that the authors would produce something of value.

I was not disappointed. The very first examination of the File saved palynological systematics from another homonym. The name of a newly proposed form-genus, already in press, could be replaced just in time by another name after the File had indicated that the initially chosen name (*Gyratisporites*) was already applied by a Russian author to accommodate a completely different type of spores.

After this first positive experience, two sets of the File have been intensively used in our institute by staff members and research students working in pre-Quaternary palynology. One of the sets was also frequently consulted by a collaborator of the IAPT project *Index Nominum Genericorum*. I believe that the three years of experience form a sound basis for estimating the value of the File as well as its impact on our current research.

The value of any project such as the File stands or falls with its coverage. If there was a weakness in Potonié's *Synopsis*, it certainly came from its incompleteness, apparently resulting from unavailable literature but also from subjective exclusion of certain genera. Soon after the receipt of the File, I was convinced that the authors were right in opting for completeness. At first it seemed a challenge to screen the File for overlooked genera. We soon gave up. The one or two names we found appeared to be included in the first supplement.

Anyone who has struggled to collect complete literature even on a restricted category of spores or pollen grains must appreciate that Jansonius and Hills have really achieved a *tour de force* in palynology. Because of its completeness the File is likely to find lasting importance.

The File now consists of 3826 (three supplements included) numbered 5 × 8" (12.7 × 20.3 cm) filing cards, printed on heavy bond by the offset method from photographically reduced typescript.

Considering the authors' policy of publishing the File at the lowest cost possible, and in spite of the fact that in the hands of students the cards tend to become somewhat crumpled, the printed product seems to be an acceptable compromise between price and quality. A minor though practical problem, possibly not foreseen by the Canadian publishers, appeared to be related to the chosen size of the cards. Although the File is delivered in cardboard boxes which may serve as semi-permanent file containers, we had purchased metal containers

for storing the cards. Somewhat to our surprise, the cards did not fit. An adaptation of the File to containers for 12.5 × 20 cm standard cards used in The Netherlands and probably also in other “metric countries”, would have saved us the trouble of slightly reducing the length of the cards.

The File is written in English. The cards are arranged in alphabetical order; they are headed by the generic name and the original or validating author and year of publication. Dictated by the circumstances, in the further lines and paragraphs the following information may be found:

- direct bibliographical reference to the page on which the name is first proposed or validated
- name of the type species
- relevant bibliographical information on the type species, including figure number of the holotype
- generic diagnosis
- remarks of general interest as to the nomenclatural status of the name
- description of the type species
- indication of stratigraphical occurrence of the type species
- discussion of nomenclatural and/or taxonomic complications or discrepancies
- emendations of the generic diagnosis

For valid genera a line-drawing of the holotype of the type species is given.

In most cases we found the information relevant and to the point. The many translations of diagnoses or discussions proved to be, as far as we could judge, in harmony with the original texts. The line-drawings are of variable quality but usually provide a reasonable first-sight impression of the overall morphological organization of the taxon concerned.

It is beyond the scope of the present review to discuss minor inaccuracies and typographic errors. Such trivial shortcomings are unavoidable. The authors welcome their notification so that they can be listed in the corrigenda of the supplements. We did not list any errors found; the only example I can think of, which has so far not been corrected is the entry *Infernopollis* instead of *Infernopollenites*.

The authors have stated that in all cases the International Code of Botanical Nomenclature has been applied to determine the validity of the generic names. Indeed, invalid names have been identified as such, usually with an acceptable indication of the reason for their inadequacy. In most cases no objections can be made as to the application of the ICBN rules. Yet I believe that there are some examples of subjective interpretation of the ICBN, notably with regard to a number of names proposed by Russian pioneer workers in pre-Quaternary palynology. Subjectivity is, of course, unavoidable in an annotated index such as the File. Therefore the following examples are not intended to criticize the authors, but as a warning to the users not to consider the File to be the last word in nomenclatural complications.

A well-known example of nomenclatural discrepancy is formed by the question of the validity of the many generic names proposed by Malyavkina

in 1949. Fortunately, in their introduction, the authors of the File have explained their line of thought with regard to the status of these names. It seems obvious that Jansonius and Hills for purely practical reasons wanted to save taxonomic palynology from the burden of Malyavkina's genera. They claimed "to apply the requirements of the ICBN as narrowly as possible, considering invalid all genera for which no formal diagnosis was provided". Here, I believe, an unacceptable subjectivity has been introduced. Apparently the authors distinguish "formal" and "informal" diagnoses. The ICBN, however, nowhere provides statements as to the required degree of formality of a diagnosis. In fact, the article of the Code concerned (Art. 41) is liberal to such an extent that any narrow interpretation is ruled out.

At present there may exist a certain consensus about the way diagnoses ought to be presented, but in the past alternative ways of presentation have been regularly handled. In early systematic botany one of the ways of presenting diagnoses used to be the dichotomous key, the application of which has never become a reason for questioning the validity of the names concerned. Such a dichotomous key has been applied by Malyavkina, and any rejection of her names on the basis of Art. 41 would create a precedent, unacceptable in neo-botany.

A second example, where I have to disagree with the File, concerns the taxa established by Naumova in 1939. The species, incidentally mentioned in this paper, are undoubtedly invalid, but this is not necessarily the case with Naumova's subgroups for which she adopted a generic nomenclature. Most of the names are accompanied by a brief diagnosis. For names effectively published in 1939 this is sufficient to comply with the ICBN provisions for valid publication. The problem whether or not Naumova's subgroups represent taxa of generic rank, as well as the fact that no valid species were established in the same paper, does not affect the validity of the names. After "validation" by others, many of Naumova's names have become important in palynological systematics; their original validity will certainly influence the current concepts of some of the taxa.

One example of Naumova's names is *Tetraporina*. In this taxon, palynomorphs are generally included which are now known to be zygosporous of algal (zygnemataceous) affinity. In the File, Jansonius and Hills selected a type species for the genus. A recognition of the original validity of *Tetraporina* probably makes this choice superfluous, but it is not for this reason that I want to mention this entry. *Tetraporina* illustrates two other aspects. In the first place it is a good example of the authors' policy of listing and discussing spores in a wide sense, including palynomorphs of fungal and algal affinity (definite acritarchs and dinoflagellates excluded). We fully applaud this policy.

We disagree, however, with the policy of en passant designating lectotypes of genera and species in the File, as exemplified by *Tetraporina*. Similarly, it was felt in our institute that the File should not be used as a medium for formally introducing new names (replacement of the invalid name *Petalum* by *Dyupetalum*). It is a good thing to register nomenclatural shortcomings, but

any formal interference, incidental as these may be up till now, should better be avoided by the authors of the File.

However, any such difference of opinion becomes unimportant and criticism vanishes when we consider the practical value of the File. Following the recommendations of the authors for optimal utilization, we are using two sets of the File: one in original alphabetical order, and one re-arranged according to a system of morphological entries (for institutions, second sets are made available at a reduced price). It is impossible to mention all individual cases where the File has directly or indirectly influenced our work. In general terms, however, I believe that the following points more or less reflect the reasons why the File has become so successfully incorporated in the daily routine of our research:

(1) A considerable amount of palynological literature is published without descriptions or illustrations of the spores and pollen grains mentioned. Frequently the generic names are unfamiliar. Consultation of the File rapidly provides a background of the genus and an impression of the fossil behind the name. In this way the File not only appeals to specialists, but also to all non-palynologists who are puzzled about names of palynological taxa.

(2) When new forms of spores or pollen grains are found, the File provides a ready means for checking whether or not a suitable form-genus has already been described in other parts of the world or from other stratigraphical intervals. Thus, the File usefully contributes to the development of links between the many stratigraphically/geographically restricted "taxonomies" of current palynological systematics. For example, guided by the File, we not longer hesitate to borrow names from "Australian—Cretaceous", "Russian—Devonian" or "Indian—Permian" taxonomy, when dealing with the analysis of Triassic assemblages from western Europe.

(3) Morphological re-arrangement of the filing cards forms an excellent basis for composing inventories or determination keys of individual groups of spores or pollen grains. Jansonius himself has set an example. His key to the genera of fossil angiosperm pollen (1978; *Rev. Palaeobot. Palynol.*, 26: 143—172) has been based on the File and should be used in combination with it. As part of our own efforts, we are now testing a dichotomous key to the identification of taeniate ("striate") saccate pollen. As a result of morphological re-interpretation and synonymizing, the number of genera within this stratigraphically important but taxonomically chaotic category could be drastically reduced. In "pre-File days" we would have shrunk from the task of making inventories of such a group.

(4) After distribution of the original set of cards, the File has been kept up-to-date by means of the issue of supplements. So far, their publication has been yearly. This is particularly appropriate because it minimizes the time-lag between publication of new genera, or important new nomenclatural/taxonomic information on earlier genera, and its registration in the File. Thus, the File has become an unrivalled reference source for the latest "news at the generic level". A number of our students have considered a personal

subscription to be a good investment. The up-to-date character of the File, in combination with the modest price for individuals, has been their motivation.

Summarizing our experiences, I believe the File to be one of the major achievements in the history of pre-Quaternary palynology. Needless to say that every institution, actively or indirectly engaged in the study of pre-Quaternary spores and pollen grains, should have at least one copy. I want to recommend the File to the coming generation of palynologists. It will be their task to develop a more unified palynological language. The File may well be one of their most consulted dictionaries.

H. VISSCHER

Laboratory of Palaeobotany and Palynology
State University
Utrecht (The Netherlands)