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THE LICHENOLOGICAL ACTIVITY OF VITTORE TREVISAN EARL OF SAN LEON (1818-1897)

by

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Introduction

The Natural History Museum of Verona and the Italian Lichen Society decided to issue this volume containing reprints of all lichenological papers by V. Trevisan. They were published more than one century ago, between 1842 and 1880. The first impression of them may be that of arid lists of names, sometimes provided with very brief descriptions, and interspersed with rare polemical notes against other contemporary lichenologists. Before discussing in more detail the lichenological activity of V. Trevisan, it is appropriate to present the reasons for the reprinting of his articles in 1994.

In order to appreciate Trevisan's role in the history of lichenology, it is necessary to place his publications in the context of the state of the discipline in the latter half of the nineteenth century. The first important lichenological system, that of the Swedish lichenologist Erik Acharius (1757-1819), was mainly based on macroscopic characters, and with hindsight consequently very artificial. This might appear surprising when it is appreciated that asci and ascospores were first figured by P.A. Micheli in Florence in the *Nova plantarum genera* of 1729 (Ainsworth 1976). However, the cost and availability of microscopes was a problem and it was only in the 1840s that microscopical characters, and especially those regarding spore colour and septation, were increasingly adopted as paramountly important taxonomic criteria; the new emphasis on spores resulted in a revolution of previous taxonomic schemes.

That all species of a natural genus should have the same type of spores had already been stated by the eminent French cryptogamist A.L.P. Feé (1789-1874) in 1837. Many of Feé's contemporaries in lichenology, however, objected to this thesis as with the microscopes then generally available the observation of spore

characters was considered too difficult for practical use. Feé soon abandoned lichenology for pteridology.

Starting from 1846, however, there was a true explosion of lichenological studies by Italian botanists, where the use of the microscope played a major role. The main reason lies in the invention of a new microscope with acromatic lenses by Giovanni Battista Amici (1786-1862), which allowed a much more detailed investigation of microscopical characters (Nimis 1988, 1993, Nimis & Bartoli 1990). A first version of the instrument, which was later improved in 1847, was produced in 1827, and the microscope was available on the Italian market between 1830 and 1840. Italian botanists were consequently the first to have the opportunity to acquire the new microscope, and this opened a new world ripe for exploration by the astute observer. The Italians A. B. Massalongo (1824-1860) and G. De Notaris (1805-1877), both now recognized as of world stature in lichenology, worked with Amici's microscope. Massalongo, for example, gave the following response to the criticism of the Finnish lichenologist W. Nylander (1822-1899) concerning the "impossible" precision of his spore measurements: "first of all I invite Mr. Nylander to acquire better information about the new, great microscopes of the famous Amici..." (Massalongo 1857). The sudden flourishing of cryptogamic studies in Italy around the middle of the previous century is mainly due to technical reasons.

De Notaris can be considered as the founder of a new period in the history of ascomycete classification as a whole, and not only of the lichen-forming species. He published only a few papers specifically devoted to lichens (Nimis & Bartoli 1990), but his *Frammenti lichenografici* of 1846 alone would have sufficed to grant him a key place in the development of lichenology. He suggested the possibility of creating a much more natural classificatory system utilizing, in order of importance: (a) spore characters; (b) structure of the ascomata; and (c) thallus morphology. De Notaris' papers had an enormous influence throughout Europe, and his basic ideas were applied and developed with extraordinary intensity by A. Massalongo (1824-1860), certainly the most outstanding of all Italian lichenologists. In a few years, Massalongo produced an impressive series of papers, some issued posthumously, where the taxonomy of lichens was drastically altered on the basis of microscopical characters, chiefly, but not only those of the spores. During his short life, he had to fight to defend his ideas, especially with Nylander, but also against other Italian lichenologists - including Trevisan. While Trevisan accepted the taxonomic importance of spore characters, he was often in conflict with Massalongo in the application of such principles and simultaneously investigated the taxonomical arrangement of several groups.

The application of microscopically based characters produced a revolution in lichen taxonomy; in a few years many new genera were proposed and the old classificatory systems soon became outdated. The hasty description of new genera, and the rapid demolition of old, well-established classificatory schemes, produced a state of extreme confusion - exacerbated by the tendency of some of those involved to take up names mentioned in correspondence and the rapid publication of short papers and privately printed pamphlets. The resulting confusion was certainly one of the reasons why in the later nineteenth century the more conservative schemes of Nylander in lichenology and P.A. Saccardo (1845-1920) for other fungi became dominant. The continuous flow of novelties into Europe as exploration accelerated required a simple and clear, although artificial, system to rapidly file all the newly described species (Poelt 1991). Nylander was the harshest antagonist of the "Italian-Silesian" school of lichenologists, which also included J.C. Flotow (1788-1856) and G.W. Körber (1817-1885) in what are now parts of Germany and Poland. Nylander personally described more than 3000 lichenized species, and became one of the leading lichenologists of his time through the shear volume of his outputs (Ahti 1967-90). The artificial process culminated with the publication of A. Zahlbruckner's (1860-1938) monumental 10 volume *Catalogus lichenum universalis*, where extremely unnatural generic concepts were often adopted.

Attention to the creation of natural systems reflecting evolutionary relationships became eclipsed in mycology (including lichenology) in a period when biologists generally were starting to embrace evolutionary concepts, although not necessarily the mechanism of natural selection; "within a few years [after the publication of *The Origin* by Charles Darwin in 1859] every biologist became an evolutionist" (Mayr 1982). The Nylanderian approach and its adoption in the compendium of Zahlbruckner conspired to hold back the development of the recognition of natural groups, i.e. monophylogenetic units, amongst lichen-forming fungi for over a century. Indeed, it is only since the mid-1970s that the larger artificial genera accepted by Nylander and Zahlbruckner have started to be analyzed in earnest with more and more powerful techniques. Many highly polyphyletic genera have now been split into better defined monophyletic units, often being found to belong to different families and even orders rather than a single genus.

During this revisionary process, a considerable number of long-synonymized generic names proposed by the Italian-Silesian lichenological group have proved to be well-founded and are now universally accepted after an interval of well over a century. Examples amongst the lichenized fungi are *Bactrospora* Massal., *Brigantiaea* Trevisan, *Celothelium* Massal., *Chromatochlamys* Trevisan,

Diploicia Massal., *Heterodermia* Trevisan, *Lecidella* Körber, *Orphniospora* Körber, *Parmotrema* Massal., *Porpidia* Körber, *Psilolechia* Körber, *Sarcosagium* Massal., *Scoliciosporum* Massal., and *Sporastatia* Massal.; and examples from the lichenicolous fungi (i.e. fungi growing on lichens) include *Cercidospora* Körber, *Karschia* Körber, *Nesolechia* Massal., and *Stigmidium* Trevisan. A shortage of researchers has led to this process of revision and rediscovery of past research being far from completed.

According to Hale (1984), about one-half (806) of the 1618 generic names proposed for lichen-forming fungi catalogued in Farr *et al.* (1979) were introduced by only nine authors: Ciferri (in part with Tomaselli, 215), Massalongo (138), Nylander (83), Müller Argoviensis (77), Clements (77), Trevisan (75), Vainio (54), Zahlbruckner (44) and Choisy (44). Trevisan and Massalongo, who followed very similar principles, were between them responsible for 213 generic names. A major obstacle in accessing their work has been the rarity of many of their publications, especially those in local scientific journals or which were privately printed at the authors' expense. In order to meet this need, selected lichenological papers by Massalongo have recently been reissued (Lazzarin, 1991), and here we present the complementary works of Trevisan.

In addition to their scientific content, Trevisan's lichenological publications also have an historical interest. The description of new genera was not his only major concern. He continuously strove towards a reduction of confusion in the application of concepts and names arising from the work of others, and his lichenological publications taken together could be considered as fragments of a major, novel classificatory system for the lichenized fungi. Why he did not succeed in publishing his taxonomic concepts in a synthetic work will become apparent below.

Biographical notes

Vettore Trevisan di San Leon was born in Padova on 5 June 1818; his father Benedetto, was a count, and his mother Maria Anna Correr, an offspring of an important noble Venetian family. As usual in families of the wealthy Venetian aristocracy, the young Vettore started his education under the guidance of a private tutor in the family estate of Mason Vicentino. Later, he moved to Padova, where he attended both the high school and the University, obtaining a degree in philosophy in 1842. During his student years he obtained, as a gift from count Nicola da Romano, the large herbarium of the priest Girolamo Romano (1765-

1840), that the count had inherited. This was the nucleus of what was destined to become one of the most impressive private Italian herbaria of the century; at the death of Trevisan the collection included more than one million samples (de Toni 1897). After the death of Trevisan the herbarium was bought by G. B. de Toni for the Institute of Botany of the University of Genoa. Tragically, the entire collection was destroyed by fire during Word War II.

The years between 1842 and 1853 were also spent in Padova, where Trevisan occupied several important administrative and military charges. In 1850 he left for a scientific journey through Austria-Hungary and Germany, which afforded him the opportunity of personally meeting several important foreign botanists. In March 1851 he was appointed professor of natural history and "popular physics" at the high school of Padova, where he taught until 1853. After that date he retired first to his estate at Mason, and later to Monza and Milano, where he moved in 1888, dedicating most of his time to his beloved botanical studies. He died of pneumonia at Milano on 8 April 1897.

The scientific interests of Trevisan encompassed the whole field of botany, with a particular emphasis on cryptogams. He published 141 scientific papers: 47 are devoted to the study of non-lichenized fungi, especially plant pathogens; 20 to lichenized fungi; 19 to algae; 18 to bacteria; 14 to general botany; 10 to vascular plants; 7 to general floristics; and 4 to bryophytes. Algae and vascular plants were the main objects of his study between 1840 and 1850, lichens from 1851 to 1869, pteridophytes and plant pathogens from 1874 to 1884, and bacteria from 1884 to 1890. A more detailed discussion of Trevisan's scientific output outside the field of lichenology is provided in de Toni (1897).

Trevisan's lichenological papers

The greatest part of the lichenological papers of Trevisan was published between 1853 and 1869. The publication of Massalongo's fundamental *Ricerche sull'autonomia dei licheni crostosi* in 1852 was probably the main stimulus to Trevisan's concentration on lichenological papers in the early 1850s. Massalongo's book bears the date of May 1852; however, Trevisan (1868) states that the book was actually printed around the middle of January 1853; this point may be controversial, but in any case Trevisan obtained a copy of Massalongo's book at the beginning of 1853. In the following months Trevisan hastily published 7 lichenological papers; the publication of one of them, including the description of 12 new genera had been planned by the printer for the summer in a self-financed

volume with a miscellaneous content, *Spighe e Paglie*, but was anticipated to April. It is difficult to understand the effect that Massalongo's papers produced on Trevisan, without knowing that in the previous years he had intensively worked on a new synopsis of lichenized genera, in which the new sporological ideas were accepted. The publication of Massalongo's work, whose importance he could not deny, anticipated some of the new genera he wanted to describe, and compelled him to revise his previous ideas, to adopt a critical position against several of Massalongo's concepts, and above all to publish as soon as possible what he had worked out until that time, without having the possibility of rounding up the whole as he probably had wished. Although he claimed that he was forced to publish his results and ideas in a fragmentary form because of the public charges he held in Padua ("*publicis negotiis frequenter impeditus curisque obsessus, opellam, cui titulus Genera Lichenum in lucem tardius edere coactus sum...*"; Trevisan 1855 a), it is most probable that the main reason was the sudden, unexpected rising of Massalongo as a lichenological star. This situation led to serious misunderstandings between the two lichenologists (see below).

Besides the enumeration of 87 lichen species from the Colli Euganei region (Trevisan 1842), the first paper Trevisan specifically devoted to lichens is a brief note on "*Lecidea microphylla*" as understood by Schaerer (Trevisan 1851); in the introduction to that work, Trevisan presents his personal impression on the state of contemporary lichenology. The discipline appeared to him as "a horrible bush dense of thorns, in which fortunate could be called those that can survive with less trouble". This paper is the first of a series in which Trevisan tried to clarify the value of diagnostic characters used for the delimitation of lichenized genera. The note is actually a discussion on the taxonomic importance of apothecial anatomy, and contains a synopsis of the genera of *Parmeliaceae*, mainly based on apothecial and spore characters, where the following new genera are described: *Berengeria*, *Lecothecium*, and *Sporoblastia*.

In the *Saggio di una classificazione naturale dei licheni. Sulla tribù delle Patellarieae*, Trevisan (1853b) clearly takes a position in favour of the use of microscopical characters, as had De Notaris and Massalongo. This note is important also because, for the first time, he clearly states his main principles for the recognition of lichenized genera: (a) all species of a natural genus should have the same type of spores; and (b) good characters for generic delimitation are, in order of importance, spores, asci, paraphyses, hypothecium, and exciple. The *Ricerche* of Massalongo was on his desk fresh from the printers; Trevisan's article contains a detailed criticism of the generic arrangement proposed by Massalongo, and a synopsis of the tribe *Patellarieae* in which, however, several Massalongian

genera, such as *Acarospora*, *Mischoblastia*, *Gyalolechia*, *Gomphospora*, were accepted; the new genus *Ectolechia* was also. Trevisan limited his praise of the monumental work of Massalongo to the statement that after De Notaris "a third Italian entered in the difficult field of lichenology...dr. Massalongo, who, with the publication of 400 nice illustrations, produced a real advancement for science". Massalongo's answer was: "I am rather disappointed to know that all that I did for science was a painter's job, but I would be curious to know who was the *second* Italian who preceded me in proposing *fundamental* reforms in lichenology" (Massalongo, 1853).The rivalry between the two Venetian lichenologists had started.

Two further short notes were published in 1853 (Trevisan 1853c, d), together providing descriptions of five new genera *Blasteniospora*, *Blennothalia*, *Garovaglia*, *Synechoblastus* and *Tornabenia*. Also in 1853 the self-edited series entitled "Spighe e Paglie" appeared (Trevisan 1853a), in which 12 new genera were hastily described: *Brigantiaea* (1 new species *B. mariae*), *Byssoloma, Dactyloblastus*, *Ectographis*, *Eschatogonia, Hemithecium*, *Heufleria, Leightonia*, *Lepolichen*, *Lichenomyces*, *Stigmagora*, and *Thalloloma*. In the same volume there is also a further criticism of the genera adopted by Massalongo in his *Ricerche*; not content of the purely scientific remarks, Trevisan even calculated the number of printing errors which he found in Massalongo's book: 1327 !

During 1853 and 1854, Massalongo's lichenological activity exploded in a series of important papers which brought about a true revolution in the generic arrangement of lichenized fungi. In the introduction to one of these fundamental contributions, the *Memorie Lichenografiche*, Massalongo (1853) provided a detailed response to Trevisan's former criticism. First, he expressed his disagreement on the relative importance of characters for taxonomic purposes: according to Massalongo, Trevisan underestimated the importance of thalline characters, the size of spores, and the structure and genesis of the apothecia. These considerations were illustrated by means of a decided defence of some Massalongian genera that had not been accepted by Trevisan. For example, *Aspicilia* (characterized by the form of apothecia), *Ochrolechia* (characterized by spore size), and *Placodium* (differing from *Lecanora* in the placodioid thallus); and *Rinodina* (differing from *Buellia* in the type of exciple). Finally, Massalongo tried to demolish many genera proposed by Trevisan, either because they were very poorly characterized, or because they were too heterogeneous. It must be recognized that much of Massalongo's criticism seems to be fully justified today. The Veronese lichenologist was a much more acute scientist than his Paduan colleague; Trevisan continuously strove towards a synthesis, but had the

misfortune to live in a period in which analytical work was much more important and productive.

After the first reaction against the *Ricerche*, and the papers published in 1853, two years later Trevisan tried to take up again a position on the ferocious taxonomic disputes brought about by Massalongo's work. In 1855 he held a conference at the Accademia di Scienze Lettere ed Arti of Padua, entitled "*Sul valore dei caratteri generici nei licheni*". The short abstract of this meeting (Trevisan 1855a) is of interest because Trevisan changed rather drastically his ideas as to the relative importance of several characters for taxonomic purposes. The new order of importance adopted was: thalline characters, spores, asci, and ascomata. The difference between homeomerous and heteromerous thalli, for example, allows the separation of the *Collemataceae* from the *Parmeliaceae*. Here the influence of Massalongo's criticism is evident. However, the number of new generic names created by Massalongo was too much for Trevisan. In his introduction he drew attention to the fact that J.A.P. Hepp (1797-1867) recognized 47 genera in Europe while Massalongo accepted three times as many; Trevisan stated that he preferred to take an intermediate position, perhaps more close to Hepp's than to Massalongo's concepts.

A new system of the *Parmeliaceae* was also proposed, in the form of a key, up to the level of family. A slightly modified version of the text of the conference, including the classificatory scheme, was brought to the attention of a broader audience with its publication in an international journal, and in Latin (Trevisan 1855b); an appendix critically discusses the Massalongian genera *Mischoblastia*, *Montinia*, *Ricasolia*, *Rinodina*, and *Segestria*, claiming that: *Montinia* cannot be accepted because of homonymy with a Linnean genus (and hence a new name was proposed: *Pyrenocarpus*); that *Segestria* is a synonym of *Sphaeromphale* of Reichenbach; and that the other genera were synonyms of Trevisan's *Berengeria*; the Massalongian genus *Pinacisca*, however, was accepted, and new species were added to it.

In 1852 Trevisan had already compiled a taxonomic revision of lecideoid lichens; he presented it at a conference at the Accademia, and a brief abstract was published later (Trevisan 1853f). The definitive publication of this work was delayed of three years (Trevisan 1856), and also in this case the main reason was the appearance of other important papers by Massalongo; the 1856 article bears the rather misleading title "Brigantiaea *novum lichenum genus*". In the first part Trevisan provides a conspectus of the genus, which he had already formally described in 1853; and in the second a synopsis of the genera of biatoroid lichens, with the description of the following new genera of lichen-forming and

lichenicolous fungi: *Oedemocarpus* (nom. nov. pro *Megalospora* Massal., non Meyen & Flotow), *Myrioblastus* (nom. nov. pro *Biatorella* De Not., rejected because "*nomina generica, ex vocabulo graeco et latino, similibusque, hybrida, non agnoscenda sunt.* Linn. Philos. bot.: 223"), *Monerolechia*, *Lecozonia*, *Phacothecium* (nom. nov. pro *Phacopsis* Massal., non Tulasne). The scheme was mainly based on spore characters for the higher subdivisions, whereas apothecial features (chiefly of the exciple and the number of spores per ascus) were used as generic characters. The last page was devoted to a re-arrangement of lecideoid lichens, which were subdivided into four tribes; here, several Massalongian genera, such as *Sporastatia*, *Scoliciosporum*, *Raphiospora*, *Sagiolechia*, are accepted.

The fragmentary notes on apothecioid crustose lichens were summarized in an important paper of 1857, as an enlarged abstract of a further conference held at the Accademia (Trevisan 1857). Here, Trevisan was finally able to present a rather complete scheme, where several Massalongian genera were accepted, and many rejected. In the introduction Trevisan complains about the plethora of new generic names coined in the previous years by the followers of the sporological school; the main point of his criticism, however, concerns the total disregard of many fellow lichenologists for nomenclatural rules, and not the principles on which the new generic subdivisions were proposed. This was a quite understandable and justified position, and his desire for order at a date before the first internationally agreed rules of botanical nomenclature is commendable; this is also a key feature of his later *Conspectus Verrucarinarum* (Trevisan 1860). The first internationally adopted rules were the *Lois de la nomenclature botanique* drawn up by A.L.P.P. De Candolle and accepted at an international botanical congress in Paris in 1867; in this respect, Trevisan was somewhat ahead in a game which was later to consume too much time of future botanical researchers.

Trevisan's 1857 general re-arrangement of crustose apothecioid lichens included the proposal of the new genera *Aipospila*, *Bayerhofferia*, *Beltraminia*, *Diblastia*, *Haploloma*, *Küttlingeria*, *Ludovicia*, *Mannia*, *Monerolechia*, *Oedemocarpus*, and *Placolecis*. This taxonomic scheme differs considerably from that presented in the previous year, being based, at higher levels, on characters of the thallus and of apothecial anatomy (chiefly the exciple), whereas the genera were chiefly distinguished by spore characters; the number of spores per ascus was now mainly used for subgeneric divisions.

In 1860, the year of Massalongo's death, Trevisan published what is perhaps the most important of his works today, a general conspectus of pyrenocarpous lichens, which also deals rather fully with the lichenicolous species known at that time. In this *Conspectus Verrucarinarum,* he applied the same principles adopted

in the arrangement of apothecioid lichens. The new genera described were: *Acrorixis, Athrismidium, Chromatochlamys, Haploblastia, Stigmidium, Syngenosorus, Theloschisma* and *Xenosphaeria*. This paper is a typical example of Trevisan's style: the text is extremely concise, being limited to the presentation of a taxonomic conspectus with the main characters of the accepted taxa, the main synonymies, nomenclatural information, and numerous telegraphically presented new combinations. Hidden in the dense smaller-type text are nomenclatural details all too frequently overlooked. For example, he introduced the new name *Spermatodium borreri* as a replacement for the misapplied *Verrucaria olivacea*, something overlooked between 1860 and 1980 when taken up by Hawksworth and James. The only point at which Trevisan adopts a more fluent style is in the notes: here it becomes clear that the disagreement with Massalongo had grown up into a veritable hostility. The recent death of Massalongo did not restrain Trevisan from accusing him of scientific dishonesty: "It is known that every time the deceased Veronese lichenologist, compelled by the force of my arguments, was forced to accept one of my genera, he invariably tried to cast down the name which I proposed...once he even wrote, printed, bound and sent by post a publication with a false date, in order to show that, for example, my genus *Byssoloma* should be called, because of priority, *Tricholecia* Mass."

The following year, in *Flora*, appeared the description of a new genus of *Ramalinaceae*, *Atestia* (Trevisan 1861a). As typical of Trevisan, the description of the new genus takes only a minor part of the paper; the rest is devoted to a taxonomic re-arrangement of fruticose lichens, where great emphasis is given to anatomical, and especially cortical features.Another fragment of his system, devoted to the *Trypethelinae*, was published in the same year (Trevisan 1861b); this paper is again in his characteristically concise style, and contains the description of the new genera *Chrooicia*, *Coenoicia, Leightonia* (non Trevisan 1853c), *Phyllothelium,* and *Stromathotelium*. However, *Coenoicia* was stated to be a synonym of *Celothelium* Massal. in a note added at the last moment. Many of Massalongo's papers went to press immediately before his death, and Trevisan, even after the demise of Massalongo, had to fight with his ghost!

Another paper devoted to the presentation of his new taxonomic system was a synopsis of coniocarpic lichens (Trevisan 1862), with the description of the new genus *Crateridium*. Massalongo (1855) had already produced a first arrangement of this group, which was original in arranging the majority of the *Caliciales* genera separately as a "series" *Mycolichenes*, with three tribes. Trevisan (1862) united *Caliciales* in a modern sense, and both in Massalongo's tribe and Trevisan's

subtribe *Acolieae* we can see a first grouping together of crustaceous genera with sessile ascocarps (Tibell 1984).

In 1868 Trevisan prepared a rather long note on the genus *Dimelaena*, proposed by Norman in 1853 (Trevisan 1868). After a long historical introduction, testifying to his interest in nomenclatural matters and the principle of priority of publication as a decisive criterion for accepting a given name, he takes into consideration several foliose lichens which were included by Norman in *Dimelaena*. Starting from the premise that the species of a given genus should be homogeneous both in spore type and in the organization of the thallus (and here, again, the Massalongian influence is evident), Trevisan claims that the structure of the upper cortex could be a good character for generic delimitation. In particular, the periclinal arrangement of the hyphae in the upper cortex of "*Dimelaena*" *speciosa* brought him to the description of the new genus *Heterodermia*. This generic name was included as a synonym of *Anaptychia* for almost a century until its significance was recognized by Josef Poelt in 1965; the genus is universally accepted today for about 80 mainly tropical macrolichens. The remaining species Trevisan left in *Dimelaena* included species of *Physcia* s.lat. and *Dirinaria*.

In 1869 Trevisan issued the eight fascicles of his *Lichenotheca Veneta*, one of the most important Italian exsiccates of the last century. Two of the schedae distributed with the exsiccates were also published separately the same year. One outlines a possible classification of the *Stictaceae* (Trevisan 1869a); the first subdivision is based on the type of photobiont, a character which was already rejected by Massalongo, as it is today, while the delimitation of genera was mainly based on spore characters. This approach forced Trevisan to subdivide some natural genera into two according to the type of photobiont, and to describe as new the genera *Diclasmia*, *Phaeosticta* and *Saccardoa*. The second note (Trevisan 1869b) regards the *Pannarieae*, subdivided into the genera *Arctomia, Coccocarpia, Pannaria*, *Placynthium*, *Psoroma*, *Racoblenna*, and *Trachyderma*. The latter genus was proposed by Norman (1853), and in its original circumscription was quite heterogeneous. Trevisan used Norman's name to include species which were thought by him to have lecideine apothecia, although some were incorrectly interpreted. According to Joergensen (1978), it is possible that Trevisan attempted to formulate a genus equivalent to the present concept of *Parmeliella*, although it still included species of several genera.

The last lichenological paper by Trevisan appeared rather late, in 1880; it was dedicated to the systematic arrangement of cyanobacterial lichens, and could be considered as the last fragment of Trevisan's own system. A new tribe of the *Collemataceae* was proposed, the *Garovaglineae*, which he subdivided into nine

genera, five of which were newly described: *Collemopsis, Epiphloea, Garovaglina, Leptogiopsis,* and *Rostania*. Trevisan also utilized this last of his lichenological papers for some additions and amendments concerning groups treated in the previous years. In the introduction he accepts a primary subdivision of lichens into six families, based on the type of photobiont, each subdivided into several tribes. In the list of genera belonging to some of these tribes he described the following new genera: *Aphragmia, Dimerella, Fouragea,* and *Ulvella*.

Postscript

In the paper on *Dimelaena* (Trevisan 1868), written eight years after the death of Massalongo, Trevisan, perhaps for the first time, inserted some words of praise for his former enemy-friend:

> "And came the year 1850, the memory of which will be always great to me, as I recall that in that year I put all the books of my library and all the lichens of my herbarium at the disposal of a young man, an enthusiastic collector of these small plants, eager to learn, which was recommended to me by the famous author of the *Flora Dalmatica*, my friend prof. de Visiani. I recall how in genial discussions I tried to convince him that it was necessary to get out of the ditch, and to follow the new way indicated by Feé and by de Notaris. This young man, in which our school, a few years later, had to find the most tenacious and, until his life lasted, the most active and tireless representative, was Abramo Massalongo".

This statement is quite interesting from the psychological standpoint: Trevisan could not deny the merits of Massalongo, but evidently felt that, were it not for the Veronese lichenologist, he himself could have merited general recognition as the great reformer of lichenology, as the one who put into practice the principles laid down by De Notaris - and, probably, that he could have done better than Massalongo....This feeling is still more evident in another of the later works of Trevisan, an obituary for De Notaris written in 1877 (Trevisan 1877):

> the great reformer of lichenology: "...was De Notaris, and not Massalongo. The latter posed himself as the great leader, his slavish followers gave him the flag and wrote: Massalongian school. It would have been ridiculous to call it Trevisanian school, just because two years before Massalongo I brought the first of my modest stones to the building planned by De Notaris; ridiculous is to substitute the

name of the Master with that of the pupil. St. Peter preached the religion of Christ; should we for this reason be called "Petrians" ?".

Massalongo and Trevisan followed similar principles and were members of the same school. However, their scientific attitudes were quite different. Massalongo was a powerful analytical spirit, whereas Trevisan had a clear tendency towards synthesis and the correction of the historical record. Almost all his lichenological papers show a continuous effort to bring about clarity in a period characterized by a confusing flow of new information deriving from the developments of the sporological school. From carefully examining his lichenological papers we have the impression that his contribution to the science of lichenology would have been much greater if he could have published his ideas a few years before the "Massalongian" period of 1852-1860, and if he had not become so preoccupied with what he perceived as putting the past into order.

Unfortunately for him, the activity of Massalongo thwarted his plans, and his concept of an all-embracing classificatory system was reduced to a scattered series of hastily published fragments in need of continuous re-building and adjusting after the appearance of every Massalongian paper.

Nevertheless, Trevisan's system, although published in a fragmentary form, constitutes one of the last examples of a general taxonomic arrangement of lichenized and lichenicolous fungi based on microscopical characters which appeared in the last century.

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