

Bryological notes
by
KAZIMIERZ SZAFNAGEL,
and his herbarium



The State Scientific Research Institute
NATURE RESEARCH CENTRE

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and his herbarium

Vilnius, 2022

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Compiled and edited by Dr. Ilona Jukonienė

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Editor's note

We present to our readers, combined in a single volume, two historical sources on moss diversity for the present-day territories of Belarus, Lithuania, Poland and Ukraine, the contents of Kazimierz Szafnagel's *Zapiski bryologiczne* (Bryological notes), published more than a century ago (1908), together with notes on his collections preserved at Vilnius University Herbarium (WI).

Szafnagel's work is an excellent example of how scientific information, through the efforts of individual enthusiasts and the community, was able to penetrate regions in which scientific institutions had for long decades been closed by the Russian Tsarist regime. Vilnius University (VU) was closed in 1832 due to the Polish and Lithuanian uprising of 1830–1831 against the Imperial Tsarist Government. Following its closure, the Vilnius Academy of Medicine and Surgery was established, but owing to political unrest among students, it was shut in 1842. Similarly, botanical research, which developed from the late 18th century until the middle of the 19th century owing to the efforts of professors at Vilnius University, had also practically come to a standstill, and for several decades, book publication at Vilnius had also ceased.

During this difficult period, part of society, having been educated at the European institutions of learning, used their knowledge, experience and contacts with scientists from other countries to study their own country, thereby making them aware of the plight of the country and disseminating scientific knowledge. Szafnagel's life revolved around the region in which he undertook his bryological studies. He was born in Berdychiv, in what is now the Ukraine, and grew up near Minsk. He studied at Warsaw Gymnasium, graduating with a gold medal. In 1880, he graduated from the Chemistry Department of the Riga Polytechnic Institute. Following his studies, Szafnagel moved to Oszmiana Powiat, settling in Kuszlany (currently Belarus). His interests spanned several disciplines such as literature, botany, and agriculture, and he played an active part in the cultural and social life of the region (Butkiewicz 2021). In the Introduction to his notes, Szafnagel describes his own involvement in moss research.

At the beginning of the 20th century, national research was largely promoted by public organizations. The Friends of Science Society in Vilnius, a Lithuanian-Polish scientific organization active from 1907 until 1939, was of immense importance as a source of information concerning the culture, ethnography and natural history of Vilnius and the surrounding region. Szafnagel was one of the founders of the Society (Ilgiewicz 2008). Indeed, it was The Vilnius Society of Friends of Science that published Szafnagel's work, the Society's very first scientific publication. Szafnagel also donated his bryophyte collection to the Society's museum, and this is preserved to this day at the herbarium of Vilnius University.

Szafnagel's book was not only dedicated to knowledge of moss diversity, it also promoted love for the nation's natural history and past, as well as respect for the local language. In addition to the valuable data on moss diversity contained therein, Szafnagel's reflections on the importance of knowledge of biodiversity and public involvement in research are still relevant today. Undoubtedly, Szafnagel's legacy is his impact on the scientific history and cultural heritage of four countries (Belarus, Lithuania, Poland and Ukraine). By the time Szafnagel's *Zapiski bryologiczne* was published, scientific institutions in Vilnius had not been active for more than half a century, and the last botanical book had been published more than 70 years previously.

His notes were written in Polish, the language that he spoke at the time. The first edition of *Zapiski bryologiczne* is a rare publication, with only the main libraries of Lithuania and certain neighboring countries, mainly Poland, holding originals. So as to acquaint a wider readership of researchers and general public with this early work on bryophyte diversity and the development of science in the region, the text was translated into English, leaving species and locality names as originally written by Szafnagel. Annotations made by Dr. I. Jukonienė accompany Szafnagel's text.

This publication summarizes Szafnagel's research results, providing a means by which data collected by him may currently be used to assess changes in the distribution and diversity of mosses.

Each moss name given by Szafnagel in this book is accompanied in parentheses by the current moss name, as provided by Hodgets *et al.* (2020), and each moss species listed is supplemented with the original label data associated with herbarium specimens bearing that name in the Szafnagel collection. The names of mosses and their authorities, as well as localities are presented as they appear on the original labels, and have not been changed or corrected. Moreover, the current name of that species is given following the information provided on the original label.

Szafnagel's herbarium collections were discovered in 2016 at the Herbarium of Vilnius University (WI). They were revised by Dr. Ilona Jukonienė and Monika Subkaitė-Kalvaitienė. Thanks to the Curator of Vilnius University Herbarium, Dr. Mindaugas Rasimavičius, all of Szafnagel's herbarium specimens were made available to the scientific community. This group of researchers, together with the botanical science historian Dr. Aurika Ričkienė, publicized the most important highlights of Szafnagel's research by means of scientific and popular articles (Jukonienė *et al.* 2020, 2021, 2022a, b; Ričkienė & Jukonienė 2022).

We sincerely thank Prof. Halina Bednarek-Ochyra of the W. Szafer Institute of Botany, Polish Academy of Sciences (Kraków) for her help with the revision of the genus *Racomitrium*. For advice on geographical and geological terms, we are grateful to Prof. A. Česnulevičius (Vilnius University) and Dr. G. Skridlaitė (Nature Research Center).

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We are greatly indebted to the reviewer Dr. Z. Gudžinskas (Nature Research Centre).

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Motto of *Zapiski bryologiczne*

Któż zbadał puszczy litewskich przepastne krainy
Aż do samego środka, do jądra gęstwiny?
Rybak ledwie u brzegów nawiedza dno morza;
Myśliwiec krąży koło puszczy litewskich łoża,
Zna je ledwie po wierzchu, ich postać, ich lice,
Lecz obce mu ich wewnętrzne serca tajemnice;

Rówienniki litewskich wielkich kniaziów, drzewa
Białowieży, Świtezi, Ponar, Kuszelewa!

Ja ileż wam winienem, o domowe drzewa!
Błahy strzelec, uchodząc szyderstw towarzyszy
Za chybioną zwierzynę, ileż w waszej ciszy
Upolowałem dumań, gdy w dzikim ostępie
Zapomniawszy o łowach usiadłem na kępie,
A koło mnie srebrzył się tu mech siwobrody.

Adam Mickiewicz (Pan Tadeusz)

Report on the bryological trips made to various parts of the country during the years 1882–1885 by Kazim. Szafnagel

A WORD OF INTRODUCTION

One can justify complaining about the inadequate study of phanerogamous plants in our country, but to do so with regard to cryptogamous plants is even more justified, since, with the exception of vascular cryptogams (cryptogamae vasculares), these have hitherto hardly been researched and studied here. Our most famous botanists, such as Waga¹, Kluk², Jundziłł³ and others, either did not include the cryptogamous cell plants (cryptogamae cellulosae), when describing our flora, or they did so in a very unsatisfactory and sketchy manner. Professor J. Jundziłł, in his excellent work⁴, devoted one-third of his book to describing cryptogamous plants, and it was he who was the first to give them Polish names. More recently, Prof. Tytus Chałubiński⁵, for many years, lovingly dedicated his life to studying the mosses of Tatra, and subsequently published an excellent monograph on one genus of mosses, entitled *Grimmieae Tatrensens*. In the *Pamiętnik Fizyograficzny*⁶, there are also valuable contributions to the cryptogamous

-
- 1 Jakub Ignacy Waga (1800–1872) – a Polish naturalist and botanist, the author of the two volume *Flora Polska* (1847–1848) (Mowszowicz 1974).
 - 2 Jan Krzysztof Kluk, Polish botanist, zoologist and geologist of the Age of Enlightenment. One of his notable works was the three volume work *Dykcjonarz roślinny...* (*The Dictionary of Plants*) (1786–1788) (Klimaszewski & Mroczek 1984).
 - 3 Józef Jundziłł (1794–1877) – Head of Vilnius Botanical Garden (1825–1829) and the last professor of *Imperatoria Universitas Vilnensis* (1827–1832) before it was shut in 1832. In 1812, after graduating from Vilnius Imperial University, he further improved his knowledge at Halle, Freiburg, Paris and Göttingen. J. Jundziłł is famous for an expedition from Vilnius (Vilna) to the Baltic Sea he organized in 1821. During the expedition he collected plants, including bryophytes (Jundziłł, 1822a, b, c). J. Jundziłł is the author of 5 botanical publications, the most famous of which is the book *Opisanie roślin w Litwie, na Wołyniu, Podolu i Ukrainie dziko rosnących, iako i oswoionych podług wydania szesnastego układu roślin* (1830), in which Polish names of the species are provided (Köhler 2004).
 - 4 The title is provided above (comment 3).
 - 5 Prof. Tytus Chałubiński – a Polish physician and co-founder of the Polish Tatra Society. He was a professor at the Medical-Surgical Academy and Principal School in Warsaw. Between 1838–1840, he studied at the Medical-Surgical Academy in Vilnius. Prof. Tytus Chałubiński was one of the first to research the natural history of Tatra, and was especially interested in mosses (Feliksiak 1987).
 - 6 The journal was initiated by a group of naturalists, mainly associated with the Polish University at Warsaw (Szkola Główna), which was active between 1862 and 1869. *Pamiętnik Fizyograficzny* (The Physiographic Diary) was published between 1881–1921, at first, on an annual basis, and later less regularly. Among its editors were botanists, e.g. Tytus Chalubiński (see comment above) and Jerzy Alexandrowicz. The journal published original studies in botany, zoology, geology, meteorology and anthropology (Majewski 2005).

flora by doctor Filipowicz⁷, Eichler⁸ and many others.

Considering that Cryptogamae contains large groups of mosses, liverworts, algae, lichens and fungi, one wonders why we have such an enormous gap when it comes to recording their discovery in our country.

It is true that the study of lower organisms is much more complicated and difficult owing to the fact that they are extremely diverse and yet are apparently closely related to each other, and distinguishing between them very often requires the use of a microscope, a relatively longer period of study and a lot of practise, but even this does not explain our apathy, given that so much has already been achieved in this respect in the West. Every county of England and the provinces of France, Germany and Scandinavia have very detailed checklists and descriptions of the cryptogams that occur there, largely due to hundreds of specialists and amateur naturalists, amongst whom can be found professors and teachers, doctors and priests, pharmacists, landowners, etc.

Naturally, given the extraordinary number of forms of cryptogamous species, it is impossible for any one individual to study several sections simultaneously; and therefore, separate sciences developed, each dealing with and describing a particular type of plant, Mosses – Bryology, Algae – Algology, Lichens – Lichenology and so on.

The individual who enters this wonderful labyrinth of living forms, very often does so because of the small size of the subjects and thus, their invisibility to the naked eye of the casual observer, who at least has looked superficially at the wonderful forms of these living organisms and sometimes at their colour and brilliance. Once inside, he seems to engage with a new world such as that encountered in a fairy tale, strange and mysterious that will continue to draw him for the rest of his days. Examining the collected spoils of summer trips on winter evenings will now and then bring to mind the scent of the forest, the hum of rivulets, and the charming panoramas and views, so that come spring, he will flee astonished and longing for the meadows and fields into the remotest forest, and with bated breath, will experience happiness whilst communing with a world that is so charming, yet so inaccessible to others!

And even today, heavy-laden with the painful affairs and cares of this world that so hurt humankind, such a distraction, however short, which always causes one to feel young and fresh, refreshes the mind and gives relief to the soul.

Undoubtedly, when it comes to researching natural history, we should follow the example of the West, and in the footsteps of many generations of naturalists. For this, no natural gift or even professional or general botanical education is required. It is

7 Kazimierz Filipowicz (1845-1891), Polish physician and botanist (Feliksiak 1789).

8 August Wilhelm Eichler (1839–1887), was a German botanist who developed a new system of classification of plants to reflect the concept of evolution. The Eichler System divided the plant kingdom into non-flowering plants (Cryptogamae) and flowering plants (Phanerogamae) (EEB 2022).

sufficient merely to specialize in one of these 'ologies', and this can be achieved with the help of an appropriate manual, a collection of reference specimens, a microscope, and of course, field excursions. Even our ladies and young ladies can find pleasure and wholesome entertainment in so doing. Now, whoever would prefer to have some useful purpose to his walks, let him get acquainted with the main features by which mosses, algae, lichens, etc. can be distinguished from each other, and let him choose one of the plant groups and make the collection of relevant specimens the target of his trips. In this way, one soon learns to identify species on sight and complete one's collection, which can then be sent to a specialist for determination.

Foliose or leafy mosses (musci foliosi), are a favourite of mine, and display the highest level of organization found in cellular⁹ plants, and occur in great abundance over the surface of the earth, to such an extent that it is possible to find at least some patches of them on almost every area of land. In the economy of nature, mosses play an important role: owing to their ability to absorb moisture from the air and from atmospheric precipitation and retain it for a longer period of time, they protect the soil from unnecessary drying and thus support the growth of plants of a higher order. Sometimes, they even form the dominant flora of the locality, giving it a characteristic appearance (bare mountain peaks, peat tundra in the north). Although the mountains are their favourite habitat, many such places also occur in the lowlands: we find them in forests, in meadows, beside springs, in caves and on cliffs, on roads and in ditches, on stones, and even on thatched rooves and fences. Therefore, searching for mosses does not present great difficulties, even less their preservation; for it is sufficient to place the discovered specimens between paper, if they are wet, in order to help them dry, and then for many years, they can be kept in appropriate folders without further change – because they do not die like flowering plants after drying, and when rehydrated, they re-acquire their original freshness. The collected and identified specimens can then be glued on sheets of stiff paper, thereby creating a truly artistic album that will delight even laymen. I provide these more general references in the hope that the number who read them will include a few who would like to devote their free time to bryological studies, and thus enrich the poor collections that we currently have for our country.

If you wish to get acquainted with mosses, I refer you to the following textbooks, which I have also used to identify specimens:

Róśliny skrytokwiatowe przez d-ra Kazimierza Filipowicza. Warszawa 1884. A well-written popular book to get you generally acquainted with these plants.

Führer in die Mooskunde von Paul Kummer, Berlin 1980. This work, intended for beginners, teaches you how to identify species without the use of a microscope.

⁹ This refers to non-vascular cellular plants.

Die Moose Deutschlands von P. Sydow. This is a more valuable reference than the last, but its use requires the help of a microscope.

Flore des mousses du Nord-ouest par T. Husnot. A small book for beginners; I recommend it to those who do not speak German.

In identifying mosses, the following works are considered necessary for anyone who already has some knowledge of bryology.

Bryologia Silesiaca von dr. Julius Milde. Leipzig 1869.

Cryptogamen Flora von Schlesien von Dr. Ferdinand Cohn. Erster Band. Breslau 1876.

Laub und Lebermoose Liv, Est und Kurlands. Gustav Karl Girgensohn. Dorpat 1860. *Arbeiten des Naturforscher-Vereins zu Riga* 1865. *Die Laubmoose der Ostseeprovinzen Russlands* von C.A. Heugel.

Grimmieae Tatrenses, Dr. Tytus Chałubiński.

And finally, the most important monumental work

Synopsis Muscorum Europaeorum auctore W. Ph. Schimper. Editio secunda. Stuttgartiae 1876.

In the lists of mosses below, I provide a Polish name next to the Latin names. The Polish names are partly taken from the work of J. Jundziłł “*Opisanie roślin na Litwii, Wolyniu I, etc.*”, and in part, I coined them myself. I believe that every living organism in any given country should have its own national name; it also has a popularizing influence on scientific knowledge and enriches the language. In coining names, I consulted the Honorable Professor Tytus Chałubiński, to whom I am grateful for much kindly help and encouragement in the study of bryology. Whatever the case, the nomenclature is based on that of a competent authority. The names coined by Jundziłł, are suffixed “Jundz.” I would like to state that the sphagnum mosses names are based on new criteria set forth by the outstanding German bryologist C. Warnstoff. A dozen or so years ago, botanists such as Braithwait¹⁰, Limpricht¹¹, Schliephacke¹², Warnstorff¹³, and

10 Robert Braithwaite (1824–1917) – English bryologist, the author of the 3-volume work *The British Moss-Flora* (1887–1905) (Lawley 2021).

11 Karl Gustav Limpricht (1834–1902) – German bryologist. The author of a work on mosses native to Germany, Austria and Switzerland, entitled *Die Laubmoose Deutschlands, Oesterreichs und der Schweiz*. It was included in Rabenhorst’s *Kryptogamenflora von Deutschland, Oesterreich und der Schweiz* (Stafleu & Cowan 1981).

12 Karl Schliephacke (1834–1913) – German bryologist. The main works: *Beiträge zur Kenntniss der Sphagna* (1865), *Die Torfmoose der Thüringischen Flora: Floristische Mitteilungen* 1883), *Genera muscorum frondosorum* (with Karl Müller) (1901) (Stafleu & Cowan 1985).

13 Carl Friedrich Warnstorff (1837–1921) – German bryologist, specializing in the genus *Sphagnum*. The author of *Die Europäischen Torfmoose*. (1881), *Zur Bryo-Geographie des Russischen Reiches* (1913–14) etc. He was editor of the section on Sphagnales-Sphagnaceae in Adolf Engler’s *Das Pflanzenreich* (Weber 2013).

others, became very interested in sphagnum moss and published detailed monographs. A number of new species have since been described and a great number of varieties and forms have been established. Professor Warnstorf of Berlin kindly named my collection of sphagnum mosses based on these new criteria.

On commencing my bryological research, I was encouraged the late Professor Tytus Chałubiński, as well as by a collection of dried and identified mosses, and provided with a reference book by doctor Kazimierz Filipowicz. All my bryological collections, gathered and identified by me, have been donated to the newly inaugurated the Friends of Science Society in Vilnius¹⁴.

14 The Friends of Science Society in Vilnius was a Lithuanian-Polish scientific organization operating in Vilnius from 1907 to 1939. Although its activities sought to preserve the Polish cultural heritage of Lithuania, the society is currently considered to have done important cultural work, by putting together a large library and accumulating manuscripts and museum collections (Ilgiewicz 2008).

I

Cocerning the Wilno and Mińsk uplands, as well as adjacent areas of Lithuania

The Ural-Baltic ridge of uplands¹⁵ extends across the centre of the Wilno governorate and the northern part of the Mińsk governorate. The Wilno¹⁶ and Mińsk uplands represent two separate groups, like nests, connected to each other by a narrow stretch of land cut across the valley through which the river Berezyna¹⁷ flows. The Mińsk uplands constitute the Black Sea-Baltic watershed, which is the watershed for the basins of the Dnieper and Nieman rivers. The Wilno uplands, on the other hand, form the watershed for the tributaries of the Wilja and Nieman rivers. Both the uplands on the south-west side are divided by a wide plain, on which are located large swamps, overgrown with forests (Wolozyńska and Nalibocka forests). The aforementioned Berezyna with its entire system of tributaries flows through these swamps. On the north-eastern side, the Wilja valley forms the border between both these uplands. A vast sandy plain, largely overgrown with forests, opens on the right side of this river. In the northern part of the plain occur the large, so-called lakes of Święciańskie (Wiszniewskie, Świrskie, Narockie etc.). The southern slope of the Mińsk upland is directly bordered by the Pińsk mires. In administrative terms, the described area will include parts of the following powiats¹⁸: Wileński, Oszmiański, Wilejski, Święciański, Miński and Ihumeński¹⁹.

The area of the country, which I have studied from the perspective of bryology, is shown in detail on the attached map: I have travelled many times in different directions, as

-
- 15 Ural-Baltic ridge (or Belarusian ridge) is a line of terminal moraines extending from Brest to Smolensk. After the First World War, following the acquisition of new research data, it had already been confirmed that this is not a single orographic formation, but that they represent separate uplands (A. Česnulevičius pers. com.).
 - 16 Probably, what was meant was the Ašmena upland that stretches from Vilnius to the Western Berezina river in Belarus (Pukelytė 2001).
 - 17 This does not refer to Berezina, a tributary of the Dnieper, but to Western Berezina, the tributary of the river Neman (Bel.) (Nemunas (Lith.)).
 - 18 Former administrative unit in the Grand Duchy of Lithuania (GDL) from the 16th century to the 18th century. The GDL had already declined by the end of the 18th century. Thereafter GDL is no longer mentioned on maps. The GDL and its former administrative territorial division are shown only on historical maps. From the end of the 18th century to the beginning of the 20th century, Lithuania's administrative territorial division was mapped only by Russian Empire cartographers. Boundaries of the various administrative units are shown on maps of that time. They were also prepared for separate regions and for each governorate. Administrative maps of governorates also used to show boundaries of districts (уезд); in Polish these were still called *powiats* (Gliżaitis 2008).
 - 19 The Wileński and Święciański powiats covered mostly the territory of Lithuania and part of Belarus, whereas the others covered only Belarus.

indicated by lines (----) on the map. Although I have not visited very many places, namely the Wołczyńska and Nalibocka forests, and the pass of the Mińsk uplands, i.e. the Black Sea-Baltic watershed proper, the results collected so far clearly reflect the local bryology of the country. Before I proceed with a detailed list of the species that I collected, I would like to draw you a picture of the local country from the perspective of a bryologist.

In the uplands of **Wilno and Mińsk** there occur single hills or plateaus, or strips thereof, that extend in various directions. Together, they form an elevation rising 300 feet above sea level. As such, they form individual upland areas that reach over 900 feet above sea level. In terms of their geological origin, they belong to the Tertiary formation. They comprise mainly of red clay, which, however, does not appear on the surface of the soil, being covered with a layer of fertile pasture-clay soil or sand and gravel. Erratic boulders, sometimes of great size, are strewn across the entire surface of the slopes. Granites and gneisses are the most common boulders, whereas syenites and porphyries are less common. In the valleys between the hills, numerous larger and smaller rivers flow, sometimes having the character of mountain streams, with a fast current and a rocky bed. Until recently, the peaks of the hills were clothed with wonderful forests, which today are in a state of rapid decline due to widespread thinning. There are also arable fields on the slopes.

In addition to the above-mentioned Tertiary uplands, there are also glacial hills, situated in the vicinity of lakes or swamps, comprised of sand and gravel, with an admixture of stones, between which occur various forms of dolomite and limestone. The glacial hills, which of course, are the remains of moraines, occur mainly at the edges of the tertiary elevation.

Erratic boulders. Each has its own characteristic moss flora. The most common moss growing locally in that local area is *Grimmia Muehlenbeckii*. This rare mountain species, which is not found in the Tatra Mountains, was probably brought here along with its substrate on the ridge of Scandinavian glaciers. A peculiar feature is that *Grimmia pulvinata*, although common elsewhere, is rare here.

Conversely, *Racomitrium heterostichum* and *R. microcarpum*, and the common boulder mosses *Grimmia apocarpa* and *Hedwigia ciliata* are abundant. The moss flora of glacial boulders sheds light on the history of the formation and disappearance of glaciers, serving to confirm the evolutionary theory, which states that the advent of the various ice ages took place slowly and gradually: what is certain, is that hitherto unknown cosmic and climatic factors caused the abundant formation of glaciers in the mountains of the north. As these descended slowly, they advanced further south, filling the Baltic Sea, and finally covering the vast expanse of our country. Boulders, gravels and sands, torn off the surface of rocks in Sweden, Norway, and Finland by glaciers, moved further and

further afield, eventually reaching us. With the advent of different climatic and cosmic factors, the glaciers slowly melted, commencing at the southern edges, and retreating further to the north; while gravels, sands and erratic boulders gradually settled on the surface of the earth. These evolutionary theories seem to be supported by the moss flora found on erratic boulders; of course, only in this way could such Scandinavian species as *Grimmia Muehlenbeckii*, *Andrea petrophila*, *Racomitrium microcarpum* and others remain on the boulders for such a long journey.

Of the rivers whose banks I have partly visited, I mention the following:

Wilja. I visited this river between Daniszew and Żodziszki in six versts. Below, and above the water, occur many stones on which *Amblystegium irriguum* and *A. fluviatile* grow; both with sporophytes.

Wilejka. I visited its picturesque shores between Wilno and Kuczkuryszki during nine versts.

Oszmianka, tributary of Wilejka.[...] ²⁰.

Sikuń and its tributaries **Kuszłanka** and **Wierchołanka**. [...] These three rivers are of mountainous character. On stones distributed on their beds occur *Fontinalis antipyretica*, *Eurhynchium rusciforme*, *Amblystegium irriguum*, *A. fluviatile*, *A. riparium* var. *longifolium*, *Hypnum palustre*, *Bryum uliginosum* and other rare species, where they grow abundantly.

Usza, tributary of Wilja. I visited the bank of it near Zaśkiewicze. The only known locality of *Atrichum tenellum* ²¹.

Berezyna, tributary of the Niemen. [...] In the river valley occurs a marshy peaty meadow in the middle of which rises a sandy hill, like an island, which is evidently of glacial origin. In the local meadows, I noticed many interesting species. The most exciting find however, was *Timmia megapolitana*!

Ptycz, tributary of the Prypec. I know it very well, having visited it between the estates of Rusinowicze, Annopol and Dudzicze, in several versts [...].

The lakes I have visited are as follows:

The lakes **Bonifacowskie** and **Wolejkowskie**. These are two small lakes. Bordered by glacial hills to the west, the eastern shores are flat, and lie adjacent to vast swamps, partly cleared for meadows or covered with forest. *Hypnum decipiens* ²² a species rare in Europe, grows abundantly here, as well as a few rarer *Sphagnum* species [...].

20 This indicates that part of the text was omitted during translation.

21 Should be *Atrichum angustatum* according to the following list of species.

22 Following revision of the specimen, this species was identified as *Helodium bandowii*.

The lakes **Wiszniewskie** and **Swirskie**. [...] A rare northern species, *Paludella squarrosa*, grows on the meadow through which flows the stream that connects the two lakes.

The Lake **Narockie** and mires **Zanorockie**. *Hypnum palustre*, *Brachythecium rivulare* and *Orthotrichum anomalum* grow abundantly on the enormous boulders that adorn part of the shores of this magnificent lake. *Fontinalis antipyretica* forms long braids at the bottom of the lake. It is more interesting, however, to discuss the wetlands near the lake. We found here, within in a small space, such rarities as: *Hypnum sendtneri* var. *vilsoni*, *Hypnum lycopodioides*, *Splachnum ampullaceum*, *Meesia tristicha* and *M. uliginosa*, *Amblyodon dealbatus* and *Catoscopium nigratum*.

The lake **Sierhiejewickie**. [...] This locality provided three otherwise unknown species, namely *Hypnum polygamum*, *Thuidium blandowii* and *Campylopus flexuosus*²³.

Speaking of **mires**, it should be noted that they can be divided into three types.

1st type. Mires located near lakes or rivers, sometimes overgrown with bushes or alders, usually exhausted and partly dry, serve as meadows or pastures for cattle: in the latter case, they form hummocks surrounded by a network of hollows. Grasses rarely grow here: the main occupants of such habitats are mosses, and these are mostly *Hypnum* species. The most common ones are *Hypnum cuspidatum*, *cordifolium*, *giganteum*, *aduncum*, *sendtnerianum*, *intermedium*, *vernicosum*²⁴, *Camptothecium nitens*, *Climacium dendroides*, as well as *Polytrichum gracile*, *Aulacomnium palustre*, *Bryum pseudotriquetrum* and *bimum*, *Dicranum palustre* and in small numbers *Sphagnum acutifolium* and *cymbifolium*.

2nd type. Mires, generally known to the people as “mszaryny”, are surrounded on all sides by higher ground. No stream flows through these mires; they have a sandy base; dwarf pine grows upon them, popping up here and there from a dense mass of peat-moss (*Sphagnum*), it is joked that this is the kingdom of these plants. We can find here all *Sphagnum* species provided on the list, with the exception of *Sphagnum teres*, *squarrosum*, *subsecundum* and *contortum*. On hummocks surrounding each dwarf pine usually grow *Hypnum schreberi* and *Cladonia rangiferina*,²⁵ also *Polytrichum strictum* and *Dicranum palustre*, though not abundantly.

3rd type. Quagmires. In forests on impermeable ground, often on the ridges, or in the valleys between the hills, we find a particular type of small natural pool, full of water that never dries out, and the source of this water is in part the slight slopes surrounding the pool, as well as sources that usually occur in the middle of the forest. Such lakes are

23 Following revision of the specimen, this species was identified as *Paraleucobryum longifolium*.

24 Although in the previous text Szafnagel always used the first letter of the generic name next to each specific epithet, he sometimes used it only next to the first species of several from the same genus.

25 The lichen *Cladonia rangiferina* (L.) Weber. All names of the lichens in comments are provided following Motiejūnaitė (2017).

called here "rojsta". The origin of them is quite a mystery to me. I leave these questions to our geologists, whose attention I would like to draw to the great local diversity of these formations. The surface of the quagmire is usually covered with a thick layer of tangled moss, which every autumn sinks to the bottom. *Hypnum fluitans*, *cordifolium*, *aduncum* var. *Kneiffii*, *stramineum*, *Sphagnum subsecundum*, *cuspidatum*, *contortum* and *squarrosum* grow abundantly here. The margins of the quagmire are surrounded by hummocks of *Polytrichum commune*, and, on old trees rotting in the water, grow *Hypnum crista-castrensis* and *Climacium dendroides*.

Meadows. I have already talked about the peaty meadows. Meadows that are not very moist, the so-called "murozne" meadows, are usually poor in mosses. Among the grasses you can always find *Hypnum palustre*, *aduncum*, *squarrosum*, *Thuidium recognitum* (the most abundant moss) and *Climacium*.

Arable fields provide shelter mostly to these three species: *Pottia truncata*, *Phascum cuspidatum* and *Anthoceros laevis*²⁶.

Fallows, especially sandy areas, are abundantly overgrown with *Polytrichum piliferum* along with *Pogonatum aloides* and *Bryum caespiticium*, all admixed with the lichens: *Cladonia rangiferina*, *occifera*,²⁷ *Cornicularia oculata*²⁸ and *Baeomyces roseus*²⁹.

In roadside ditches and in various pits, we most often encounter *Ceratodon purpureus*, *Webera nutans*, *Bryum caespiticium*, *Thuidium abietinum*, *Atrichum undulatum*, *Funaria hygrometrica* and *Didymodon rubellus*.

On thatched roofs usually always grows *Barbula ruralis* accompanied by *Ceratodon purpureus* and *Orthotrichum speciosum* and *Thuidium abietinum*.

Forests. We can distinguish four very distinct types of forests in this area.

1st type. Pine forests, growing on diluvial or alluvial sands. [...] The entire ground is covered with glossy yellow *Hypnum Schreberi* and gray *Cladonia rangiferina*. This monotonous carpet is interrupted here and there by lawns of *Ceratodon purpureus*, and thin beards of *Usnea barbata*³⁰ and *Evernia prunastris*³¹ hang from the branches and trees [...].

2nd type. Pine forests, growing in sandy soil on a permeable base. They are rich in hazel bushes, and spruce or oak are scattered here and there. The vegetation is much richer here; blueberry, lily of the valley and wild strawberry grow abundantly, but the

26 The lists provided in the book contain only mosses. Hornworts and liverworts are not listed.

27 Perhaps some lichen species of the *Cladonia coccifera* group.

28 = *Cetraria aculeata* (Schreb.) Fr. (lichen species).

29 = *Dibaeis baeomyces* (L.F.) Rambold & Hertel (lichen species).

30 Some lichen species of the *Usnea barbata* group.

31 = *Evernia prunastri* (L.) Ach.

mosses represented here also occur as richly as in 1st type forests, where they form a carpet and are scattered throughout the area. *Hylocomium splendens* and *triquetrum* compete against *Hypnum schreberi* for dominance; *Hypnum cupressiforme* and *crista-castrensis* cover scattered boulders; *Brachythecium rutabulum* encircles the bases of trees, together with velvety cushions of *Dicranum flagellare* and *montanum*, as well as *Dicranum scoparium* and *undulatum*; all pits are overgrown with *Atrichum undulatum* and *Polytrichum juniperinum*. [...]

3rd type. Spruce forests. [...] In the hill forests, where the spruce trees stand so close to each other, and their branches are so intertwined, that they do not allow any other trees to grow there except as bushes. We have hazel-strewn forests in which spruces are accompanied by pines, oaks and birches. In forests, located at lower altitudes occur aspen, rowan and bird cherry growing beneath oak and birch, and finally, at even lower altitudes, occur forests where spruce trees gradually give way to alders, aspens and willows.

In all these forests the ground is clayey: they are shady, moist and contain quagmires, as described previously. The moss flora is very abundant here, occurring as evenly distributed carpets, but sometimes the moss species form and climb onto both living and fallen trunks, and also occur on branches, uneven ground, etc. Neither *Hypnum schreberi* nor *Hylocomium splendens* occur here, and of this trio, only *Hylocomium triquetrum* remains, which here finds a suitable niche for its vigorous growth. *Hypnum cupressiforme* and *crista-castrensis* co-exist with *Hypnum uncinatum*, and, in humid places, with *Hypnum sommerfeltii* and *haldanianum*: *Dicranum flagellare* and *montanum* are the only *Dicranum* species present. *Eurhynchium striatum* predominates at lower altitudes, together with *strigosum*, *Brachythecium salebrosum*, *rutabulum*, *starckii* and *velutinum*, as well as the *Mnium* species: *cuspidatum*, *undulatum*, *affine*, *strigosum*, usually accompanied at the lowest altitudes by *M. punctatum* and *stellare*, as well as *Fissidens adianthoides*. Much *Bryum roseum*, *Thuidium recognitum* and *T. tamariscinum* is present. Hazel and aspen are clothed with *Pylaisia polyantha*, *Orthotrichum affine*, *O. speciosum* and *Ulota crispula*, and only *Orthotrichum gymnostomum* does not grow profusely. This rare species is known only from a few places in Europe. For the sake of completeness, the liverwort *Plagiochila asplenioides* and the lichens *Peltigera canina* L.³² and *P. rufescens* Foffm.³³, which grow on rocks and soil, must be added to the list of aforementioned mosses, as well as the lovely green lichen *Sticta pulmonaria* L.³⁴ that decorate birches and aspens. [...]

4th type. Primeval forests. Deciduous forests grow on low, swampy and clayey ground. This substratum comprises a mixture of very fine white sand containing a good

32 = *Peltigera canina* (L.) Willd. (lichen species).

33 = *Peltigera rufescens* (Weiss) Humb. (lichen species).

34 = *Lobaria pulmonaria* (L.) Hoffm. (lichen species, and an indicator of ancient forests).

percentage of humus and, as I understand it, a little marl, I think that the subsoil must be a very peculiar layer of some type of marl or marly clay, otherwise it is difficult to explain the lush growth of huge oaks, ashes, maples, elms, limes, aspens and spruces that comprise the felled forest. This type includes the Nalibocka Forest, and the neighboring Wołczyńska, and Iłska Forests, which I visited myself. Although I have seen the Białowieża Forest and the numerous forests in Podole, the impression I had of the Iłska Forest will remain with me forever. This last one is situated by the river Ilja near the village of the same name. [...]

The ground in the wilderness is extremely wet; it is simply black, sticky, soggy mud. There are hardly any small flowering plants here, only one by one there are huge, smooth pillars of hundred-year-old trees of an amazing thickness and height, without any branches at the bottom, only at the top spreading a thick umbrella of their green branches. These umbrellas touch each other and form a roof over the forest, which does not allow any almost sunny rays to enter this natural temple. In the middle of these dark ceilings here and there glisten gaps, formed by storm-fallen trees. There are many such fallen giants, lying on top of each other, uprooted, with a whole huge shield of roots extending radially. [...] The forest ground is not conducive to the growth of mosses; it is too dark here for peat-mosses and there is too little moisture for aquatic *Hypnum* species, whereas for others, it is too wet. Indeed, the mosses covering the giant trees have taken them over to such an extent that it is impossible to be rid of them. Starting at the base, each trunk is wrapped in soft, furry tail-mosses (*Anomodon viticulosus*, *A. longifolius*), accompanied by tamarisk-mosses (*Thuidium recognitum*, *tamariscinum*), thyme-mosses (*Mnium cuspidatum*, *affine*, *punctatum*) and feather-mosses (*Brachythecium rutabulum*, *B. salebrosum*). The old, dense wefts of *Leucodon* extend higher up the trunk, and *Neckera pennata* and *Sticta pulmonaria* form entire festoons that hang down from above. The trees, enveloped by all these mosses, appear as though they have been deliberately decorated, and resemble sacred columns. Various liverworts grow on rotting felled trees, hidden beneath a glossy layer of *Plagiothecium denticulatum* and mats of *Hypnum uncinatum* and fertile plait-moss (*Hypnum fertile*). The last of these species is already disappearing in Europe, due to the felling of old forests, which suited it and without which it cannot live, and so it finds here a safe niche for itself, but for how long?

I have a few words left to say about the locations that I have explored in greater detail.

These include the estate of **Kuszlany**, the central focus of all my trips, located in the Oszmiana powiat, ten miles south of Wilno and three miles from the town of Oszmiana. In addition to the main property, there are several farms with the same name, as well as the farms of Gajdzie, Rudziszki, Trykole, Sikuń and others, which I will mention often in the list. The whole area is situated in the valley of the rivers Kuszlanka, Wiercholanka

and Sikuń, between several ridges of the hills, at the feet of which they begin. These hills form the eastern edge of the Wilno upland. As a result, separate areas of this location are characterized by very different soil profiles. Some are located on slopes with sandy-clay soil, and some occur in the Wilja valley, covered with alluvial sands. The Kuszlańskie forests lie near the east border of the Zuprańskie forests, whereas to the south and west occur large Smorgońskie forests, that contain numerous swamps and marshes, – among others, which are often mentioned in the list: Latyhoła, Węclawinięta, Kołpny. Such a location is conducive to a rich bryological flora. In the Kuszlan forest, at the location referred to as **Wysoka**, there are several mires, one of which especially drew my attention. It is situated deep in the valley between quite steep slopes, occupying the space of just a few dozen square feet; from one bank, just below the steep wall of the hill, a spring gushes out, saturating the place with moisture. It too has started to dry up. Much grass grows on it, but only the two mosses *Hypnum cuspidatum* and *Thuidium recognitum*. At this mire, the digging of a well was commenced. At the centre of the mire, after removing the thick layer above the moss, a layer of bluish plastic clay was found, some two metres thick, and below it, a layer of peat about two metres thick. This peat consisted exclusively of moss. The structure of this moss was so well preserved that I was able to identify all the species from which the peat was formed. The first layer, therefore, was of *Hypnum Sendtnerianum*, *Hypnum intermedium* var. *giganteum* and *Hyp. vernicosum*. A layer of *Hypnum scorpioides* had started to grow beneath this, then *Bryum Duvali*, and finally a uniform layer of *Sphagnum cymbifolium* spread out, resting directly on the sand and gravel. We have an interesting example of species succession here. Firstly, on the alluvial sand, resting on an impermeable base of tertiary clays, *Sphagnum cymbifolium* had begun to grow. The conditions for the growth of this *Sphagnum* species were favorable for a long time, since the moss formed a metre-thick layer of peat. Finally, something prevented further growth of the turf; I think that the reason for this must have been a change in the chemical composition of the water at source, namely the increased content of lime, as it is known that peat mosses cannot tolerate lime-rich water. The *Sphagnum* moss was gradually replaced by *Bryum Duvali*, which is a mountain species. This was followed by *Hypnum scorpioides*, which also formed a two-foot-thick layer, like the previous peat layer. It is worth noting that I have never before seen both of these species growing together, and even though one had grown abundantly, both species had died out in the area. What is the reason for their disappearance? The upper part of the peat cover, as I have already mentioned, comprised *Hypnum sendtneri*, *intermedium* var. *giganteum*, and *H. vernicosum*. These species are quite common in this location even today, except that I have never seen them in forest swamps, but always only in meadows. There was a new local cataclysm during this period. Here the springs changed their composition once again: instead of lime, small particles of clay were deposited on the surface of the moss. The mosses began to disappear, and a thick layer of clay was formed, on which only *Hypnum cuspidatum*

and *Thuidium recognitum* could now grow. How long did this minor geological event last? Well, if we accept that each layer of peat represents a single year of moss growth, then the total time needed to deposit the entire layer would be 2,000 years.

The second noteworthy feature of Kuzlany is the *Andrea petrophila*³⁵ that I found there. This species grew on a granite boulder in the Kuzlany forest. This species usually grows only on high mountains mainly in the north. Concerning this matter, Professor Tytus Chałubiński wrote to me the following: “Last year, Eichler found *Andrea petrophila* in Podlasie, also on erratic granites: who knows whether it too, like its habitat, migrated on ice from Finland or Sweden hundreds of centuries ago”.

Annopol is located in the Mińsk governorate, four miles to the south from the governorate city. It is situated on the Mińsk plateau, where the ground is clayey, and there are no erratic boulders at all. The river Ptycz flows through the estate, flanked on both sides by wide peaty meadows. The spruce and pine forests are of type 2. In this locality I did a lot of bryological research and I often also mention these sites in the lists. In this vicinity is located the Rusinowicze estate, occurring under similar topographic conditions to the previous ones, as well as the Zamość estate, located at the southern edge of the Mińsk uplands.

The total number of moss species collected by me for the entire area of the country described above was 209, including 81 pleurocarpous mosses, 114 acrocarpous mosses and 14 *Sphagnum* species³⁶, which represents almost one-third of the total number of European species.

35 We have not been able to find a specimen to support this species.

36 We found that the list contains 82 pleurocarpous mosses, 113 acrocarpous mosses and 14 *Sphagnum* species.

LIST OF MOSSES (MUSCI FOLIOSI)

Collected at the localities described above, in the powiats: Wileński, Oszmiański, Wiliejski, Święciański, Miński and Ihumieński³⁷

MUSCI FOLIOSI. MUSCI PLEUROCARPI

*Hylocomium*³⁸ Schpr.³⁹ (Gajnik⁴⁰)

H. splendens B.S. [*Hylocomium splendens* Bruch et Schimp.]⁴¹. In pine forests, on sandy-loamy ground, in gardens and birch groves, widely distributed. Rarely with sporophytes⁴².

Herbarium specimens:

Hylocomium splendens (Schmpr)⁴³, Kuzlany, in forest, August 1883. – *Hylocomium splendens* (Hedw.) Schimp., WI⁴⁴ B06582.

Hylocomium splendens (Schpr) c.F⁴⁵!, Łatyhoła, alder forest, 25 August 1883. – *Hylocomium splendens* (Hedw.) Schimp., WI B06583.

Hylocomium splendens (Schpr), Porojsie, in forest, 22 April 1883. – *Hylocomium splendens* (Hedw.) Schimp., WI B06603.

Note: During revision, as *Hylocomium splendens*, two specimens of *Hypnum schreberi* (see description of herbarium specimens for this species) were also determined.

H. triquetrum B.S. [*Hylocomiadelphus triquetrus* (Hedw.) Ochyra & Stebel]. Distributed in the same habitats as the above-mentioned species, but grows luxuriantly in spruce forests, and even in wet places. Sporophytes quite rare.

37 The names of the localities are given in the original as they appeared in *Zapiski bryologiczne* and on the herbarium labels. The current names of the localities are given at the end of the book.

38 Currently the species listed below belong to the genera *Hylocomiadelphus* Ochyra & Stebel, *Hylocomium* Bruch et Schimp and *Rhytidiadelphus* (Limpr.) Warnst. (Hodgets *et al.* 2020).

39 The names of the authors are given in the original spelling as they appeared in *Zapiski bryologiczne* and on the herbarium labels.

40 The Polish name of the genus, suggested by Bloński (1889) and Szafnagel, is still used for the genus *Hylocomium* (Ochyra *et al.* 2003).

41 Here and below, the species name given by Schafnagel is followed by the current species name (Hodgets *et al.* 2020, Ochyra *et al.* 2003) in square brackets.

42 Taking into account the characteristics of bryophytes, we indicate the presence or absence of sporophytes, although originally, Szafnagel used the term *with or without fruits, fertile or sterile* etc.

43 For some reason, Szafnagel puts the author of the species in parentheses on herbarium labels. In addition, the names of the authors are often written differently both in *Zapiski bryologiczne* and on labels, as well as on different labels.

44 WI – acronym of the Herbarium of Vilnius University.

45 With sporophytes. Labelled c.F, C.f., C.Fr., etc.

Herbarium specimens:

Hylocomium triquetrum (Schpr), Łatyhoła, in alder forest, 29 June 1884. – *Hylocomiadelphus triquetrus* (Hedw.) Ochyra & Stebel, WI B06576.

Hylocomium triquetrum (Schpr), Kuzlany, in Tymowski Forest, 20 May 1884. – *Hylocomiadelphus triquetrus* (Hedw.) Ochyra & Stebel, WI B06578.

H. squarrosus B.S. [*Rhytidiadelphus squarrosus* (Hedw.) Warnst.]. In dry grasslands, in forests, in grassy places, in gardens. Much rarer than the mosses mentioned earlier. Kuzlany, Gródek, Iłska Forest, Anopol, Rusinowicze. Always lacking sporophytes.

Herbarium specimens:

Hylocomium squarrosus Iłska Forest, 6 June 1884. – *Rhytidiadelphus squarrosus* (Hedw.) Warnst., WI B06579.

Hylocomium squarrosus (Schmpr.) Węclawinięta, in forest, 30 September 1883. – *Rhytidiadelphus squarrosus* (Hedw.) Warnst., WI B06580.

Hylocomium squarrosus (Linn.), Kuzlany in dry grassland, 26 April 1883. – *Rhytidiadelphus squarrosus* (Hedw.) Warnst., WI B06581.

*Hypnum*⁴⁶ Dill (Rokiet⁴⁷ Jundz.)

H. sommerfeldtii Myr. [*Campylophyllopsis sommerfeldtii* (Myrin) Ochyra]. In wet forests and alder thickets, on tree trunks. Żuprany, Kuzlany, Smorgonie, Łatyhoła. Always with abundant sporophytes. Quite rare.

Herbarium specimens:

⁴⁸*Hypnum sommerfeldtii* (Myrin), Żuprany, in swampy forest, 28 September 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06413.

46 The provided species are now assigned to 20 genera: *Callicladium* H.A. Crum, *Calliergon* (Sull.) Kindb., *Calliergonella* Loeske, *Campyliadelphus* (Kindb.) R.S. Chopra, *Campylium* (Kindb.) R.S. Chopra, *Campylophyllopsis* W.R. Buck, *Cratoneuron* (Sull.) Spruce, *Drepanocladus* (Müll. Hal.) G. Roth, *Hamatocaulis* Hedenäs, *Homomallium* (Schimp.) Loeske, *Hygrohypnum* Lindb., *Hypnum* Hedw., *Jochenia* Hedenäs, Schlesak & D. Quandt, *Palustriella* Ochyra, *Pleurozium* Mitt., *Pseudohygrohypnum* Kanda, *Ptilium* De Not., *Sanionia* Loeske, *Sarmentypnum* Tuom. & T.J. Kop., *Scorpidium* (Schimp.) Limpr., *Stereodon* (Brid.) Mitt., *Straminergon* Hedenäs, *Warnstorfia* Loeske.

47 The Polish name provided by B.S. Jundziłł (1791) for the genus *Hypnum*. It is still used for this genus (Ochyra *et al.* 2003). Bonifacy Stanisław Jundziłł (1761–1781) was viceprofessor (1799–1802) of *Schola Princeps Magni Ducatus Lithuaniae*, professor (1803–1824) of Botany and Zoology at *Imperatoria Universitas Vilnensis* and in 1799–1824 headed Vilnius Botanical Garden. B.S. Jundziłł was the author of 36 publications in the fields of Botany, Zoology and Natural History. Two of these (Jundziłł 1791, 1811) were first records of bryophyte species for territories currently belonging to Lithuania, Belarus and Ukraine (Ričkienė & Jukonienė 2018).

48 This sign indicates that, following revision, the specimen was assigned to another species, as indicated by Szafnagel.

Note: The presence of the species *Campylophyllopsis sommerfeltii* in the area was confirmed during revision of the specimen named *Amblystegium riparium* (see specimen list).

H. stellatum Schreb. [*Campylium stellatum* (Hedw.) Lange et C.E.O. Jensen]. On swampy lake shores with hummocks, sometimes in wet spruce forests. Kuzlany – with erect stems lacking sporophytes. Jachimowszczyzna, Gwozdowo, near Lake Bonifacowskie etc. – with abundant prostrate stems bearing sporophytes; quite rare.

Herbarium specimens:

Hypnum stellatum (Schreb. Fl. Lips), Kuzlany, in peaty meadow, 7 April 1883. – *Campylium stellatum* (Hedw.) Lange & C.E.O. Jensen, WI B06402.

Hypnum stellatum (Schreb. Fl. Lips.), by Lake Narocz, in mire. 21 June 1884. – *Campylium stellatum* (Hedw.) Lange & C.E.O. Jensen, WI B06407.

H. chrysophyllum Brid. [*Campyliadelphus chrysophyllus* (Brid.) R.S. Chopra]. On trunks of fruit trees, lacking sporophytes, with *Amblystegium serpens*. On Bekieszowa Hill at Wilno, on Kowalewicka Hill – scattered on marly soil; bearing sporophytes; rare.

Herbarium specimens:

Campylium chrysophyllum (Brid.). on Kowalewicka Hill, 20 August 1885. – *Campyliadelphus chrysophyllus* (Brid.) R.S. Chopra, WI B06408.

Campylium chrysophyllum (Brid). sterile cum *Amblystegium serpens* (Schpr), Kuzlany, August 1883. – *Campyliadelphus chrysophyllus* (Brid.) R.S. Chopra, WI B06410(a).

Campylium chrysophyllum (Brid). sterile cum *Amblystegium serpens* (Schpr) var: *squarrosus* Schmpr, Wilno, Bekieszowa Hill, 10 June 1884. – *Campyliadelphus chrysophyllus* (Brid.) R.S. Chopra, WI B06410(b).

Hypnum polygamum Schmpr. [*Drepanocladus polygamus* (Schimp.) Hedenäs]. I noticed it only in thickets near Lake Sierhiejewickie, producing sporophytes in great profusion.

Herbarium specimen:

Hypnum polygamum (B. E.), near Lake Serhiejewickie, 25 May 1985. – *Drepanocladus polygamus* (Schimp.) Hedenäs, WI B06411.

H. cordifolium Hedw. [*Calliergon cordifolium* (Hedw.) Kindb.]. Quite frequent in swamps, ditches, on grasslands; the stems sometimes up to 3 dm in length; in swamps, usually with sporophytes. Kuzlany, Żuprany, Smorgonie, Prudy, Wiszniew, Annopol.

Var. *Iliiformis*. In Ilska Forest I observed an atypical form of the species: on clayey, sticky, damp soil, in complete shade forming extensive lawns consisting of individual, fairly uniform (half dm) stems growing vertically and very distantly spaced. The stems were particularly thick and stiff (like *Polytrichum*) and abruptly truncated at their tips; leaves very distantly spaced (*folia maxime remota*), in an almost orthogonal direction to the growth of the stem. At first sight, this plant was thought to be a variety of *Mnium*. I allowed myself to name this new variety *varietas Iliiformis*.

Herbarium specimens:

Hypnum cordifolium (H.) cum *Hypnum fluitans* c.fl., Żuprany, in swampy forest, 28 September 1883. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06301.

Hypnum cordifolium (H.) Ilska Forest, in meadow, 5 June 1884. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06356.

Hypnum cordifolium (H.), Kuzlany, in meadow within forest, 29 August 1883. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06357.

Hypnum cordifolium (H.), Wiszniew, in forest, 25 June 1884. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06359.

Hypnum cordifolium (H.), Kuzlany, on clayey soil, 3 May 1884. – *Calliergon cordifolium* (Hedw.) Kindb. WI B06368.

Hypnum cordifolium (H.), in ditches, 24 September 1883. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06369.

Hypnum cordifolium (H.), Trykole, in forest, 20 May 1884. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06370.

[√]*Hypnum cordifolium* (H.), Wojstomski Forest, June 1884. – *Calliergon giganteum* (Schimp.) Kindb., WI B06300.

[√]*Hypnum cordifolium* (H.), Kuzlany, in meadow, 20 08 1883. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06358.

[√]*Hypnum cordifolium* (H.), Kuzlany, in meadow, 20 August 1883. – *Brachythecium rivulare* Schimp., WI B06299.

Note: Three specimens identified by K. Szafnagel as *Hypnum fluitans* were, following revision, determined to be *Calliergon cordifolium* (Hedw.) Kindb. (see description of herbarium specimens for this species).

H. giganteum Schmpr. [*Calliergon giganteum* (Schimp.) Kindb.]. In ditches full of water, where it often reaches three dm, on wet meadows, together with *H. cuspidatum*. Rather rare. Prudy, Kuzlany, Węclawinięta, Annopol, Zamość. Only once did I observe this species with sporophytes. This was in Łatythoła, in a swampy meadow within the forest.

Herbarium specimens:

Hypnum giganteum (Schmpr) c.Fl, Łatyhoła, in wet grassland, 20 June 1884 – *Calliergon giganteum* (Schimp.) Kindb., WI B06367.

Hypnum giganteum (Schmpr.), near Lebieziew, in pit, 24 September 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06364.

Note: The specimens named by K. Szafnagel as *Hypnum cordifolium* was, following revision, determined to be *Calliergon giganteum* (Schimp.) Kindb.). (see description of herbarium specimens for this species).

H. Schreberi Willd. [*Pleurozium schreberi* (Willd. ex Brid.) Mitt.]. Common in dry pine forests; rarely with sporophytes.

Herbarium specimens:

Hypnum schreberi (Willd.). Kuzlany, 22 August 1883.– *Pleurozium schreberi* (Willd. ex Brid.) Mitt., WI B06515.

Hypnum schreberi (Willd.). Kuzlany, in forest, 1883. – *Pleurozium schreberi* (Willd. ex Brid.) Mitt., WI B06516.

Hypnum schreberi (Willd.). near Gródek, in forest, 23 September 1883. – *Pleurozium schreberi* (Willd. ex Brid.) Mitt., WI B06517.

[√]*Hypnum schreberi* (Willd.), Kuzlany, 22 August 1883. – *Hylocomium splendens* (Hedw.) Shimp., WI B06482.

[√]*Hypnum schreberi* (Willd.), Kuzlany, in grassland. 20 August 1883. – *Hylocomium splendens* (Hedw.) Shimp., WI B06485.

H. cuspidatum L. [*Calliergonella cuspidata* (Hedw.) Loeske]. Very common in grasslands. In a ditch, at Prudy, I saw the floating form; four dm in length; rarely with sporophytes.

Herbarium specimens:

Hypnum cuspidatum (L.), Kuzlany, 3 April 1884. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06455.

Hypnum cuspidatum (L.), Kuzlany, 31 March 1883. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06456.

Hypnum cuspidatum (L.), Łukawiec, in forest, 6 June 1884. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06457.

Hypnum cuspidatum (L.), in pit, 24 September 1883. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06458.

Hypnum cuspidatum (L.), Węclawinięta, in forest, 3 September 1883. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06459.

Hypnum cuspidatum (L.), in pit, 24 September 1883. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06460.

Hypnum cuspidatum (L.). Łukawiec, in forest 5 June 1884. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06461.

Note: Two specimens were confirmed to be *Calliergonella cuspidata* following revision of the specimens initially named *Amblystegium riparium* and *Hypnum cordifolium* (see description of herbarium specimens bearing these names).

Var. *pungens* Schmpr. In alder forest near Łatythoła and Smorgonie.

Note: No specimen of this variety was found.

H. stramineum Dicks. [*Straminergon stramineum* (Dicks. ex Brid.) Hedenäs]. Rarely occurs in forest swamps and wet thickets; usually with sporophytes. Kuzłany, Kołpny, near Lake Wolejkowskie, at Wiszniew.

Herbarium specimens:

Hypnum stramineum (Dicks.), Kuzłany, in forest, 25 August 1883. – *Straminergon stramineum* (Dicks. ex Brid.) Hedenäs, WI B06378.

Hypnum stramineum (Dicks) c.F!, Wiszniew, in meadow, 26 June 1884. – *Straminergon stramineum* (Dicks. ex Brid.) Hedenäs, WI B06379(1).

Hypnum stramineum (Dicks) c.F!, Kołpny, in forest, 20 May 1884. – *Straminergon stramineum* (Dicks. ex Brid.) Hedenäs, WI B06379(2).

H. palustre L. [*Hygrohypnum luridum* (Hedw.) Jenn.]. Grows abundantly on boulders near Lake Narocz, on stones in the river and on the mill⁴⁹ at Kuzłany; Węclawinięta; with abundant sporophytes.

Herbarium specimens:

Hypnum palustre (L.), near Lake Narocz, on boulders, 24 June 1884. – *Hygrohypnum luridum* (Hedw.) Jenn., WI B06463.

Hypnum palustre (L.), Kuzłany, 15 September 1884. – *Hygrohypnum luridum* (Hedw.) Jenn., WI B06464.

Hypnum palustre (L.), Kuzłany, 29 August 1883. – *Hygrohypnum luridum* (Hedw.) Jenn., WI B06465.

Hypnum palustre (L.), Kuzłany, 15 September 1884. – *Hygrohypnum luridum* (Hedw.) Jenn., WI B06466.

⁴⁹ Probably refers to a water mill.

H. crista castrensis L. [*Ptilium crista-castrensis* (Hedw.) De Not.]. In coniferous forests on loamy soil. Common. Annopol, Kuzlany, Żuprany, Smorgonie, Jachimowszczyzna, Krewo, Gródek, Klewica, Zamość. Usually with sporophytes. Occurs in two forms: 1) stems erect, green in colour and 2) stems creeping on stones and old trunks of trees, brownish-yellow colour. Lacking sporophytes.

Herbarium specimens:

Hypnum crista castrensis (Linn.), Węclawinięta, in forest, 3 September 1882. – *Ptilium crista-castrensis* (Hedw.) De Not., WI B06509.

Hypnum crista castrensis (Linn.), Kuzlany, in forest, 27 September 1883. – *Ptilium crista-castrensis* (Hedw.) De Not., WI B06510.

Hypnum crista castrensis (Linn.), Kuzlany, Żuprany, in forest, on stone, 1 September 1883. – *Ptilium crista-castrensis* (Hedw.) De Not., WI B06511.

Hypnum crista castrensis (Linn.), Kuzlany, in forest, summer 1882. – *Ptilium crista-castrensis* (Hedw.) De Not., WI B06512.

Hypnum crista castrensis (Linn.), Porojskie, in forest, 22 April 1882. – *Ptilium crista-castrensis* (Hedw.) De Not., WI B06513.

Hypnum crista castrensis (Linn.), Kuzlany, near forest, on stone, 27 March 1883. – *Ptilium crista-castrensis* (Hedw.) De Not., WI B06514.

H. filicinum Milde [*Cratoneuron filicinum* (Hedw.) Spruce]. On peaty meadows and in thickets by rivers, by sources, quite common. Very rarely with sporophytes. Very variable in form and colour. Kuzlany, Gajdzie, Rusinowicze, Daniszew.

Herbarium specimens:

Hypnum filicinum (Schpr), Kuzlany, by the river, on stone, 10 September 1883. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06320.

Hypnum filicinum (Schpr), Kuzlany, by the river, on stone, 8 September 1884. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06321.

Hypnum filicinum (Schpr), Kuzlany, in peaty meadow, 19 August 1883. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06322.

Hypnum filicinum (Schpr), Kuzlany, by the river in alder forest, on stone, 7 April 1883. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06323.

Hypnum filicinum (Schpr) c.F!, Gajdzie, in alder forest, 13 May 1884. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06324.

Hypnum filicinum (Schpr.), Rusinowicze, by the river in alder forest, on stone, 10 September 1883. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06326.

Var. *gracilescens* Schmpr. At Kuzslany, on the mill and on alder trunks, also on stones by the river.

Herbarium specimen:

Hypnum filicinum (Schpr), var: *gracilescens* Kuzslany 15 September 1884. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06325.

Note: Six specimens were confirmed to be *Cratoneuron filicinum* (Hedw.) Spruce following revision of the specimens named *Amblistegium irriguum*, *Amblistegium fallax* and *Hypnum aduncum* (see descriptions of herbarium specimens bearing these names).

H. fallax Brid. [*Cratoneuron filicinum* (Hedw.) Spruce]. I collected the species only once on a bridge sprayed with water, near the mill at Kuzslany. Lacking sporophytes.

Note: We have not found the specimen named *Hypnum fallax* in the collection. It may be that K. Szafnagel meant the one named *Amblistegium fallax*:

√*Amblistegium fallax* (Schmpr), Kuzslany, on stone, 15 September 1884. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06319.

H. decipiens D. Ntr. [*Palustriella decipiens* (De Not.) Ochyra]. Very rare. At Kuzslany and Gajdzie, in mire, in small quantities amongst other mosses. In a meadow near Łatyhoła it forms green lawns beneath bushes, producing sporophytes in great profusion. In bushes by Lake Wołejkowskie, together with *Sphagnum teres*. The yellow-orange colour is characteristic of both species and they are similar in appearance to each other; therefore it was correctly assigned the specific epithet *decipiens*, for it ‘pretends’ to be a sphagnum (peatmoss)⁵⁰.

Note: We have not found the specimen which, following revision, was shown to be *Palustriella decipiens*. All specimens named by K. Szafnagel as *Hypnum decipiens* were redetermined as *Helodium blandowii*:

√*Hypnum decipiens* (Dntr.) c.F!, Łatyhoła, in meadow, 27 June 1884. – *Helodium blandowii* (F. Weber & D. Mohr) Warnst., WI B06374(1).

√*Hypnum decipiens* (Dntr.) c.F!, by Lake Wołejkowskie, in bushes, 20 September 1884. – *Helodium blandowii* (F. Weber & D. Mohr) Warnst., WI B06375.

H. uncinatum Hedw. [*Sanionia uncinata* (Hedw.) Loeske]. In shady, wet forests on stones and tree trunks, not rare. With abundant sporophytes. Very variable in form and colour. Kuzslany, Żuprany, forest near Łukawiec, Zamość, Iłska Forest, Smorgonie.

50 Revision of the specimens shows that plants fitting this description should be assigned to *Helodium blandowii*.

Herbarium specimens:

Hypnum uncinatum (H.), Kuzlany, on stone, 24 March 1885. – *Sanionia uncinata* (Hedw.) Loeske, WI B06441.

Hypnum uncinatum (H.), Łatyhoła Forest, in alder stand, 15 August 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06442.

Hypnum uncinatum (H.), Kuzlany, Tymowski Forest, on stone, 20 May 1884. – *Sanionia uncinata* (Hedw.) Loeske, WI B 06443

Hypnum uncinatum (H.), Ilska Forest, 6 June 1884. – *Sanionia uncinata* (Hedw.) Loeske, WI B06444.

Hypnum uncinatum (H.), Kuzlany, in forest, on stone, 1 August 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06445.

Hypnum uncinatum (H.), Węclawinięta, in forest, 3 August 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06446.

Hypnum uncinatum (H.), Gajdzie, in alder forest, on stone, 1882. – *Sanionia uncinata* (Hedw.) Loeske, WI B06447.

Hypnum uncinatum (H.), Żuprany, in swampy forest, 28 September 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06448.

Hypnum uncinatum (H.), Gajdzie, on stone, 9 April 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06449.

Hypnum uncinatum (H.), Kuzlany, on stone, summer 1882. – *Sanionia uncinata* (Hedw.) Loeske, WI B06450

Hypnum uncinatum (H.), Łatyhoła, in forest, 15 August 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06451(1).

Hypnum uncinatum (H.) Kuzlany, in forest, 13 April 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06451(2).

Hypnum uncinatum (H.), Kuzlany, in forest, on stone, 1882. – *Sanionia uncinata* (Hedw.) Loeske, WI B06452.

Hypnum uncinatum (H.), Trykole, in forest, 20 May 1882. – *Sanionia uncinata* (Hedw.) Loeske, WI B06453.

Note: Two specimens named by K. Szafnagel as *Hypnum somerfeltii* and *Hypnum arcuatum*, following revision, were identified as *Sanionia uncinata* (see description of herbarium specimens).

Var. *plumulosum* Schmpr. In a forest near Kuzlany, it grew on juniper bushes and in a forest near Smorgonie, on spruce twigs.

Note: We have not found the specimen named var. *plumulosum*, nor that collected in Smorgonie and Kuzlany growing on juniper bushes.

Var. *plumosum* Schmpr. In a forest near Kuzlany on boulders, in the localities of Wysoka and Gajdzie on stones beneath alder trees.

Note: The collection contains four specimens collected from stones at Kuzlany and two from Gajdzie; none were named var. *plumosum*. No specimen of *Sanionia uncinata* from the locality Wysoka was found.

H. fluitans L. [*Warnstorfia fluitans* (Hedw.) Loeske] – Distributed in swampy forests, ditches, sometimes in wet meadows. Quite often bearing sporophytes. Sporophyte seta varies greatly in size. Kuzlany, Żuprany, Gródek, island in Lake Narocz, Prudy, Wiszniew, Smorgonie, Zamość.

Herbarium specimens:

Hypnum fluitans (Linn), Kuzlany, 3 May 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06560.

Hypnum fluitans (Linn), Żuprany, in swampy forest, 12 September 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06403.

[√]*Hypnum fluitans* (Linn.), Żuprany, in swampy forest, 28 September 1883. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06519.

[√]*Hypnum fluitans* (Linn.), Żuprany, in swampy forest, 28 September 1883. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06559.

[√]*Hypnum fluitans* (Linn.) c.fl., Żuprany, in swampy forest, 28 September 1883. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06613.

[√]*Hypnum fluitans* (Linn.), Żuprany, in swampy forest, 6 May 1884 – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06562.

[√]*Hypnum fluitans* (Linn.), near Lebedziew, in pit, 24 September 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06612.

Note: Six specimens of *Hypnum revolvens* collected in Kołpny were, following revision, identified as *Warnstorfia fluitans* (see list of specimens bearing the name *Hypnum revolvens*).

Var. *falcatum* Schmpr. Annapol, in meadow named Strzynka within forest. Lacking sporophytes.

Herbarium specimens:

Hypnum fluitans (Linn.), var: *falcatum* (Schpr), Annapol, in meadow, 15 September 1883. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06561.

Var. *serratum* Lindb. I found it growing in a swampy area in Żuprany Forest, near Nazdraczun village, together with *Sphagnum laxifolium*⁵¹. Lacking sporophytes.

Herbarium specimens:

Hypnum fluitans (Linn.) var. *serratum* (Lindb) Cohn? cum *Sphagnum laxifolium*, Nazdraczuny, in swampy forest, 30 May 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06563.

Var. *terrestris* Milde. I collected at Żuprany, in dried-out mire, with many sporophytes.

Note: No specimen of this variety was found.

Var. *submersum* Schmpr. Kuzslany and Wiszniew, in forest mires. Producing sporophytes in great profusion.

Herbarium specimens:

Hypnum fluitans (Linn.) var. *submersum* (Schmpr), Wiszniew, in swampy forest, 26 June 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06558.

[√]*Hypnum fluitans* (Linn) var. *submersum* (Schmpr), Wojstomski Forest, 4 June 1884. – *Calliergon cordifolium* (Hedw.) Kindb., WI B06518.

H. exannulatum Gümb. [*Sarmentypnum exannulatum* (Schimp.) Hedenäs]. I collected impressive examples of this species in the pits near the brickyard, on wet meadow near Wilejka, near Prudy station, in the forest ditch near Łukawiec (Wilejka powiat). Lacking sporophytes.

Herbarium specimens:

Hypnum exannulatum (Gümb. Bryol. Eur.), Łukawiec, in forest, by road, 6 June 1884 – *Sarmentypnum exannulatum* (Schimp.) Hedenäs, WI B06335.

Hypnum exannulatum (Gümb. Bryol. Eur.), Wilejka powiat, 5 May 1884. – *Sarmentypnum exannulatum* (Schimp.) Hedenäs, WI B06615.

[√]*Hypnum exannulatum* (Gümb. Bryol. europ.), near Lebieziew, in pit, 24 September 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06616.

H. lycopodioides Schwaeger [*Drepanocladus lycopodioides* (Brid.) Warnst.]. In Zanorockie mires, near Gwozdowo, with sporophytes.

Herbarium specimen:

Hypnum lycopodioides (Schwaegr.) C.F!, near Gwozdowo, in Zanorockie mires, 25 June 1884. – *Drepanocladus lycopodioides* (Brid.) Warnst., WI B06454.

51 *Sphagnum cuspidatum* Ehrh. ex Hoffm.

Hypnum aduncum Schmpr. [*Drepanocladus aduncus* (Hedw.) Warnst.]. Common on wet meadows. Kuzlany, Annapol, Bonifaców, Soly, by Lake Narocz, Jachimowszczyzna, Zamość, Rusinowicze. Remarkably variable. For an example of this variation, I can refer to specimens of the species collected in Kuzlany from a peaty meadow, with unidirectionally falcate leaves. I placed them in a window room for some time and kept them wet; after two weeks the plants grew long sprouts arising from the previous ones – their leaves were shorter and wider, adpressed closely to the stem, not bent at all, and the plant was similar to *Brachythecium rivulare*. Always lacking sporophytes.

Herbarium specimens:

Hypnum aduncum (H.), Gajdzie, in pit, 11 June 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06332.

Hypnum aduncum (H.), by Lake Narocz, 26 June 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06333.

Hypnum aduncum (H), Kuzlany, in meadow, August 1883. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06571.

Hypnum aduncum (H), Rudziszki, in meadow, 15 May 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06572.

√*Hypnum aduncum* (H.), by Lake Wolejkowskie, 20 September 1884.– *Cratoneuron filicinum* (Hedw.) Spruce, WI B06589.

√*Hypnum aduncum* (H.) c.fl., Jachimowszczyzna, in peaty meadow, 15 July 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06588.

√*Hypnum aduncum* (H.), Gajdzie, in grassland, 13 May 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06590.

√*Hypnum aduncum* (H.), Gajdzie, in peaty meadow, 13 May 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06591.

√*Hypnum aduncum* (H.), by Lake Wolejkowskie, 20 September 1884. – *Brachythecium rivulare* Schimp., WIB06469.

√*Hypnum aduncum* (H.), by Lake Wolejkowskie, 20 September 1884.– *Cratoneuron filicinum* (Hedw.) Spruce, WI B06589.

Note: Following revision, specimens previously identified as *Hypnum exannulatum*, *H. fluitans*, *H. giganteum*, *H. sendtneri* and *Amblystegium riparium* (see descriptions of herbarium specimens for these species) were identified as *Drepanocladus aduncus*.

Var. *kneiffii* Shmpr. In pits near Prudy and in Kuzlany, on the island of the Lake Narockie. Always submerged in water.

Herbarium specimens:

Hypnum aduncum (Hedw) var: *Kneiffii*, Lebieziew, in pits, 24 September 1883. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06568.

Note: One specimen was named *Hypnum Kneiffii*:

Hypnum Kneiffii (Sch.), Węclawinięta, in meadow. 3 September 1883. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06334.

Var. *gracilescens* Schmpr. This variety grew near Gajdzie village, in the vicinity of Kuzlany,

Herbarium specimen:

[√]*Hypnum aduncum* (H.) var: *gracilescens* (Sch), Jachimowszczyzna, in meadow, 15 July 1884. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06587.

Var *inundatum* Schmpr. Gajdzie, in pits near brickyard.

Herbarium specimen:

Hypnum aduncum (H.) var: *inundatum* Schpr. Gajdzie, in pits, 11 June 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06569.

H. sendtneri Schmpr. [*Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst.]. Kuzlany, Łatyhola, Annopol, Gwozdowo, Lakes Wołejkowskie and Sierhiejewickie. Always on wet meadows. Sporophytes infrequent.

Herbarium specimens:

Hypnum sendtneri (Sch), Kuzlany, in meadow, 7 June 1884. – *Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst., WI B06149.

Hypnum sendtneri (Sch.), Kuzlany, meadow “Szeroka”, 31 March 1884. – *Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst., WI B06617.

Hypnum sendtneri (Sch.), near Gwozdowo, by Lake Narocz, in mire, 25 June 1884. – *Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst., WI B06543.

[√]*Hypnum sendtneri* (Sch.), Kuzlany, in meadow, 31 March 1884. – *Drepanocladus aduncus* (Hedw.) Warnst., WI B06556.

[√]*Hypnum sendtneri* (Sch), by Sierhiejewickie Lake, 20 May 1885. – *Scorpidium cossonii*. (Schimp.) Hedenäs, WI B06520.

Var. *vilsonii* Schmpr. In mires near Lakes Narocz and Wiszniewskie. Sporophytes present in both localities.

Herbarium specimen:

Hypnum sendtneri (Sch.) var.: B. Vilsoni c.F!, Wiszniew, in meadow, 26 June 1884. – *Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst., WI B06309.

Note: This species was also found mixed in a sheet of *Meesia triquetra*.

H. intermedium Lindb. [*Scorpidium cossonii* (Schimp.) Hedenäs]. In wet meadows. Kuzlany, Łopocie, Węclawinięta, Rusinowicze, mires near Lake Narocz. Rarely with sporophytes.

Herbarium specimens:

Hypnum intermedium (Lindb.), Węclawinięta, in meadow, 30 September 1883. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06521.

Hypnum intermedium (Lindb.), Kuzlany, in meadow, 7 April 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06522.

Hypnum intermedium (Lindb.) c.F!, Gajdzie, in meadow, 11 June 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06523(1).

Hypnum intermedium (Lindb.) c.F!, near Gwozdowo, near Lake Narocz, in meadow, 25 June 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06523(2).

Hypnum intermedium (Lindb.), Kołpny, in meadow, 20 May 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06524.

Hypnum intermedium (Lindb.), Węclawinięta, in meadow by forest, 30 September 1883. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06530.

Hypnum intermedium ? c.fl, Kuzlany, in meadow, 1 June 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06532.

Hypnum intermedium (Lindb.), Kuzlany, in meadow, 1 September 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06533.

Hypnum intermedium (Lindb.) c.F!, near Gwozdowo, by Lake Narocz, 25 June 1884. – *Scorpidium cossonii* (Schimp.) Hedenäs, WI B06535.

Note: Three specimens indicated by K. Szafnagel as *Drepanocladus aduncus*, following revision, were identified as *Scorpidium cossonii* (see description of herbarium specimens for this species).

H. vernicosum Lindb. [*Hamatocaulis vernicosus* (Hedw.) Hedenäs]. Gajdzie, Łatyhoła. By Lakes Wołejkowskie, Świrskie, Wiszniewskie and Sierhiejewickie, Jachimowszczyzna, Smorgonie, Annopol. All three species⁵² grew abundantly in peaty meadows where they formed the groundlayer. Sporophytes frequent but not abundant.

52 probably referring to *H. intermedium*, *H. vernicosus*, *H. revolvens*.

Herbarium specimens:

Hypnum vernicosum (Ldb.), by Lake Wolejkowskie, 20 September 1884. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06525.

Hypnum vernicosum (Ldb.), near Gwozdowo, by Lake Narocz, in mire, 24 June 1884. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06526.

Hypnum vernicosum (Ldb.) c.fl., near Gwozdowo, by Lake Narocz, in mire 25 June 1884. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06527.

Hypnum vernicosum (Ldb.), near Gwozdowo, by Lake Narocz, in mire 20 May 1885. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06528.

Hypnum vernicosum (Ldb.) c.fl., Wiszniew, in meadow, 21 June 1884. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06529.

Hypnum vernicosum (Ldb.), by Lake Wolejkowskie, 20 September 1884. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06531.

Hypnum vernicosum (Ldb.), by Lake Wolejkowskie, 20 September 1884. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06534.

Note: One specimen previously named *Hypnum revolvens*, following revision, was identified as *Hamatocaulis vernicosus* (see description of herbarium specimens named *Hypnum revolvens*). *Hamatocaulis vernicosus* was also recorded mixed with *Calliergon giganteum* (WI B06367).

H. revolvens Sw. [*Scorpidium revolvens* (Sw. ex anon.) Rubers]. A little rarer than the previous species, occurring infrequently in forest pools on sandy soil. I collected nice specimens with sporophytes at Kołpry and Łatyhoła, and also lacking sporophytes at Annopol and Zamość.

Herbarium specimens:

√*Hypnum revolvens* (Swartz), Kołpry, in forest, in swamp, 15 September 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06550.

√*Hypnum revolvens* (Swartz), Kołpry, in forest, in swamp, 15 September 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06551.

√*Hypnum revolvens* (Swartz), Kołpry, in forest, 15 September 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06552.

√*Hypnum revolvens* (Swartz), Kołpry, in forest, in swamp, 15 September 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06553.

√*Hypnum revolvens* (Swartz), Kołpry, in forest, in swamp, 15 September 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06554.

√*Hypnum revolvens* (Swartz), Kołpry, in forest, in swamp, 15 September 1884. – *Warnstorfia fluitans* (Hedw.) Loeske, WI B06557.

[√]*Hypnum revolvens* (Swartz), by the road, in Wojstomski Forest, 4 June 1884. – *Hamatocaulis vernicosus* (Mitt.) Hedenäs, WI B06391.

Note: No specimens available to confirm the species as *Scorpidium revolvens*.

H. incurvatum Schrad. [*Homomallium incurvatum* (Schrad. ex Brid.) Loeske]. I have only two specimens with sporophytes, collected on boulders in spruce forest near Kuzslany.

Herbarium specimens:

Hypnum incurvatum (Schrd.), Kuzslany, in forest, 20 May 1884. – *Homomallium incurvatum* (Schrad. ex Brid.) Loeske). WI B06606.

Hypnum incurvatum (Schrd.), Kuzslany, in forest, 14 July 1883. – *Homomallium incurvatum* (Schrad. ex Brid.) Loeske). WI B06621.

H. reptile Mich. [*Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt]. On stones and birch stumps in forests; rare. Often with sporophytes. Kuzslany, Żuprany, Polany, Kowalewicze. I have noticed in forests near Kuzslany and Annopol, on trunks of spruce, a variety of this species with the following features: fine, dark green-coloured, very glossy, leaves that are shorter and wider than usual and are finely denticulate, the stems, which are not bent at the tip, resemble fine forms of *H. cupressiforme*. With sporophytes.

Herbarium specimens:

Hypnum reptile (Mx.), Kuzslany, on stone, 22 April 1883. – *Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt, WI B06472.

Hypnum reptile (Mx.), Kuzslany, in forest, 19 August 1883. – *Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt., WI B06473(2).

Hypnum reptile (Mx.), Polany, in forest, 6 September 1884. – *Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt., WI B06473(1).

Hypnum reptile (Mx.), Kuzslany, on stone, 27 March 1883. – *Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt, WI B06474.

Hypnum reptile (Mx.), Żuprany, in forest, 01 September 1883. – *Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt, WI B06475.

[√]*Hypnum reptile* (Mx.), Gajdzie, in alder forest, on stone, 24 March 1883. – *Platygyrium repens* (Brid.) Schimp., WI B06546.

[√]*Hypnum reptile* (Mx.), Kuzslany, on stone, 27 March 1884. – *Platygyrium repens* (Brid.) Schimp., WI B06547.

H. fertile Sendt. [*Pseudohygrohypnum fertile* (Sendtn.) Jan Kućera]. Grows in Ilska Forest on fallen decaying trunks of deciduous trees. With abundant sporophytes.

Herbarium specimen:

[√]*Hypnum fertile* (Sendt.), Ilska Forest, on decaying trunk, 05 June 1884. – *Hypnum cupressiforme* Hedw. WI B06620.

Note: No specimens available to confirm species identity of *Pseudohygrohypnum fertile*.

H. cupressiforme L. [*Hypnum cupressiforme* Hedw.]. Common in alder stands, forests, gardens – on tree trunks, on stones etc., but they do not grow as abundantly as in the Kingdom⁵³). Quite often with sporophytes. Colour variable: from dark bronze to light yellow. Size and direction of leaves also various.

Herbarium specimens:

Hypnum cupressiforme (L.), Węclawinięta, in forest, 3 September 1883. – *Hypnum cupressiforme* Hedw., WI B06489.

Hypnum cupressiforme (L.), Kuzlany, in forest, on stone, 12 April 1883. – *Hypnum cupressiforme* Hedw., WI B06490.

Hypnum cupressiforme (L.), Gajdzie, in alder forest, 9 April 1883. – *Hypnum cupressiforme* Hedw., WI B06492.

Hypnum cupressiforme (L.), Żuprany, in forest, 27 September 1883. – *Hypnum cupressiforme* Hedw., WI B06495.

Hypnum cupressiforme (L.), Żuprany, in forest, 28 September 1883. – *Hypnum cupressiforme* Hedw., WI B06498.

Hypnum cupressiforme (L.), Żuprany, in forest, 28 March 1883. – *Hypnum cupressiforme* Hedw., WI B06627.

Hypnum cupressiforme (L.), Węclawinięta, in forest, 3 September 1883. – *Hypnum cupressiforme* Hedw., WI B06500.

Hypnum cupressiforme (L.), Kuzlany, by the river, on stump, 31 March 1883. – *Hypnum cupressiforme* Hedw., WI B06503.

Hypnum cupressiforme (L.), Gajdzie, in alder forest, 9 April 1883. – *Hypnum cupressiforme* Hedw., WI B06504.

[√]*Hypnum cupressiforme* (L.), Gajdzie, in alder forest, 9 April 1883. – *Pylaisia polyantha* (Hedw.) Schimp., WI B06499.

53 Probably what is meant is the former territory of the Polish Kingdom (MELC 2022), which also included areas close to the River Wisła (Vistula) investigated by Szafnagel.

However, I could not determine varieties, except for the following:

Var. *filiformis* Schmpr. [*Hypnum cupressiforme* Hedw. var. *filiforme* Brid.]. In Żuprany Forest. Lacking sporophytes.

Herbarium specimens:

Hypnum cupressiforme (L.), Porojskie, in forest, 22 April 1883. – *Hypnum cupressiforme* var. *filiforme* Brid., WI B06501.

Hypnum cupressiforme (L.) var: *filiforme*, in forest, 30 May 1884. – *Hypnum cupressiforme* var. *filiforme* Brid., WI B06502.

Note: The specimens named by Szafnagel as *Hypnum arcuatum* and *H. fertile*, following revision, were determined to be *Hypnum cupressiforme*,

H. arcuatum Lindb. (*Calliergonella lindbergii* (Mitt.) Hedenäs). On loamy soil, at edges of forests, by forest roads and ditches. Two forms are encountered: with ascending, light green stems, and yellowish-brown, creeping stems. Kuzlany, Giry, Daniszew, Jachimowszczyzna, Gródek, Annopol. Quite rare. Lacking sporophytes.

Herbarium specimens:

Hypnum arcuatum (Ldb.) c.fl., Kuzlany, 1 July 1884. – *Calliergonella lindbergii* (Mitt.) Hedenäs, WI B06440.

Hypnum arcuatum (Ldb.) c.fl., Żuprany, 15 September 1884. – *Calliergonella lindbergii* (Mitt.) Hedenäs, WI B06471.

Hypnum arcuatum (Ldb.), 18 September 1884. – *Calliergonella lindbergii* (Mitt.) Hedenäs, WI B06497.

Hypnum arcuatum (Lib.), Kuzlany, in forest, 18 September 1884. – *Calliergonella lindbergii* (Mitt.) Hedenäs, WI B06625.

Hypnum arcuatum (Lib.) c.fl., Żuprany, 15 September 1884. – *Hypnum cupressiforme* Hedw., WI B06622.

Hypnum arcuatum (Ldb.) cum *Hypnum cuspidatum* (L.), Kuzlany, in grasslands, together with *Hypnum cuspidatum*. – *Calliergonella lindbergii* (Mitt.) Hedenäs, WI B06508.

[√]*Hypnum arcuatum* (Ldb.), Kuzlany, in forest by swamp, 29 August 1883. – *Sanionia uncinata* (Hedw.) Loeske, WI B06586.

[√]*Hypnum arcuatum* (Ldb.), Żuprany, on pine trees, 15 September 1884. – *Hypnum cupressiforme* Hedw., WI B06620.

Var. *demissum* Schmpr. Annopol, in the meadow next to the manor.

Herbarium specimen:

Hypnum arcuatum (Ldb.) var: *demissum* (Sch.), Annopol, 8 September 1884. – *Calliergonella lindbergii* (Mitt.) Hedenäs, WI B06536.

H. pratense Br. Schmpr. [*Stereodon pratensis* (Brid.) Mitt]. Rarer than the previous taxon. On wet meadows. Jachimowszczyzna (with sporophytes), Łatyhoła, Annopol.

Herbarium specimens:

Hypnum pratense (Koch), Kuzlany in meadow, 1882. – *Stereodon pratensis* (Brid.) Mitt., WI B06539.

Hypnum pratense (Koch) c.fl, Jachimowszczyzna, on peaty meadow, 15 July 1884. – *Stereodon pratensis* (Brid.) Mitt., WI B06540.

Hypnum pratense (Koch), Łatyhoła, in alder forest, 21 August 1883. – *Stereodon pratensis* (Brid.) Mitt., WI B06494.

H. haldanianum Grev. [*Callicladium haldanianum* (Grev.) H.A. Crum]. Belongs to the more common species; grows on decaying trunks of trees in forests and in wet thickets. Produces sporophytes in very great profusion. Kuzlany, Żuprany, Polany, Gródek, Annopol, by the Sierhiejewickie Lake.

Herbarium specimens:

Hypnum haldanianum (Grev.), Żuprany, in swamp, 6 May 1884. – *Callicladium haldanianum* (Grev.) H.A. Crum, WI B06476.

Hypnum haldanianum (Grev.), Żuprany, in swamp, 28 September 1883. – *Callicladium haldanianum* (Grev.) H.A. Crum, WI B06477.

Hypnum haldanianum (Grev.), Polany, in garden, 6 September 1884. – *Callicladium haldanianum* (Grev.) H.A. Crum, WI B06478.

Hypnum haldanianum (Grev.), Polany, 6 September 1884. – *Callicladium haldanianum* (Grev.) H.A. Crum, WI B06479.

Hypnum haldanianum (Grev.), Żuprany, 21 April 1883. – *Callicladium haldanianum* (Grev.) H.A. Crum, WI B06493.

Hypnum nemorosum Koch.⁵⁴ [*Heterophyllum nemorosum* (W.D.J. Koch ex Brid.) Kindb.]. I collected a specimen of this very rare species in Polany on the decaying trunk of a birch, at the edge of a forest. With sporophytes.

Note: No specimen available.

54 It is not clear to which species it could now be assigned, especially as we did not find a herbarium specimen bearing this name.

***Brachythecium*⁵⁵ Br.i Sch. (Penzlik⁵⁶)**

Br. albicans Br. i Sch. [*Brachythecium albicans* (Hedw.) Schimp.] This is a less common species; growing on garden lawns. Kuzlany, Rudziszki. With sporophytes.

Herbarium specimen:

Brachythecium albicans (Schmpr) c.f.!. Rudziszki, in grassland, 15 October 1884. – *Brachythecium albicans* (Hedw.) Schimp., WI B06318.

Br. Mildeanum Schmpr. [*Brachythecium mildeanum* (Schimp.) Schimp.]. Grows in wet meadows and is greenish-yellow in colour, I could not conclude whether this species is polygamous⁵⁷, but its characteristic feature locally is that the tips of the leaves are usually transversely undulate. Kuzlany, Jachimowszczyzna, Rusinowicze, by Lake Sierhiejewickie. Rarely with sporophytes.

Herbarium specimens:

√*Brachythecium mildeanum* (Schmpr), Kuzlany, 3 April 1884. – *Brachythecium rivulare* Schimp., WI B06296(1).

√*Brachythecium mildeanum* (Schmpr.), Kuzlany, on peatland. – *Brachythecium rivulare* Schimp., WI B06296(2).

√*Brachythecium mildeanum* (Schmpr), Rusinowicze, on peatland, 10 September 1884. – *Brachythecium rivulare* Schimp., WI B06297(1).

√*Brachythecium mildeanum* (Schmpr), Jachimowszczyzna, on peatland, 15 July 1884. – *Brachythecium rivulare* Schimp., WI B06297(2).

Note: No specimens available to confirm the species *Brachythecium mildeanum*.

Br. salebrosum Schmpr. [*Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp.]. Common in forests, in thickets and in groves. Always with sporophytes. Kuzlany, Żuprany, Smorgonie, Anopol, Zamość.

Herbarium specimens:

Brachythecium salebrosum (Schmpr), in forest, on stone, 22 April 1883. – *Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp., WI B06361.

Brachythecium salebrosum var:....., Rusinowicze, (p. Miński), at birch trunk, 4 March 1884. – *Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp., WI B06362.

55 The species described below are now assigned to 3 genera: *Brachythecium* Schimp, *Brachytheciastrum* Ignatov & Huttunen and *Sciuro-hypnum* (Hampe) Hampe.

56 The Polish name for the genus provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

57 What is probably meant is that these mosses can be both monoecious and dioecious.

Brachythecium salebrosum (Schmpr), Węclawinięta, p. Oszm., in forest, 3 September 1883. – *Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp., WI B06404.

⁴*Brachythecium salebrosum* (Schmpr), Kuzlany, p. Oszmiański, 16 April 1884. – *Brachythecium rutabulum* (Hedw.) Schimp., WI B06302.

Var. *cylindricum* Schmpr. In Żuprany forests, on trunks and stones. With sporophytes.

Note: No specimen available.

Br. velutinum Br. et Sch. [*Brachytheciastrum velutinum* (Hedw.) Ignatov et Huttunen]. Widespread in forests and gardens, near the base of tree trunks. With abundant sporophytes. Kuzlany, Smorgonie, Gródek, Kowalewicze.

Herbarium specimens:

Brachythecium velutinum (Schmpr), Kuzlany, in forest, on stone, 22 April 1883. – *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen, WI B06399(1).

Brachythecium velutinum (Schmpr), Kuzlany, in forest, 1882. – *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen, WI B06399(2).

Brachythecium velutinum (Schmpr), Żuprany, in forest, near swamp, 28 September 1883. – *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen, WI B06400(1).

Brachythecium velutinum (Schmpr), Gajdzie, in forest, 23 September 1883. – *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen, WI B06400(2).

Br. reflexum Br. et Sch. [*Sciuro-hypnum reflexum* (Starke) Ignatov et Huttunen]. I collected the only specimen of this mountain species, but lacking sporophytes, from a boulder in Kuzlany Forest.

Herbarium specimen:

Brachythecium reflexum (W. et M.), Kuzlany, on stone, summer 1882. – *Sciuro-hypnum reflexum* (Starke) Ignatov & Huttunen, WI B06382.

Br. starckii Br. et Sch. [*Sciuro-hypnum starckii* (Brid.) Ignatov et Huttunen].

Herbarium specimens:

Brachythecium starckii (Schmpr), Węclawinięta, 3 September 1883. – *Sciuro-hypnum oedipodium* (Mitt.) Ignatov & Huttunen, WI B06351(1).

Brachythecium starckii (Schmpr), Węclawinięta, 13 September 1883. – *Sciuro-hypnum oedipodium* (Mitt.) Ignatov & Huttunen, WI B06351(2).

Brachythecium starckii (Schmpr), Żuprany, in a forest, 28 September 1883 – *Sciuro-hypnum oedipodium* (Mitt.) Ignatov & Huttunen, WI B06363(1).

Brachythecium starckii (Schmpr), Annapol, in a forest, 1883. – *Sciuro-hypnum oedipodium* (Mitt.) Ignatov & Huttunen, WI B06363(2).

Var. *robustum* Schmpr. This variety of the species, quite often, like the next, occurs in spruce forests. With abundant sporophytes. Kuzslany, Smorgonie, Annapol.

Note: No specimens of this species represented this variety.

Br. rutabulum Br. et Sch. [*Brachythecium rutabulum* (Hedw.) Schimp.]. Common in spruce forests, always with sporophytes. Żuprany, Kuzslany, Smorgonie, Ilska Forest, Annapol.

Herbarium specimens:

Brachythecium rutabulum (Schmpr), Annapol, 25 September 1883. – *Brachythecium rutabulum* (Hedw.) Schimp., WI B06397(1).

Brachythecium rutabulum (Schmpr), Wojstomski, forest, 3 September 1883. – *Brachythecium rutabulum* (Hedw.) Schimp., WI B06397(2).

Brachythecium rutabulum (Schmpr), Ilska Forest, 05 June 1884. – *Brachythecium rutabulum* (Hedw.) Schimp., WI B06406(1).

Brachythecium rutabulum (Schmpr), Żuprany, in forest, near swamp, 18 August 1883. – *Brachythecium rutabulum* (Hedw.) Schimp., WI B06406(2).

Note: One specimen named *Brachythecium salebrosum* by K. Szafnagel was redetermined as *Brachythecium rutabulum* (see description of herbarium specimens).

Var. *flavescens* Br. et Sch. In Żuprany Forest, with sporophytes.

Note: No specimen of *Brachythecium rutabulum* represented this variety. The specimen from Żuprany also lacked a varietal name.

Br. rivulare Br. et Sch. [*Brachythecium rivulare* Schimp.]. Occurs in Kuzslany, Gajdzie on trunks of alder by the river and at its sources, by Lake Narocz, on stones; with sporophytes.

Brachythecium (Schmpr), by Lake Narocz, on stone, 23 June 1884. – *Brachythecium rivulare* Schimp., WI B06405.

Brachythecium (Schmpr), Kuzslany, on alder trunk, 7 April 1883. – *Brachythecium rivulare* Schimp., WI B06405.

¹*Brachythecium rivulare* (Schmpr), Birżuny, (p. Oszmiański), in clay pit, 24 September 1883. – *Leptodictyum riparium* (Hedw.) Warnst, WI B06395.

Note: The only specimen in the collection named *Brachythecium rivulare* by Szafnagel was revised. In addition to the specimen which only bore the genus name, specimens named *Brachythecium mildeanum*, *Hypnum cordifolium* and *Hypnum aduncum*, following revision, were identified as *Brachythecium rivulare* (see description of so-named herbarium specimens).

Br. campestre Br. et Sch. [*Brachythecium campestre* (Müll. Hal.) Schimp.]. Widespread in thickets, on grasslands and in forests on trunks of trees and bushes; always with sporophytes. Kuzslany, Smorgonie, Annopol, Usza, Pakoszów.

Herbarium specimens:

Brachythecium campestre (Schmpr), in forest., 3 September 1883. – *Brachythecium campestre* (Müll. Hal.) Schimp., WI B06292.

Brachythecium campestre (Schmpr), near the Usza, in bushes, 8 June 1884. – *Brachythecium campestre* (Müll. Hal.) Schimp., WIB06294.

Brachythecium campestre (Schmpr), Pakoszów (p. Oszmiański), at birch trunk, 30 March 1884. – *Brachythecium campestre* (Müll. Hal.) Schimp., WI B06295.

Br. populeum Br. et Sch. [*Sciuro-hypnum populeum* (Hedw.) Ignatov et Huttunen]. On boulders in forests, in grasslands and pastures; always with sporophytes. Kuzslany, Polany, Mysa.

Herbarium specimens:

Brachythecium populeum (Schmpr), Kuzslany, on stone, 2 April 1884. – *Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen, WI B06383.

Brachythecium populeum (Schmpr), Polany, Oszm. pow., in forest on stone, 6 September 1884. – *Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen, WI B06384.

Brachythecium populeum (Schmpr), Kuzslany, on stone, 12 March 1884. – *Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen, WI B06385.

Br. plumosum Br. et Sch. [*Sciuro-hypnum plumosum* (Hedw.) Ignatov et Huttunen]. I collected the only specimen of this species, but lacking sporophytes, from a wooden bridge at Kuzslany; having doubts, I sent it to Professor Chałubiński⁵⁸ who replied to me: It would, however, appear that *Br. plumosum* lacks sporophytes and is therefore difficult to identify.

Note: However, we were not able to confirm the identity of this species even following re-examination of the specimen:

58 See comment 5.

Brachythecium plumosum (Schmpr), Kuzlany, on bridge, 03 April 1884. – *Brachythecium salebrosum* (Hoffm. ex F.Weber & D. Mohr) Schimp., WI B06293.

***Camptothecium*⁵⁹ Schmpr. (Blyszcze⁶⁰)**

Cam. nitens Schmpr. [*Tomentypnum nitens* (Hedw.) Loeske]. Distributed on peaty grasslands; rarely with sporophytes. Kuzlany, Węclawinięta, Smorgonie, Jachimowszczyzna, Rusinowicze, Gwozdowo, Annopol.

Herbarium specimens:

Camptothecium nitens (Schmpr) c.fl., Jachimowszczyzna, on peatland, 15 July 1884. – *Tomentypnum nitens* (Hedw.) Loeske, WI B06199.

Camptothecium nitens (Schmpr), Kuzlany, on peatland, 7 April 1883. – *Tomentypnum nitens* (Hedw.) Loeske, WI B06355.

***Amblystegium*⁶¹ Schmpr (Tępik⁶²)**

Amb. riparium Br. et Sch. (*Leptodictyum riparium* (Hedw.) Warnst.). In floating and standing waters, sources, on dams etc: always with sporophytes. Kuzlany, Wilno, Żuprany, Annopol, Rusinowicze.

Herbarium specimens:

Amblystegium riparium (Schmpr), Wilno, 28 August 1884. – *Leptodictyum riparium* (Hedw.) Warnst., WI B06315.

Amblystegium riparium (Schmpr), Rusinowicze, 10 September 1883. – *Leptodictyum riparium* (Hedw.) Warnst., WI B06327(1).

Amblystegium? *riparium* (Schmpr), Annopol, 8 September 1884. – *Leptodictyum riparium* (Hedw.) Warnst., WI B06327(2).

[√]*Amblystegium riparium* (Schmpr), Wilno, in the botanical garden, 10 June 1884. – *Amblystegium serpens* (Hedw.) Schimp., WI B06424(2).

[√]*Amblystegium riparium* (Schmpr). Kuzlany. 1882. – *Campylophyllopsis sommerfeltii* (Myrin) Ochyra, WI B06424(1).

[√]*Amblystegium riparium* (Schmpr.), Wilno, in the botanical garden, 10 June 1884. – *Calliergonella cuspidata* (Hedw.) Loeske, WI B06424(3).

59 The only available specimen is now assigned to the genus *Tomentypnum* Loeske.

60 The Polish name for the genus, provided by Szafnagel, is still used to name the genus *Tomentypnum* (Ochyra *et al.* 2003).

61 The species listed below, are now assigned to five genera: *Amblystegium* Schimp., *Hygroamblystegium* Loeske *Leptodictyum* (Schimp.) Warnst., *Pseudoamblystegium* (Vanderp.) Hedenäs and *Pseudocampylium* (Vanderp.) Hedenäs.

62 The Polish name for the genus *Amblystegium*, provided by Szafnagel, is now no longer used.

√*Amblystegium riparium* cum *ambli serpens*, Wilno, 10 August 1884. – *Amblystegium serpens* (Hedw.) Schimp., WI B06419.

√*Amblystegium riparium* (L), by Lake Serhiejewickie, 20 May 1885. – *Hygroamblystegium humile* (P. Beauv.) Vanderp., Goffinet & Hedenäs, WI B06624.

Var. *longifolium* Schmpr. A very characteristic variety – forming long, floating, yellowish-brown braids attached to stones, very glossy; leaves are similar in shape to those of *Hypnum fluitans*, always with sporophytes; in fast-flowing rivulets or in pits of water. Kuzlany, Rudziszki, Łatyhoła, Prudy.

Herbarium specimens:

Amblystegium riparium var: *Longifolium*, Kuzlany, on stone, 28 June 1884. – *Leptodictyum riparium* (Hedw.) Warnst., WI B06341.

Amblystegium riparium var. *longifolium* (Schmpr), Kuzlany, on stone, 28 June 1884. – *Leptodictyum riparium* (Hedw.) Warnst., WI B06371.

Amblystegium riparium var: *longifolium*, 25 September 1883. – *Leptodictyum riparium* (Hedw.) Warnst., WI B06470.

Amblystegium irriguum Schmpr. [*Hygroamblystegium tenax* (Hedw.) Jenn.]. On stones in rivers, in shady sites. Kuzlany, Gajdzie, Wilno, Daniszew; rarely with sporophytes.

Note: No specimens available to confirm the species. All specimens named *Amblystegium irriguum*, following revision, were assigned to other species:

√*Amblystegium irriguum* (Schmpr), Gajdzie, in alder stand, 9 April 1883. – *Cratoneuron filicinum* (Hedw.) Spruce, WI B06311(1).

√*Amblystegium irriguum* (Schmpr), Kuzlany, 19 August 1883. – *Cratoneuron filicinum* (Hedw.) Spruce, B06311(2).

√*Amblystegium irriguum* (Schmpr), Gajdzie, pow. Oszm, on stone, 28 May 1884. – *Amblystegium serpens* (Hedw.) Schimp., WI B06310.

Ambl. fluviatile Schmpr. [*Hygroamblystegium fluviatile* (Hedw.) Loeske]. Occurs in the same places as previous species. Kuzlany, Daniszew. With sporophytes.

Herbarium specimens:

Amblystegium fluviatile (Schmpr), Kuzlany, on stone, 6 September 1884. – *Hygroamblystegium fluviatile* (Hedw.) Loeske, WI B06417

Amblystegium fluviatile c.fl., Daniszew, on the bank of the river Wilja, 13 June 1884.– *Hygroamblystegium fluviatile* (Hedw.) Loeske, WI B06418.

Ambl. radicale Br. et Schmpr. (*Pseudocampylium radicale* (P. Beauv.) Vanderp.). Widespread in wet thickets; with abundant sporophytes. Stymonie, Daniszew, Gajdzie, Łukawiec, Annopol, by Lakes Bonifacowskie and Sierhiejewickie.

Herbarium specimens:

√*Amblystegium?* *radicale* forma *normalis* (Schmpr), Daniszew, on the bank of the river Wilja, 23 June 1884. – *Hygroamblystegium varium* (Hedw.) Mönk., WI B06422.

√*Amblystegium radicale* (Pal. Beauv.), by Lake Sierhiejewickie, 25 May 1885. – *Hygroamblystegium varium* (Hedw.) Mönk., WI B06423.

√*Amblystegium radicale* (Pal. Beauv.), by Lake Sierhiejewickie, 20 May 1885. – *Hygroamblystegium varium* (Hedw.) Mönk., WI B06427.

√*Amblystegium radicale* (Pal. Beauv.), Annopol, 25 May 1885. – *Hygroamblystegium tenax* (Hedw.) Jenn., WI B06420.

Note: no specimen available to confirm the species *Pseudocampylium radicale*.

Ambl. serpens Br. et Schmpr. [*Amblystegium serpens* (Hedw.) Schimp.]. Always on tree trunks in shady sites, however, rare in forests; with abundant sporophytes.

Herbarium specimens:

Amblystegium serpens (Schmpr), Kuzlany, in garden, 12 April 1883. – *Amblystegium serpens* (Hedw.) Schimp., WI B06416.

Amblystegium serpens (Schmpr), Kuzlany, 31 March 1883. – *Amblystegium serpens* (Hedw.) Schimp., WI B06426.

Note: The specimens named *Amblystegium irriguum* (2), and *A. riparium* (2), following revision, were identified as *Amblystegium serpens* (see the list of herbarium specimens).

Var. *tenue* Schmpr. [*Amblystegium serpens* (Hedw.) Schimp.]. On decaying tree trunk in spruce forests, Wiszniew. With sporophytes.

Note: No specimen available.

Var. *squarrosum* Schmpr. [*Amblystegium serpens* (Hedw.) Schimp.]. Wilno, Bekieszowa Hill.

Herbarium specimens:

Amblystegium serpens (Schmpr) var: *squarrosum*, Węclawinięta (pow. Oszmiański), in forest, 3 September 1883. – *Amblystegium serpens* (Hedw.) Schimp., WI B06425.

Ambl. subtile Br. et Schmpr. [*Pseudoamblystegium subtile* (Hedw.) Vanderp.]. In Kuzlany and Żuprany Forests, on tree trunks in wet sites, especially on aspens, in forest near Annapol, which is called, the Forest of limes.

Herbarium specimens:

Amblystegium subtile (Schmpr), Żuprany, in forest, 28 September 1883. – *Pseudoamblystegium subtile* (Hedw.) Vanderp., WI B06372.

Amblystegium (Schmpr), Kuzlany, Tymowski Forest, 20 May 1884. – *Pseudoamblystegium subtile* (Hedw.) Vanderp., WI B06373.

Not identified specimen, Kowalewicze, August 1885. – *Pseudoamblystegium subtile* (Hedw.) Vanderp., WI B06308(2).

***Plagiothecium*⁶³ Schmpr (Płagosz⁶⁴)**

Pl. silvaticum Br. et Schmpr. [*Plagiothecium nemorale* (Mitt.) A. Jaeger]. Very rare; I noticed it only in alder forests at Kuzlany and Gajdzie, and on stones in Kuzlany Forest; with sporophytes.

Herbarium specimens:

Hypnum sylvaticum (Schmpr), Kuzlany, in alder forest, 7 April 1883. – *Plagiothecium nemorale* (Mitt.) A. Jaeger, WI B06462(1).

Hypnum sylvaticum (Schmpr), Kuzlany, in alder forest, 15 October 1884. – *Plagiothecium nemorale* (Mitt.) A. Jaeger, WI B06462(2).

Hypnum sylvaticum (Schmpr), Kuzlany, on stone, 13 April 1883. – *Plagiothecium nemorale* (Mitt.) A. Jaeger, WI B06462(3).

Plagiothecium sylvaticum (Schmpr) var: *curvifolium*, Gajdzie, in alder forest, 13 May 1884. – *Plagiothecium nemorale* (Mitt.) A. Jaeger. WI B06585.

Pl. roseanum Br. et Sch. [*Plagiothecium cavifolium* (Brid.) Z. Iwats.]. Kuzlany, by the river under alder trees; lacking sporophytes.

Note: we found no specimens named *Plagiothecium roeseanum*. Meanwhile, three specimens named *Plagiothecium denticulatum*, following revision, were determined to be *Plagiothecium cavifolium* (see list of *Plagiothecium denticulatum* herbarium specimens).

Pl. denticulatum Br. et Sch. [*Plagiothecium denticulatum* (Hedw.) Schimp.]. Often occurs in forests, in wet sites; always with sporophytes. Kuzlany, Żuprany, Smorgonie, Annapol, Łatyhoła, especially in Iłska Forest with abundant sporophytes.

63 The species listed below are now assigned to the genera: *Plagiothecium* Bruch & Schimp. and *Herzogiella* Broth.

64 The Polish name for the genus *Plagiothecium*, provided by Szafnagel, is now no longer used.

Herbarium specimens:

√*Plagiothecium denticulatum* (Schmpr), Węclawinięta, in forest, 3 September 1883. – *Plagiothecium cavifolium* (Brid.) Z. Iwats, WI B06507(1).

√*Plagiothecium denticulatum* (Schmpr), Ilska Forest, 5 June 1884. – *Plagiothecium cavifolium* (Brid.) Z. Iwats., WI B06507(2).

√*Plagiothecium denticulatum* (Schmpr), Daniszew, on the banks of the river Wilja, 25 June 1884. – *Plagiothecium cavifolium* (Brid.) Z. Iwats., WI B06507(3).

√*Plagiothecium denticulatum* (Schmpr), Ilska Forest, 5 June 1884. – *Herzogiella seligeri* (Brid.) Z. Iwats., WI B06602(1).

√*Plagiothecium denticulatum* (Schmpr), Kuzlany, in Tymowski Forest, 7 July 1884. – *Herzogiella seligeri* (Brid.) Z. Iwats, WI B06602(2).

Note: No specimens available to confirm identity of *Plagiothecium denticulatum*.

Pl. silesiacum Br. et Sch. [*Herzogiella seligeri* (Brid.) Z. Iwats.]. On decaying trunks in forests; rare. Kuzlany, Smorgonie, Annopol.

Herbarium specimen:

Plagiothecium silesiacum (Schmpr), Kuzlany, in the forest, 12 April 1883. – *Herzogiella seligeri* (Brid.) Z. Iwats, WI B06600.

Note: Identity of *Herzogiella seligeri* was also ascertained while revising *Plagiothecium denticulatum* (see list of herbarium specimens for the species).

***Eurhynchium*⁶⁵ Schmpr. (Ostrowiek⁶⁶)**

Eurhynchium striatum Br. et Sch. [*Eurhynchium striatum* (Hedw.) Schimp.]. In spruce and mixed forests, in shady sites; quite often present; quite rarely with sporophytes. Kuzlany, Żuprany, Smorgonie, Ilska Forest, Annopol.

Herbarium specimen:

√*Eurhynchium striatum*, Smorgonie, in forest, 21 August 1883. – *Eurhynchium angustirete* (Broth.) T.J. Kop. WI B06328.

Note: No specime available to confirm identity of *Eurhynchium striatum*.

Eurh. strigosum Schmpr. [*Eurhynchiastrum pulchellum* (Hedw.) Ignatov et Huttunen]. In forests, like previous species, however, found on lower and wetter sites, on trunks,

65 The species listed below are now assigned to 5 genera: *Cirriphyllum* Grout., *Euhynchium* Schimp., *Eurhynchiastrum* Ignatov & Huttunen, *Kindbergia* Ochyra and *Rhynchostegium* Bruch & Schimp.

66 It is now the name of the genus *Eurhynchiastrum* (Ochyra *et al.* 2003).

stones and on the ground; usually with sporophytes. Kuzlany, Smorgonie, Ilska Forest, Gródek, Annapol.

Herbarium specimen:

Eurynchium strigosum (Schmpr), Węslawinięta, in forest, 3 September 1883. – *Eurhynchiastrum pulchellum* (Hedw.) Ignatov & Huttunen. WI B06306.

Note: The specimens named by Szafnagel *Eurhynchium confertum* (see below), following revisions, were determined as *Eurhynchiastrum pulchellum*.

Eurh. confertum Br. et Sch. [*Rhynchostegium confertum* (Dicks.) Schimp.]. Very rare. On stones or on soil in forests. Smorgonie, Kuzlany, Polany. With sporophytes.

Herbarium specimens:

[√]*Eurynchium confertum* (Schmpr), Kuzlany, in forest, on stone, 1882. – *Eurhynchiastrum pulchellum* (Hedw.) Ignatov & Huttunen, WI B06305(1).

[√]*Eurynchium confertum* (Schmpr), Polany, in forest, 1 October 1884. – *Eurhynchiastrum pulchellum* (Hedw.) Ignatov & Huttunen, WI B06305(2).

Eurh. rusciforme Br. et Sch. [*Rhynchostegium riparioides* (Hedw.) Cardot]. The only locality I know is in Kuzlany; on stones in the river; lacking sporophytes.

Herbarium specimens:

Eurynchium rusciforme var: *complanata* (Schmpr), Kuzlany, in the river, on stone, 15 September 1884. – *Rhynchostegium riparioides* (Hedw.) Cardot, WI B06380.

Eurynchium rusciforme var: *complanatum* (Schmpr), Kuzlany, in the river, on stone. 15 September 1884 – *Rhynchostegium riparioides* (Hedw.) Cardot, WI B06381.

Eurh. piliferum Br. et Sch. [*Cirriphyllum piliferum* (Hedw.) Grout]. In spruce forests; rare. Smorgonie, Gródek. With sporophytes.

Herbarium specimen:

Eurynchium piliferum (Schmpr), Węslawinięta, in forest, 21 September 1883. – *Cirriphyllum piliferum* (Hedw.) Grout, WI B06331.

Eurh. praelongum Br. et Sch. [*Kindbergia praelonga* (Hedw.) Ochyra]. In gardens, on the ground, under deciduous trees; quite rare; rarely with sporophytes. Kuzlany, Annapol.

Herbarium specimens:

[√]*Eurhynchium praelongum* (Schmpr) cum *Amblystegium serpens*, Kuzlany, August 1883. – *Oxyrrhynchium hians* (Hedw.) Loeske, WI B06401.

[√]*Eurhynchium praelongum* (Schmpr) cum *Amblystegium serpens*, Annopol, 8 September 1883. – *Oxyrrhynchium hians* (Hedw.) Loeske, WI B06303.

Note: No specimen available to confirm identity of *Kindbergia praelonga*.

***Homalothecium*⁶⁷ Schmpr. (Lśnik⁶⁸)**

Hom. sericeum Br. et Sch. [*Homalothecium sericeum* (Hedw.) Schimp.]. Rather rare, occurs on ruins or on tree trunks; always lacking sporophytes. Krewo, on castle ruins; Zalesie, on chapel ruins, Wilno, on Zamkowa Hill; Annopol, Rusinowicze.

Herbarium specimens:

Homalothecium sericeum (Schmpr), Krewo, on castle ruins, August 1882. – *Homalothecium sericeum* (Hedw.) Schimp., WI B06386 (1).

Homalothecium sericeum (Schmpr), Zalesie, on chapel ruins, 17 July 1883. – *Homalothecium sericeum* (Hedw.) Schimp., WI B06386 (2).

Homalothecium sericeum (Schmpr), Rusinowicze, 10 July 1884. – *Homalothecium sericeum* (Hedw.) Schimp., WI B06386 (3).

Homalothecium sericeum (Schmpr), Annopol, 8 September 1883. – *Homalothecium sericeum* (Hedw.) Schimp., WI B06389.

***Isothecium* Brid. (Tłuszczak⁶⁹)**

Is. myurum Brid. [*Isothecium alopecuroides* (Lam. ex Dubois) Isov.]. Very rare. I have only two specimens of this species, both lacking sporophytes, from Żuprany forests. A remarkable fact about the above two species⁷⁰ is that they are almost common in the Kingdom⁷¹, and even in Białowieża Forest; here, however, they are rare and lack sporophytes.

Herbarium specimens:

Isothecium myurum (Schmpr.), Kuszlan, in forest, on stone, 19 August, 1883. – *Isothecium alopecuroides* (Lam. ex Dubois) Isov., WI B06353(1).

Isothecium myurum (Schmpr.), Żuprany, in forest, 29 September 1882. – *Isothecium alopecuroides* (Lam. ex Dubois) Isov., WI B06353(2).

67 *Homalothecium* Shimp.

68 The Polish name for the genus *Homalothecium*, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

69 The Polish name for the genus *Isothecium*, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

70 Perhaps *Homalothecium sericeum* and *Isothecium alopecuroides*.

71 See comment 53.

***Platygyrium* Br. et Sch. (Upień)⁷²**

Pl. repens Br. et Sch. [*Platygyrium repens* (Brid.) Schimp.]. Not rare on trunks of birch trees. On stone, recorded in a forest near Żuprany.

Herbarium specimens:

Platygyrium repens (Schmpr), Kuzlany, on stump, 15 October 1884. – *Platygyrium repens* (Brid.) Schimp., WI B06549(1).

Platygyrium repens (Schmpr), Annopol, in forest 15 September 1883. – *Platygyrium repens* (Brid.) Schimp., WI B06549(2).

Platygyrium repens (Schmpr), Węclawinięta, in forest, 1883. – *Platygyrium repens* (Brid.) Schimp., WI B06549(3).

Note: Two specimens previously named *Hypnum reptile*, following revision, were determined to be *Platygyrium repens* (Brid.) Schimp.

***Homalia* Brid. (Szklistka)⁷³**

H. trichomanoides Br. et Sch. [*Homalia trichomanoides* (Hedw.) Brid.]. Often occurs in mixed forests on trunks of oaks and on boulders. Kuzlany, Żuprany, Węclawinięta, Iłska Forest. Sporophytes not rare.

Herbarium specimens:

Homalia trichomanoides (Schmpr), Żuprany, in forest, 15 September 1884. – *Homalia trichomanoides* (Hedw.) Brid., WI B06496(1).

Homalia trichomanoides (Schmpr), Iłska Forest, 5 June 1884. – *Homalia trichomanoides* (Hedw.) Brid., WI B06496(2).

Homalia trichomanoides (Schreb), Kowalewicz, 15 August 1885. – *Homalia trichomanoides* (Hedw.) Brid., WI B06599.

***Pylaisia* Schimp. (Pylaisia)⁷⁴**

Pylaisia polyantha Sch. [*Pylaisia polyantha* (Hedw.) Schimp.]. Widespread in gardens, forests etc. Always with abundant sporophytes.

Herbarium specimens:

Pylaisia polyantha (Schmpr), Kuzlany, in garden, 15 October 1883. – *Pylaisia polyantha* (Hedw.) Schimp., WI B06480.

72 *Platygyrium* Bruch et Schimp. (Hodgets *et al.* 2020). The Polish name for the genus *Platygyrium*, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

73 The Polish name for the genus *Homalia*, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

74 Szafnagel suggested a Polish name for the genus *Pylaisia* based on the Latin name. Recently this approach is no longer accepted (Ochyra *et al.* 2003).

Pylaisia polyantha (Schmpr), Kuzlany, in forest, 19 April 1883. – *Pylaisia polyantha* (Hedw.) Schimp., WI B06481(1).

Pylaisia polyantha (Schmpr), Żuprany, in forest, 18 August 1883.– *Pylaisia polyantha* (Hedw.) Schimp., WI B06481(2).

Note: One specimen determined by Szafnagel as *Hypnum cupressiforme*, following revision, was identified as *Pylaisia polyantha* (see description of herbarium specimens named *H. cupressiforme*).

***Climacium* W et M. (Drabik Jundz.)⁷⁵**

C. dendroides W. et M. [*Climacium dendroides* (Hedw.) F. Weber & D. Mohr]. Widely distributed in grasslands, in wet forests, alder forests etc. Rarely with sporophytes. Kuzlany, Żuprany, Smorgonie, Annopol, Zamość, Jachimowszczyzna etc. In swampy forests, it forms very dense and high turfs.

Herbarium specimens:

Climacium dendroides (Schmpr), Annopol, on peatland, 23 September 1883. – *Climacium dendroides* (Hedw.) F. Weber & D. Mohr, WI B06574(1).

Climacium dendroides (Schmpr), Kuzlany, on peatland, 7 April 1883. – *Climacium dendroides* (Hedw.) F. Weber & D. Mohr, WI B06574(2).

Climacium dendroides c.fl., Żuprany, in swampy forest, 2 September 1883. – *Climacium dendroides* (Hedw.) F. Weber & D. Mohr, WI B06575.

***Leucodon* Schwaegr. (Białoząb⁷⁶ Jundz.)**

Leucodon sciuroides Schwaegr. [*Leucodon sciuroides* (Hedw.) Schwägr.]. On trunks of deciduous trees: limes, oaks, willows. Quite often present, it is not, however, ubiquitous, e.g. I have not seen it at all in the environs of Kuzlany. In Annopol in garden and in forest; on willows near Prudy, in Iłska Forest; always lacking sporophytes.

Herbarium specimens:

Leucodon sciuroides (Schmpr), Iłska Forest, 5 June 1884. – *Leucodon sciuroides* (Hedw.) Schwägr., WI B06430.

Leucodon sciuroides (Schmpr), Prudy, 24 September 1883. – *Leucodon sciuroides* (Hedw.) Schwägr., WI B06431.

75 *Climacium* (Hedw.) Weber et D. Mohr (Hodgets *et al.* 2020). The Polish name of the genus, suggested by J. Jundziłł (1830), is currently still used (Ochyra *et al.*, 2003).

76 The Polish name of the genus, suggested by J. Jundziłł (1830), is currently still used (Ochyra *et al.*, 2003).

Neckera Hedw. (*Nekera*⁷⁷ Jundz.)

N. pennata Hedw. [*Neckera pennata* Hedw.]. Infrequently occurs in mixed forests, on oaks and aspens, usually forming small flake-like colonies. Kuzlany, Żuprany, Annapol; in Ilska Forest it grows extremely luxuriantly, climbing high on the trees and hanging down in huge garlands⁷⁸. Always with sporophytes. It is the only species of the genus *Neckera* found in the area.

Herbarium specimens:

Neckera pennata (Schmpr), Ilska Forest, 5 June 1884. – *Neckera pennata* Hedw., WI B06593(1).

Neckera pennata (Schmpr), Porojskie, in forest, 24 April 1883. – *Neckera pennata* Hedw., WI B06593(2).

*Pterigynantrum*⁷⁹ Hedw. (*Matowik*⁸⁰)

Pt. filiforme Hedw. [*Pterigynandrum filiforme* Hedw.]. I found it only in two localities: In Kuzlany, on stone in grassland, and in Myssa, on stone in garden; lacking sporophytes.

Herbarium specimens:

Pterigynandrum filiforme (Schmpr), Mysa, Oszm. powiat, in garden, on stone, 25 April 1884. – *Pterigynandrum filiforme* Hedw., WI B06537.

Pterigynandrum filiforme (Schmpr), Kuzlany, in grassland on stone, 19 August 1883 – *Pterigynandrum filiforme* Hedw., WI B06538.

*Thuidium*⁸¹ Schimp. (*Tujnik*⁸²)

Th. tamariscinum Br. et Sch. [*Thuidium tamariscinum* (Hedw.) Schimp.]. It occurs less often than the following species in wet, shady forests. Kuzlany, Sierhiejewicze, Annapol, Rusinowicze; I collected it in a garden on the trunk of a lime tree, bearing numerous sporophytes.

Herbarium specimens:

Thuidium tamariscinum (Schmpr), Kuzlany, Oszm. powiat, in peaty meadow, 20 August 1883. – *Thuidium tamariscinum* (Hedw.) Schimp., WI B06435.

77 The Polish name of the genus, suggested by J. Jundziłł (1830), is currently still used. (Ochyra *et al.*, 2003).

78 The growth form of *Neckera pennata* is described so picturesquely – comprising many widely spreading branches arising from the stem, which is attached to the trunk.

79 With a spelling error be *Pterigynandrum*, (Hedw.) (Hodgets *et al.* 2020).

80 The Polish name for the species, provided by K. Szafnagel, is currently not used (Ochyra *et al.* 2003).

81 Recently, the below-described species were assigned to four genera: *Abietinella* Müll. Hal., *Helodium* Müll. Hal., *Pelekium* Mitt. and *Thuidium* Bruch & Schimp.

82 The Polish name for the genus *Thuidium*, suggested by Szafnagel, was recently accepted for the genus *Cyrto-hypnum* (*Pelekium*) (Ochyra *et al.* 2003).

Thuidium tamariscinum (H.) c.fl, Sierhiejewicze, by the lake, 20 May 1885. – *Thuidium tamariscinum* (Hedw.) Schimp., WI B06436.

Note: Two specimens of *Thuidium tamariscinum* were named by Szafnagel as *Thuidium recognitum*, although this species was not listed for the area:

[√]*Thuidium recognitum* (Schmpr), Iłska Forest, 6 June 1884. – *Thuidium tamariscinum* (Hedw.) Schimp., WI B06339.

[√]*Thuidium recognitum* (Schmpr), Węclawinięta, in forest, 3 September 1883. – *Thuidium tamariscinum* (Hedw.) Schimp., WI B06340.

Th. delicatulum Br. et Sch. [*Thuidium delicatulum* (Hedw.) Schimp.] It often occurs in grasslands, forests, gardens, and rarely bears sporophytes. Kuzlany, Jachimowszczyzna, Annopol, Smorgonie, Daniszew, by Lake Narocz, in Iłska Forest. Next to *Climacium*, it is the dominant species of local grasslands. In forests, it covers tree trunks, stones and soil outcrops.

Note: Although this species is described as being widely distributed, we have not been able to find a herbarium specimen of it.

Th. abietinum Br. et Sch. [*Abietinella abietina* (Hedw.) M. Fleisch]. It is distributed on sand dunes, slopes, on thatched roofs, always lacking sporophytes.

Herbarium specimens:

Thuidium abietinum (Schmpr), Annopol., 8 September 1883. – *Abietinella abietina* (Hedw.) M. Fleisch., WI B06437.

Th. minutulum Br. et Sch. [*Pelekium minutulum* (Hedw.) Touw]. I collected this rare species in Kuzlany Forest, on a spruce trunk and in the cemetery at Kowalewicze, on oak – in both localities, it had sporophytes.

Herbarium specimens:

Thuidium minutulum, (Schmpr), Kuzlany, (pow. Oszmiański), in Tymowski Forest, 22 May 1884. – *Pelekium minutulum* (Hedw.) Touw, WI B06317.

Not identified specimen, Kowalewicze, at trunk of oak, August 1885 – *Pelekium minutulum* (Hedw.) Touw, WI B06623.

Th. blandowii Br. et Sch. [*Helodium blandowi* (F. Weber & D. Mohr) Warnst.]. I collected the first and only specimen of this species in a wet area at Sierhiejewicze, by the lake.

Herbarium specimens:

Thuidium Blandowii (W. et M.), Sierhiejewicze, by the lake, 20 May 1885. – *Helodium blandowi* (F. Weber & D. Mohr) Warnst., WI B06438.

Thuidium Blandowii (W. et M.), Sierhiejewicze, in grassland, 20 May 1885. – *Helodium blandowii* (F. Weber & D. Mohr) Warnst, WI B06439.

Note: This species was also collected by Szafnagel at Łatyhoła, and near Lake Wolejkowskie, except it was named *Hypnum decipiens* (see description of herbarium specimens for this species).

***Anomodon*⁸³ Hook. et Tayl. (Zwiślik⁸⁴ Jundz.)**

An. viticulosus Hook. et Tayl. [*Anomodon viticulosus* (Hedw.) Hook. & Taylor]. In Iłska Forest it covers the lowermost parts of almost all deciduous trees. There, I observed it with sporophytes; it also occurs, albeit not abundantly, at Annopol and Rusinowicze, in gardens, on limes and on oaks by the River Wilja, between Daniszew and Żodziszki.

Herbarium specimens:

Anomodon viticulosus (Schmpr) c.fl, Iłska Forest, on..., 5 June 1884. – *Anomodon viticulosus* (Hedw.) Hook. & Taylor, WI B06349.

Anomodon viticulosus (Schmpr), Rusinowicze, 25 06 1884. – *Anomodon viticulosus* (Hedw.) Hook. & Taylor, WI B06350(1).

Anomodon viticulosus (Schmpr), by the river Wilja, 25 June 1884. – *Anomodon viticulosus* (Hedw.) Hook. & Taylor, WI B06350(2).

An. attenuatus Hartm. [*Pseudanomodon attenuatus* (Limpr.) Ignatov & Fedosov]. I collected the only fertile mat from an oak by the river Wilja, between Daniszew and Żodziszki.

Herbarium specimen:

Anomodon attenuatus (Schmpr), near Daniszew, by the river Wilja, 3 June 1884. *Pseudanomodon attenuatus* (Limpr.) Ignatov & Fedosov, WI B06347.

An. longifolius. Hartm. [*Anomodon longifolius* (Schleich ex Brid.) Hartm.]. It grows profusely in Iłska Forest, just like *An viticulosus*; there, it also produces sporophytes. Apart from this, I also saw it growing in a mixed forest near Węclawinięta.

Herbarium specimens:

Anomodon longifolius (Schmpr), Węclawinięta, pow. Oszm., in forest, 3 September 1883. – *Anomodon longifolius* (Schleich ex Brid.) Hartm., WI B06348.

Anomodon longifolius (Schmpr), Iłska Forest, 5 June 1884. – *Anomodon longifolius* (Schleich ex Brid.) Hartm., WI B06345.

83 Recently, the species listed above were assigned to two genera: *Anomodon* Hook. & Taylor and *Pseudanomodon* Hook. & Taylor.

84 The Polish name of this species, provided by J. Jundziłł (1830), has until present been used as the name of genus (Ochyra *et al.* 2003).

Not identified, Kowalewicze, on monument, August, 1885. – *Anomodon longifolius* (Schleich ex Brid.) Hartm., WI B06308.

***Leskea*⁸⁵ Hedw. (*Leskea*⁸⁶ Jundz.)**

Leskea polycarpa Ehrh. [*Leskea polycarpa* Hedw.]. Very common, it grows abundantly on willows and alders, sometimes on wet sand. Always with abundant sporophytes. Annapol. Rusinowicze, Kuzlany etc.

Herbarium specimens:

Leskea polycarpa (Schmpr), Annapol, Rusinowicze, on birch, 10 September 1883 – *Leskea polycarpa* Hedw., WI B06344.

Var. *paludosa* (Hedw.) In Rusinowicze in shady habitat on lime. With sporophytes.

Herbarium specimen:

Leskea polycarpa (Schmpr) var. *paludosa*, Rusinowicze, 10 September 1883. – *Pseudoleskeella nervosa* (Brid.) Nyholm, WI B06313.

Var. *exilis* (Starke). I noticed this variety in Ilska Forest growing with *Brachyt. rutabulum* and *Mnium cuspidatum*. With sporophytes.

Note: No specimen available bearing this name.

L. nervosa Rabenh. [*Pseudoleskeella nervosa* (Brid.) Nyholm]. In forests on roots and trunks. Always with sporophytes. Kuzlany, Żuprany.

Herbarium specimens:

Leskea nervosa (Schmpr), Kuzlany, in forest, on stone, 14 April 1883. *Pseudoleskeella nervosa* (Brid.) Nyholm, WI B06312(1).

Leskea nervosa (Schmpr), Kuzlany, 25 March 1883. – *Pseudoleskeella nervosa* (Brid.) Nyholm, WI B06312(2).

***Fontinalis*⁸⁷ Dill. (*Zdrojek*⁸⁸ Jundz.)**

F. antipyretica L. [*Fontinalis antipyretica* Hedw.]. Kuzlany, in the river, in a pond and in Lake Narocz; with sporophytes. In running water, it forms branching braids, attached to a stone in a pond, it resembles tangled spikes.

85 Currently the species described below are assigned to two different genera, *Leskea* Hedw. and *Pseudoleskeella* Kindb.

86 The Polish name of this species, provided by J. Jundziłł (1830), is now no longer accepted.

87 *Fontinalis* Hedw (Hodgets *et al.* 2020).

88 The Polish name for the genus, provided by B.S. Jundziłł (1791), has been used up to the present (Ochyra *et al.*, 2003).

Herbarium specimens:

Fontinalis antipyretica, Kuzlany, in river, on stone, 6 April 1883. – *Fontinalis antipyretica* Hedw., WI B06376.

Fontinalis antipyretica (Schmpr) Kuzlany, 23 April 1883. – *Fontinalis antipyretica* Hedw., WI B06377.

MUSCI ACROCARPI

***Buxbaumia* Hall. (Bezlist⁸⁹. Jundz.)**

Buxbaumia aphylla L. [*Buxbaumia aphylla* Hedw.]. I collected this in Kuzlany Forest on damaged soil, also in the forests of Żuprany near the village of Nazdraczuń. With sporophytes.

Herbarium specimens:

Buxbaumia aphylla (Schmpr), Kuzlany, Nazdraczuń⁹⁰, in forest, 30 May 1884. – *Buxbaumia aphylla* Hedw., WI B06202.

***Polytrichum* L. (Plonnik Jundz.)⁹¹**

P. commune L. [*Polytrichum commune* Hedw.]. In forests, in wet places, – sometimes it forms large convex hummocks; usually with sporophytes. Kuzlany, Wiszniew, Wiazyń, Gwozdowo, Wilejka, Smorgonie etc.

Herbarium specimens:

Polytrichum commune (Schmpr), Annopol, in forest, 1 July 1884. – *Polytrichum commune* Hedw., WI B06152.

Polytrichum commune Schmpr., Kuzlany, in forest, 1 July 1884. – *Polytrichum commune* Hedw., WI B06153.

Polytrichum juniperinum Wild. [*Polytrichum juniperinum* Hedw.]. In dry sandy places, in forests, on fallow land etc. Always with sporophytes.

Herbarium specimen:

Polytrichum juniperinum (Schmpr), Kuzlany, in pine forest, 17 June 1884. – *Polytrichum juniperinum* Hedw., WI B06154.

89 *Buxbaumia* Hedw. (Hodgets *et al.* 2020). The Polish name for the genus, provided by B.S. Jundzill (1811), has been used up to the present (Ochyra *et al.*, 2003).

90 In fact the village Nazdraczuń is closer to Kuzlany than Żuprany (as indicated in *Zapiski bryologiczne*).

91 *Polytrichum* (Hedw.) (Hodgets *et al.* 2020). The Polish name, suggested by B.S. Jundzill (1791) is still used for the genus.

Polytrichum piliferum Schreb. [*Polytrichum piliferum* Hedw.]. It grows on sandy abandoned fields (fallow land). Birżuny, Rudziszki, Soły, Żuprany, Always with sporophytes.

Herbarium specimens:

Polytrichum piliferum (Schmpr), Kuszłany⁹², on sandy fallow land, 2 April 1883. – *Polytrichum piliferum* Hedw., WI B06151.

Polytrichum formosum Hedw. [*Polytrichum formosum* Hedw.]. Quite common in swampy forests; often in alder forests. Kuszłany, in Daniszewski Forest, Annopol. Always with sporophytes.

Herbarium specimens:

[†]*Polytrichum formosum* (Schmpr), Kuszłany, in forest, 1882. – *Polytrichum longisetum* Sw. ex Brid., WI B06155.

Polytrichum formosum (Schmpr), Kuszłany, in forest, in wet place, 12 April 1883. – *Polytrichum formosum* Hedw., B06157.

P. gracile Menz. [*Polytrichum longisetum* Sw. ex Brid.]. In peatlands, often together with *Climacium dendroides*. Annopol, Kołpry, Jachimowszczyzna, Daniszew, Wiszniew, Il-ska Forest, by Lake Bonifacowskie, Węclawinięta, Gajdzie. Always with sporophytes; forms hummocks.

Herbarium specimens:

Polytrichum gracile (Schmpr), Kołpry, Jachimowszczyzna, in peatland, 15 June 1884. – *Polytrichum longisetum* Sw. ex Brid., WI B06156.

Note: Following revision, the specimen named *Polytrichum formosum* was confirmed to be *P. longisetum* (see descripton of herbarium specimen).

P. strictum Menz. [*Polytrichum strictum* Menzies ex Brid.]. In peatlands, forms hummocks, also in wet meadows. Wiszniew, Łopocie, Annopol, Sikuń. Always with sporophytes.

Herbarium specimens:

Polytrichum strictum (Schmpr), Łopocie, in wet place, 24 June 1884. – *Polytrichum strictum* Menzies ex Brid., WI B06150.

***Pogonatum P. Beur.*⁹³ (Włosogłówka⁹⁴)**

P. urnigerum (L.) Schimp. [*Pogonatum urnigerum* (Hedw.) P. Beauv.]. Rare. In forest near Klewica. In ditch. With sporophytes.

92 The locality not listed for this species in the book.

93 Spelling mistake, should be P. Beauv.

94 The Polish name for the genus, provided by Szafnagel, is now no longer accepted.

Herbarium specimens:

Pogonatum urnigerum (Scmpr), Klewica, in ditch by road, 20 September 1884. – *Pogonatum urnigerum* (Hedw.) P. Beauv., WI B06158.

Pogonatum nanum (Schmpr), Klewica, in forest, by road, in ditch, 8 April 1884. – *Pogonatum nanum* (Hedw.) P. Beauv., WI B06159.

P. aloides P. Beauv. [*Pogonatum aloides* (Hedw.) P. Beauv.]. On fallow land, pastures. Rudziszki, Gajdzie, Marymont, Daniszew. With sporophytes.

Note: No specimen available to confirm identity of the species:

[†]*Pogonatum aloides* (Schmpr), Gajdzie, on fallow land, 29 September 1883. – *Pogonatum urnigerum* (Hedw.) P. Beauv., WI B06160.

P. nanum P. Beauv. [*Pogonatum nanum* (Hedw.) P. Beauv.]. On pastures and on sandy-loamy slopes, on fallow land. Pakoszów, Horodyszczce. With sporophytes.

Herbarium specimens:

Pogonatum nanum (Schmpr), Sikuń, Annopol⁹⁵, 8 April 1884. – *Pogonatum nanum* (Hedw.) P. Beauv., WI B06159.

***Atrichum*⁹⁶ P. Beauv.⁹⁷ (Łysak⁹⁸)**

A. undulatum P. Beauv. [*Atrichum undulatum* (Hedw.) P. Beauv.]. In wet and shady places. Always with sporophytes. Kuzlany, Daniszew, Gajdzie.

Herbarium specimens:

Atrichum undulatum (Schmpr), Kuzlany, Gajdzie, in alder forest, 1883. – *Atrichum undulatum* (Hedw.) P. Beauv., WI B06161.

At. tenellum Br. et Sch. [*Atrichum tenellum* (Röhl.) Bruch & Schimp.]. Quite rare; in swampy places and in ditches by roads; sometimes with sporophytes. Kuzlany, Grauzyszki, Klewica.

Herbarium specimens:

Atrichum tenellum (Schmpr), Grauzyszki, in ditch by road, 20 September 1884. – *Atrichum tenellum* (Röhl.) Bruch & Schimp., WI B06162.

95 Two quite remote localities.

96 *Atrichum* P. Beauv. (Hodgets *et al.* 2020).

97 Spelling mistake (see comment 96).

98 The Polish name for the genus, provided by Szafnagel, is now no longer accepted for bryophytes (Ochyra *et al.* 2003).

At. angustatum [*Atrichum angustatum* (Brid.) Bruch & Schimp.]. Zaśkiewicze, by the river Usza; with sporophytes; rare.

Herbarium specimens:

Atrichum angustatum (Schmpr), by the river Usza, by road, 8 April 1883. – *Atrichum angustatum* (Brid.) Bruch & Schimp., WI B06163.

***Tetraphis* Hedw. (Czteroząb⁹⁹ Jundz.)**

T. pellucida Hedw. (*Tetraphis pellucida* Hedw.). In forests on decaying trunks. Annapol, Pakoszów, Wiszniew, Daniszew, Węclawinięta, Żuprany. Produces sporophytes in great profusion.

Herbarium specimens:

Tetraphis pellucida (Schmpr), Annapol, Daniszew¹⁰⁰, in forest, 21 August 1883. – *Tetraphis pellucida* Hedw., WI B06188.

***Timmia* Hedw. (Timmia¹⁰¹)**

T. megapolitana Hedw. [*Timmia megapolitana* Hedw.]. In swampy meadows, with sporophytes. Jachimowszczyzna, Annapol. Very rare.

Herbarium specimens:

Timmia megapolitana (Schmpr), Jachimowszczyzna, in mire, 15 July 1884. – *Timmia megapolitana* Hedw., WI B06433.

***Philonotis* Brid. (Źródlik¹⁰²)**

Ph. fontana Brid. [*Philonotis fontana* (Hedw.) Brid.]. In wet places and near springs. Mires by Lake Narocz near Gwozdowo, Rudziszki. Lacking sporophytes. Rare.

Herbarium specimens:

Philonotis fontana var. *caespitosa* (Schmpr), Gwozdowo, in Zanorockie mire, 25 June 1884. – *Philonotis fontana* (Hedw.) Brid., WI B06286.

Var. *falcata*. Also lacking sporophytes, male specimen. Kuszlany on swampy meadow and by Lake Bonifacowskie.

Note: No specimen available.

99 The Polish name for the genus, provided by B.S. Jundzill (1811), has been used up to the present (Ochyra *et al.*, 2003).

100 Two quite remote localities.

101 Szafnagel suggested a Polish name for the genus *Timmia* based on the Latin; such approach is no longer accepted (Ochyra *et al.*, 2003).

102 The Polish name for the genus, provided by Szafnagel, is now no longer accepted (Ochyra *et al.* 2003).

***Amblyodon* P. Beauv¹⁰³. (Tępek¹⁰⁴)**

Amblyodon dealbatus P. Beauv. [*Amblyodon dealbatus* (Hedw.) P. Beauv.]. I collected it only once in mires by Lake Narocz near Gwozdowo. With sporophytes.

Herbarium specimens:

Amblyodon dealbatus (Schmpr), Gwozdowo, in mire, 25 June 1884. – *Amblyodon dealbatus* (Hedw.) P. Beauv., WI B06231.

***Meesea* Hew. (*Meesia* Jundz.)¹⁰⁵**

*M. uliginosa*¹⁰⁶ Hedw. [*Meesia uliginosa* Hedw.]. In wet peatlands; rare; with sporophytes. Gwozdowo, Kuzslany.

Herbarium specimens:

Meesia uliginosa (Schmpr), Gwozdowo, 24 June 1884. – *Meesia uliginosa* Hedw., WI B06226.

M. tristicha Br. et Sch. [*Meesia triquetra* (L. ex Jolycl.) Ångstr.]. In mires. Gwozdowo and by Lake Wołajkowskie. With sporophytes.

Herbarium specimens:

Meesia tristicha (Schmpr), Gwozdowo, 25 June 1884. – *Meesia triquetra* (L. ex Jolycl.) Ångstr., WI B06227.

Meesia tristicha (Schmpr), by Lake Wołajkowskie, in mire, 20 May 1884. – *Meesia triquetra* (L. ex Jolycl.) Ångstr., WI B06230.

***Paludella* Ehrh. (Bagnik)¹⁰⁷**

P. squarrosa Ehrh. [*Paludella squarrosa* (Hedw.) Brid.]. Very rare. Wizniew, in meadow between Lakes Świrskie and Wiszniewskie. Lacking sporophytes.

Herbarium specimen:

Paludella squarrosa (Schmpr), Wizniew, on mire between two lakes, 25 June 1884. – *Paludella squarrosa* (Hedw.) Brid. WI B06628.

***Aulacomnium* Schwaegr. (Gwiazdzik¹⁰⁸)**

Aul. palustre Schwaegr. [*Aulacomnium palustre* (Hedw.) Schwägr.]. Often occurs in

103 Spelling mistake, should be P. Beauv.

104 The Polish name for the genus, provided by Szafnagel, is now no longer accepted (Ochyra *et al.* 2003).

105 *Meesia* Hedw. (Hodgets *et al.* 2020). J. Jundzill (1830) suggested to use the Latin name as a basis for the Polish name, this approach is no longer accepted.

106 Probably a spelling mistake, should be *uliginosa*.

107 *Paludella* Brid. (Hodgets *et al.* 2020). The name for the genus, provided by Szafnagel, is now no longer accepted (Ochyra *et al.* 2003).

108 The name for the genus, provided by Szafnagel, is now no longer accepted (Ochyra *et al.* 2003).

meadows, in ditches and swampy forests. Kuzlany, Annopol, Jachimowszczyzna, Węclawinięta, Daniszew.

Herbarium specimens:

Aulacomnium palustre (Schmpr.), Sikuń, in wet place, 8 April 1884. – *Aulacomnium palustre* (Hedw.) Schwägr., WI B06233.

Aulacomnium palustre (Schmpr) var., Annopol, in forest, 13 September 1883. – *Aulacomnium palustre* (Hedw.) Schwägr., WI B06234.

***Mnium* L.¹⁰⁹ (Merzyk¹¹⁰ Jundz.)**

Mn. cuspidatum Hedw. [*Plagiomnium cuspidatum* (Hedw.) T.J. Kop.]. Often occurs in wet, shady places, in alder forests near tree trunks, often with sporophytes. Żuprany, Kuzlany, Wiszniew, Ilska Forest, Annopol, Daniszew.

Herbarium specimens:

Mnium cuspidatum (Schmpr), Kuzlany, in forest, 20 May 1884. – *Plagiomnium cuspidatum* (Hedw.) T.J. Kop., WI B06240(2).

Mnium cuspidatum (Schmpr), Kuzlany, in forest, 7 July 1884. – *Plagiomnium cuspidatum* (Hedw.) T.J. Kop., WI B06252(1).

Mnium cuspidatum (Schmpr), Wiszniew, in forest, 10 May 1884. – *Plagiomnium cuspidatum* (Hedw.) T.J. Kop., WI B06252(2).

Mnium cuspidatum (Schmpr), Żuprany, in forest, 7 July 1884. – *Plagiomnium cuspidatum* (Hedw.) T.J. Kop., WI B06240(1).

Mnium cuspidatum (Schmpr), Rudziszki, 24 April 1883. – *Plagiomnium elatum* (Bruch & Schimp.) T.J. Kop., WI B06240(3).

Mn. affine Bland. [*Plagiomnium affine* (Blandow ex Funck) T.J. Kop.]. In wet forests, in shady meadows, beneath coniferous trees; most often lacking sporophytes. Kuzlany, Ilska Forest, Żuprany, Rusinowicze, Daniszew.

Herbarium specimens:

Mnium affine (Schmpr), Kuzlany, in garden, 15 August 1883. – *Plagiomnium affine* (Blandow ex Funck) T.J. Kop., WI B06254(1).

Mnium affine (Schmpr), Rusinowicze, in wet meadow, 10 September 1883. – *Plagiomnium affine* (Blandow ex Funck) T.J. Kop., WI B06243(2).

Mnium affine (Schmpr), Kuzlany, in garden, 15 August 1883. – *Plagiomnium affine* (Blandow ex Funck) T.J. Kop., WI B06254(2).

109 Recently, the species listed below were assigned to three genera: *Mnium* Hedw., *Plagiomnium* T.J. Kop. and *Rhizomnium* (Broth.) T.J. Kop. (Hodgets *et al.* 2020).

110 The Polish name for the genus, provided by B.S. Jundziłł (1791), is currently still used for the genus *Mnium* (Ochyra *et al.* 2003).

√*Mnium affine* (Schmpr), Iłska Forest, 5 June 1884. – *Plagiomnium elatum* (Bruch & Schimp.) T.J. Kop., WI B06243(1).

√*Mnium affine* (Schmpr), Gajdzie, on alder tree, 20 September 1884. – *Plagiomnium ellipticum*¹¹¹ (Brid.) T.J. Kop., WI B06242.

√*Mnium affine* var: *elatum* (Schmpr.), Gajdzie, in alder forest, 23 May 1884. – *Plagiomnium ellipticum* (Brid.) T.J. Kop., WI B06246.

Mn. rostratum Schwaegr. [*Plagiomnium rostratum* (Schrad.) T.J. Kop.]. Rare; on shady stones. Annapol, in garden; with sporophytes. On stone by Lake Narocz.

Herbarium specimens:

√*Mnium rostratum* (Schmpr), Kuzłany, in forest, 1882. – *Plagiomnium elatum* (Bruch & Schimp.) T.J. Kop., WI B06244(1).

√*Mnium rostratum* (Schmpr), Annapol, 8 September 1883. – *Plagiomnium elatum* (Bruch & Schimp.) T.J. Kop., WI B06244(2).

Mnium rostratum (Schmpr), by Lake Narocz, on stone, 23 June 1884. – *Plagiomnium rostratum* (Schrad.) T.J. Kop., WI B06245.

√*Mnium rostratum* (Schrd.), by Lake Sierhiejewickie, 20 May 1885. – *Plagiomnium elatum* (Bruch & Schimp.) T.J. Kop., WI B06253.

Mn. punctatum L. [*Rhizomnium punctatum* (Hedw.) T.J. Kop.]. Common; with sporophytes; in shady springy places. Daniszew, Węclawinięta, Żuprany.

Herbarium specimens:

Mnium punctatum (Schmpr), Gajdzie, on alder trunk, 9 April 1883. – *Rhizomnium punctatum* (Hedw.) T.J. Kop., WI B06241(1).

Mnium punctatum (Schmpr), Trykole, in forest, 10 May 1884. – *Rhizomnium punctatum* (Hedw.) T.J. Kop., WI B06248.

Mnium punctatum (Schmpr), Wiszniew, in forest, 25 June 1884. – *Rhizomnium punctatum* (Hedw.) T.J. Kop., WI B06241(2).

Mnium stellare Hedw. [*Mnium stellare* Hedw.]. In forests. Wiszniówka, Daniszew, Polany, Węclawinięta, Żuprany. Rarely with sporophytes.

Herbarium specimens:

Mnium stellare (Schmpr), Polany, in forest, 6 September 1884. – *Mnium stellare* Hedw., WI B06255(1).

Mnium stellare (Schmpr), Węclawinięta, in forest, 31 September 1884. – *Mnium stellare* Hedw., WI B06255(2),

111 The species not listed in the book for the area.

Mnium stellare (Schmpr), Daniszew, 25 June 1884. – *Mnium stellare* Hedw., WI B06255(3).

Mn. insigne Mitten. [*Plagiomnium elatum* (Bruch & Schimp.) T.J. Kop.]. In alder forests; lacking sporophytes. Gajdzie, Rusinowicze.

Herbarium specimens:

[√]*Mn. insigne* Mitten, Gajdzie, in alder forest, 9 April 1883. – *Plagiomnium ellipticum*¹¹² (Brid.) T.J. Kop., WI B06251(1).

Mn. insigne Mitten, Rusinowicze, in alder forest, 10 September 1882. – *Plagiomnium elatum* (Bruch & Schimp.) T.J. Kop., WI B06251(2).

Note: The specimens named by K. Szafnagel *Mnium affine* (1) and *Mnium rostratum* (4), following revision, were redetermined as *Plagiomnium elatum* (see list of so-named specimens).

Mn. undulatum Hedw. [*Plagiomnium undulatum* (Hedw.) T.J. Kop.]. In wet forests, always lacking sporophytes. Annopol, Polany, Kuzlany, Węclawinięta, Daniszew.

Herbarium specimens:

Mnium undulatum (Schmpr), Węclawinięta, in forest, 31 September 1883. – *Plagiomnium undulatum* (Hedw.) T.J. Kop., WI B06249(1).

Mnium undulatum (Schmpr), Annopol, in forest, 9 September 1883. – *Plagiomnium undulatum* (Hedw.) T.J. Kop., WI B06249(2).

Mnium undulatum (Schmpr), Daniszew, in forest, 23 August 1883. – *Plagiomnium undulatum* (Hedw.) T.J. Kop., WI B06250(1).

Mnium undulatum (Schmpr., Polany, in forest, 5 September 1884. – *Plagiomnium undulatum* (Hedw.) T.J. Kop., WI B06250(2).

***Bryum*¹¹³ Dill. (Prątnik¹¹⁴ Jundz.)**

Br. roseum Schreb. [*Rhodobryum roseum* (Hedw.) Limpr.]. In forests; usually lacking sporophytes. Żuprany (with sporophytes), Kuzlany, Trykole, Węclawinięta, Annopol.

Herbarium specimens:

Bryum roseum (Schmpr.) c.fr.!, Żuprany, in forest, 2 October 1883. – *Rhodobryum roseum* (Hedw.) Limpr., WI B06269.

112 See comment 111.

113 Currently the species listed below belong to the genera *Bryum* Hedw., *Ptychostomum* Hornsch. and *Rhodobryum* (Schimp.) Limpr. (Hodgets *et al.* 2020).

114 The Polish name for the genus suggested by B.S. Jundziłł (1811) is currently still used for the genus *Bryum*.

Bryum roseum c.f. (Schmpr), Kuszlany, Węclawinięta,¹¹⁵ in forest, 31 September 1883. – *Rhodobryum roseum* (Hedw.) Limpr., WI B06267.

Br. capillare L. [*Ptychostomum capillare* (Hedw.) Holyoak & N. Pedersen]. I observed it only once in Gajdzie beneath alders. Lacking sporophytes.

Herbarium specimens:

[√]*Bryum capillare* (Schmpr), Gajdzie, in alder forest, 29 August 1882. – *Ptychostomum moravicum* (Podp.) Ros & Mazimpaka¹¹⁶. WI B06277.

Note: No specimens available to confirm the species *Ptychostomum capillare*.

Br. pallens Sw. [*Ptychostomum pallens* (Sw. ex anon.) J.R. Spence]. By Lake Bonifacowskie, with sporophytes.

Herbarium specimens:

[√]*Bryum pallens* (Schmpr), by Lake Bonifacowskie, 12 June 1884. – *Ptychostomum turbinatum* (Hedw.) J.R. Spence,¹¹⁷ WI B06279.

Note: No specimens available to confirm the species *Ptychostomum pallens*.

Br. longisetum Bland. [*Ptychostomum longisetum* (Blandow ex Schwäger.) J.R. Spence]. Jachimowszczyzna in meadow. With sporophytes.

Herbarium specimens:

Bryum longisetum (Schmpr), Jachimowszczyzna, on peatland, 15 July 1884. – *Ptychotiomum longisetum* (Blandow ex Schwäger.) J.R. Spence, WI B06276.

Br. pallescens Schleich. [*Bryum pallescens* (Schleich. ex Schwäger.) J.R. Spence]. Wilno, Bekieszowa Hill. With sporophytes.

Herbarium specimens:

Bryum pallescens (Schmpr), Wilno, Bekieszowa Hill, 10 June 1884. – *Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pedersen., WI B06284.

Note: No specimens available to confirm the species *Ptychostomum pallescens*.

Br. inclinatum Bland. [*Ptychostomum inclinatum* (Sw. ex Brid.) J.R. Spence]. Kuszlany, on alder trunks, by the river Wilja, on outcrop below Daniszew, on outcrops by Lake Narocz. With sporophytes.

115 Localities within 5 km of each other.

116 The species not listed in the book for the area.

117 The species not listed in the book.

Herbarium specimens:

Br. inclinatum (Schmpr), Kuzlany, 28 March 1883. – *Ptychostomum inclinatum* (Sw. ex Brid.) J.R. Spence, WI B06283(1).

Br. inclinatum (Schmpr), by the River Wilja, near Daniszew, 25 June 1884. – *Ptychostomum inclinatum* (Sw. ex Brid.) J.R. Spence, WI B06283(2).

Br. pendulum Schimp. [*Ptychostomum compactum* Hornsch.]. In ditch near Giry. With sporophytes.

Herbarium specimens:

Bryum pendulum (Schmpr), Giry, 13 June 1884. – *Ptychostomum compactum* Hornsch., WI B06282.

Br. pseudotriquetrum Schwaegr. [*Ptychostomum pseudotriquetrum* (Hedw.) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pedersen]. In meadow by Lake Wolejkowskie; Gajdzie – meadow. Lacking sporophytes.

Herbarium specimens:

Bryum pseudotriquetrum (Schmpr), Gajdzie, in meadow, 20 May 1884. – *Ptychostomum pseudotriquetrum* (Hedw.) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pedersen, WI B06281(1).

Bryum pseudotriquetrum (Schmpr), by Lake Wolejkowskie, 20 September 1884. – *Ptychostomum pseudotriquetrum* (Hedw.) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pedersen, WI B06281(2).

Bryum pseudotriquetrum (H.), Annapol, 25 May 1885. – *Ptychostomum pseudotriquetrum* (Hedw.) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pedersen, WI B06280.

Br. uliginosum Br. et Sch. [*Ptychostomum cernuum* (Hedw.) Hornsch.]. Kuzlany, by river, on alder trunks. With sporophytes.

Herbarium specimens:

Bryum uliginosum (Schmpr), Kuzlany, on alder trunk, 4 September 1883. – *Ptychostomum cernuum* (Hedw.) Hornsch., WI B06273.

B. bimum Schreb. [*Ptychostomum pseudotriquetrum* var. *bimum* (Schreb.) Holyoak & N. Pedersen]. Jachimowszczyzna, in wet thickets. With sporophytes.

Herbarium specimens:

Bryum bimum (Schrb), Sierhiejewicze, by lake, 20 May 1885. – *Ptychostomum pseudotriquetrum* var. *bimum* (Schreb.) Holyoak & N. Pedersen, WI B06270.

Bryum bimum (Schmpr), Jachimowszczyzna, in mire, 15 July 1884. – *Ptychostomum pseudotriquetrum* var. *bimum* (Schreb.) Holyoak & N. Pedersen, WI B 06271(1).

Bryum bimum (Schmpr), Gwozdowo, in mire, 25 June 1884. – *Ptychostomum pseudotriquetrum* var. *bimum* (Schreb.) Holyoak & N. Pedersen, WI B 06271(2).

Bryum caespiticium L. [*Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pedersen]. Common. On fallow land, on gravelly hills, in meadows, on decayed trunks in forests. Kuzlany, Żuprany, Smorgonie, Annopol. With sporophytes.

Herbarium specimens:

Bryum caespiticium (Schmpr), Gajdzie, on loamy soil, 29 August 1883. – *Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pedersen, WI B06274(2)

Bryum caespiticium (Schmpr) c.fr., Żuprany, 1 May 1884. – *Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pedersen. WI B06274 (4).

√*Bryum caespiticium* (Schmpr), Węclawinięta, in forest. 31 September 1884. – *Pohlia nutans* (Hedw.) Lindb., WI B06274 (3).

√*Bryum caespiticium* (Schmpr), Kuzlany, at tree trunk, 4 August 1883 – *Ceratodon purpureus* (Hedw.) Brid., WI B06275(1).

√*Bryum caespiticium* (Schmpr), Michanowicze, in peatland, 15 May 1884 – *Pohlia nutans* (Hedw.) Lindb., WI B06275(2).

√*Bryum caespiticium* (Schmpr), Rudziszki,(?), 11 May 1884 – *Pohlia nutans* (Hedw.) Lindb., WI B06275(2).

Note: the species initially named *Bryum pallescens* and *Bryum badium*, following revision, identified as *Ptychostomum imbricatum* (see description of herbarium specimens for this species).

Br. argenteum L. [*Bryum argenteum* Hedw.]. On sandy hills, in gardens. With sporophytes. Kuzlany, Annopol.

Herbarium specimens:

Bryum argenteum (Schmpr), Kuzlany, 29 August 1883. – *Bryum argenteum* Hedw., WI B06268.

Br. badium Bruch.¹¹⁸ [*Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pedersen]. On fallow land by Lake Sierhiejewickie.

118 *Bryum badium* Bruch = *Bryum caespiticium* var. *badium* Brid.

Herbarium specimens:

Bryum badium Br., by Lake Sierhiejewickie, in fallow land, 20 May 1885. – *Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pedersen, WI B06278.

Br. cirrhatum Hornsch. [*Ptychostomum pallescens* Schleich. ex Schwägr.]. Kalwarja, near Wilno.

Note: No specimen of this so-named species was found.

***Webera*¹¹⁹ Hedw. (*Webera*¹²⁰)**

Webera albicans Schimp. [*Pohlia wahlenbergii* (F. Weber & D. Mohr) A.L. Andrews]. Grauzyszki in wet meadow, Kuzlany, by ditch.

Herbarium specimens:

Webera albicans (Schmpr), Budziniki¹²¹, meadow. – *Pohlia wahlenbergii* (F. Weber & D. Mohr) A.L. Andrews, WI B06264(1).

Webera albicans (Schmpr), Grauzyszki, 20 September 1884. – *Pohlia wahlenbergii* (F. Weber & D. Mohr) A.L. Andrews, WI B06264(2).

W. annotina Schwaegr. Kuzlany [*Pohlia annotina* (Hedw.) Lindb.]. Kuzlany in fields, Gajdzie by road.

Herbarium specimens:

[√]*Webera annotina* (Schmpr) c.fl, Gajdzie, on loamy soil, 1 October 1884. – *Pohlia filum* (Schimp.) Mårtensson¹²², WI B06263.

W. nutans var. *sphagnetorum* Schimp. [*Pohlia sphagnicola* (Bruch & Schimp.) Broth.]. In mire within forest, between *Sphagnum* mosses.

Herbarium specimens:

Webera nutans (Schmpr) var: *sphagnetorum*, Kołpny, in forest, 15 September 1884. – *Pohlia nutans* (Hedw.) Lindb., WI B06260.

Note: No herbarium specimen available to confirm identity of *Pohlia sphagnicola*.

W. nutans Hedw. [*Pohlia nutans* (Hedw.) Lindb.]. Common. Wojstomski Forest on peat, Żuprany on hill, Pakoszów in wet forest. Kuzlany – forest. Always with sporophytes.

119 Currently all species listed below belong to the genera *Pohlia* Hedw. (Hodgets *et al.* 2020).

120 Szafnagel suggested to use Latin name also as Polish. It is no longer accepted (Ochyra *et al.* 2003).

121 According to the localities indicated in the list, this meadow seems to be in the vicinity of Grauzyszki.

122 The species not listed in *Zapiski bryologiczne*.

Herbarium specimens:

Webera nutans (Schmpr), Wojstomski Forest, 5 June 1884. – *Pohlia nutans* (Hedw.) Lindb., WI B06259(1).

Webera nutans (Schmpr), Marymont, on hill, 1 May 1884. – *Pohlia nutans* (Hedw.) Lindb., WI B06259(2).

Webera nutans (Schmpr), Kuzlany, 1882. – *Pohlia nutans* (Hedw.) Lindb., WI B06259(3).

Webera nutans (Schr) var., near Wilejka, in forest, 5 June 1884. – *Pohlia nutans* (Hedw.) Lindb, WI B06261.

Note: Three specimens initially named *Bryum caespiticium* (see description of herbarium specimens), following revisions, were identified as *Pohlia nutans*.

***Leptobryum* Schimp. (Ładnik¹²³)**

L. pyriforme Schimp. [*Leptobryum pyriforme* (Hedw.) Wilson]. Iłska Forest, Kuzlany, in forest, by Lake Narocz, Kuczkuryszki. Always with sporophytes.

Herbarium specimens:

Leptobryum pyriforme (Schmpr), Kuczkuryszki, near Wilno, 20 June 1884. – *Leptobryum pyriforme* (Hedw.) Wilson, WI B06258(1).

Leptobryum pyriforme (Schmpr), Żuprany, 12 June 1884. – *Leptobryum pyriforme* (Hedw.) Wilson, WI B06258(2).

***Funaria* Schreb. (Skrętek¹²⁴ Jundz.)**

F. hygrometrica Hedw. [*Funaria hygrometrica* Hedw.]. Common. On burnt sites, in ditches and on peat; always with sporophytes. Kuzlany, Anopol, Wiszniew, Iłska Forest.

Herbarium specimens:

Funaria hygrometrica (Schmpr.), Kuzlany, on peat, 12 August 1883. – *Funaria hygrometrica* Hedw., WI B06256(1).

Funaria hygrometrica (Schmpr), Wiszniew, 28 June 1884. – *Funaria hygrometrica* Hedw., WI B06256(2).

123 The Polish name for the genus, provided by Szafnagel, is now no longer accepted (Ochyra *et al.* 2003).

124 The Polish name provided by J. Jundziłł (1830) for the genus *Funaria* is still used for this genus (Ochyra *et al.* 2003).

***Physcomitrium* Brid. (Dętek¹²⁵)**

Physcomitrium pyriforme Brid. [*Physcomitrium pyriforme* (Hedw.) Bruch & Schimp.]. In ditches and by rivers; with sporophytes. Kuzlany, Soly, Kuczkuryszki, Annopol.

Herbarium specimens:

Physcomitrium pyriforme (Schmpr), Kuzlany, 1882. – *Physcomitrium pyriforme* (Hedw.) Bruch & Schimp., WI B06257(1).

Physcomitrium pyriforme (Schmpr), Kuzlany, 13 June 1884. – *Physcomitrium pyriforme* (Hedw.) Bruch & Schimp., WI B06257(2).

Physcomitrium pyriforme (Schmpr), Kuzlany, 10 June 1884. – *Physcomitrium pyriforme* (Hedw.) Bruch & Schimp., WI B06257(3).

Physcomitrium pyriforme (Schmpr), Kuzlany, 18 October 1884. – *Physcomitrium pyriforme* (Hedw.) Bruch & Schimp., WI B06257(4).

***Splachnum* L.(Podsadnik¹²⁶ Jundz.)**

Spl. ampullaceum L. [*Splachnum ampullaceum* Hedw.]. Mires by Lake Narocz, near Gwozdowo and in peatlands near Michanowicze, by Lake Sierhiejewickie. Always with sporophytes. Ubiquitous on bovine excrements.

Herbarium specimens:

Splachnum ampullaceum (Schmpr), by Lake Narocz, near Gwozdowo, in mire, 24 May 1884. – *Splachnum ampullaceum* Hedw., WI B06191(1).

Splachnum ampullaceum (Schmpr), by Lake Sierhiejewickie, on peatland, 25 May 1884. – *Splachnum ampullaceum* Hedw., WI B06191(2).

Splachnum ampullaceum (L.), by Lake Sierhiejewickie, 20 May 1885. – *Splachnum ampullaceum* Hedw., WI B06192.

***Catoscopium* Brid. (Czarnogłów¹²⁷)**

Catoscopium nigratum Brid. [*Catoscopium nigratum* (Hedw.) Brid.]. Mire by Lake Narocz, near Gwozdowo. With sporophytes.

Herbarium specimens:

Catoscopium nigratum (Schmpr), Gwozdowo, in Zanorockie mire (p. Święciański), 25 June 1884. – *Catoscopium nigratum* (Hedw.) Brid., WI B06491.

125 The Polish name for the genus, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

126 Polish name provided by J. Jundziłł (1830) for the genus *Splachnum*. It is still used for this genus (Ochyra *et al.* 2003).

127 The Polish name for the genus, provided by Szafnagel, has been used up to the present (Ochyra *et al.*, 2003).

***Hedwigia* Ehrh. (*Hedwigia*¹²⁸)**

Hedwigia ciliata Hedw. [*Hedwigia ciliata* (Hedw.) P. Beauv.]. Common. Always on erratic boulders. Kuzslany, Smorgonie along the road Wilno-Mińsk. With sporophytes.

Herbarium specimens:

Hedwigia ciliata (Schmpr), Kuzslany, on stone, 1884. – *Hedwigia ciliata* (Hedw.) P. Beauv., WI B06203(1).

Hedwigia ciliata (Schmpr), by road Wilno-Mińsk, on stone, 8 September 1883. – *Hedwigia ciliata* (Hedw.) P. Beauv., WI B06203(2).

Hedwigia ciliata (Schmpr), Kuzslany, on stone, 7 May 1884. – *Hedwigia ciliata* (Hedw.) P. Beauv., WI B06204.

***Ulotia* Mohr. (*Ulotia*)¹²⁹**

Ul. crispa Brid. [*Ulotia crispa* (Hedw.) Brid.]. Forest near Gródek. With sporophytes.

Herbarium specimens:

Ulotia crispa (Schmpr), near Gródek (pow. Miński), in forest, 23 September 1883. – *Ulotia crispa* (Hedw.) Brid., WI B06415.

Note: Specimens initially named *Ulotia crispula*, following revision, were identified as *Ulotia crispa* (see description of specimens below).

Ul. crispula Bruch (*Ulotia crispula* (Hedw.) Brid. Kuzslany in forest on hazelnuts, Żuprany in forest, Gajdzie on alder. With sporophytes.

Herbarium specimens:

[√]*Ulotia crispula* (Schmpr), Kuzslany, in forest, 9 June 188?. – *Ulotia crispa* (Hedw.) Brid., WI B06414(1).

[√]*Ulotia crispula* (Schmpr), Kuzslany, in forest, 15 March 1884. – *Ulotia crispa* (Hedw.) Brid., WI B06414(2).

Ulotia crispula (Schmpr), Kuzslany, in forest, 10 April 1883. – *Ulotia crispa* (Hedw.) Brid., WI B06414(3)

Note: No specimen available to confirm the species *Ulotia crispula* (Hedw.) Brid.

128 Szafnagel, as well as Safran (1939), suggested a Polish name for the genus *Hedwigia* based on the Latin name. The name is still used (Ochyra *et al.*, 2003).

129 *Ulotia* D. Mohr (Hodgets *et al.* 2020). Szafnagel's suggestion to use the Latin name as the basis for the Polish name of the genus *Ulotia* is no longer accepted (Ochyra *et al.*, 2003).

***Orthotrichum*¹³⁰ Hedw. (Szurpek¹³¹ Jundz.)**

Orth. anomalum Hedw. [*Orthotrichum anomalum* Hedw.]. On boulders by Lake Narocz, Kuzlany on stones by river. With sporophytes.

Herbarium specimens:

Orthotrichum anomalum (Schmpr), Kuzlany, on stone, 6 April 1883. – *Orthotrichum anomalum* Hedw., WI B06542(1).

Orthotrichum anomalum (Schmpr.), by Lake Narocz, on stone, 24 June 1884. – *Orthotrichum anomalum* Hedw., WI B06542(1).

Orth. gymnostomum Bruch [*Nyholmiella gymnostoma* (Bruch ex Brid.) Holmen & E. Warncke]. Widespread in forests on aspens. Smorgonie, Żuprany, Kuzlany. With sporophytes.

Herbarium specimens:

Orthotrichum gymnostomum (Schmpr), Żuprany, in forest, on aspen, 28 September 1883. – *Nyholmiella gymnostoma* (Bruch ex Brid.) Holmen & E. Warncke, WI B06342(1).

Orthotrichum gymnostomum (Schmp.), Żuprany, in forest, on aspen, 21 April 1883. – *Nyholmiella gymnostoma* (Bruch ex Brid.) Holmen & E. Warncke, WI B06342(2).

Orth. obtusifolium Schrad. [*Nyholmiella obtusifolia* (Brid.) Holmen & E. Warncke]. On poplars. Annopol and near Wilno. With sporophytes.

Herbarium specimens:

Orthotrichum obtusifolium (Schmpr), Wilno, 20 June 1884. – *Nyholmiella obtusifolia* (Brid.) Holmen & E. Warncke, WI B06555(1).

Orthotrichum obtusifolium (Schmpr), Annopol, 25 September 1883. *Nyholmiella obtusifolia* (Brid.) Holmen & E. Warncke – WI B06555(2).

Orth. pumilum Sw. [*Orthotrichum pumilum* Sw. ex anon.]. On poplars. Kuzlany, Annopol. With sporophytes.

Herbarium specimens:

Orthotrichum pumilum (Schmpr), Kuzlany, on poplar, September 1882. – *Orthotrichum pumilum* Sw. ex anon., WI B06343(1).

130 The species listed below currently belong to three genera Lewinskya F. Lara, Garilleti & Goffinet, *Nyholmiella* Holmen & E. Warncke and *Orthotrichum* Hedw.

131 The Polish name provided by J. Jundziłł (1830) for the genus *Orthotrichum*. It is still used for this genus (Ochyra *et al.* 2003).

Orthotrichum pumilum (Schmpr), Anopol, on poplar, 25 May 1884. – *Orthotrichum pumilum* Sw. ex anon., WI B06343(2).

Orth. speciosum N et E. [*Lewinskya speciosa* (Nees) F. Lara, Garilleti & Goffinet]. Common on hazelnuts, on stones, on spruces. Gajdzie, Wiazyń, Wilno, Wiszniew. With sporophytes.

Herbarium specimens:

Orthotrichum speciosum (Schmpr), Gajdzie in meadow on stone, 28 September 1883. – *Lewinskya speciosa* (Nees) F. Lara, Garilleti & Goffinet, WI B06545(1).

Orthotrichum speciosum (Schmpr), Kuzlany, 1882. – *Lewinskya speciosa* (Nees) F. Lara, Garilleti & Goffinet, WI B06545(2).

Note: Two specimens initially named *Orthotricum affine*, following revision, were identified as *Lewinskya speciosa* (see description of specimens below).

Orth. stramineum Hornsch. [*Orthotrichum stramineum* Hornsch. ex Brid.]. On oak by the river Wilja near Żodziszki. With sporophytes.

Herbarium specimens:

Orthotrichum stramineum (Schmpr.), ???, 23 June 1884. – *Orthotrichum stramineum* Hornsch. ex Brid., WI B06541.¹³²

Orth. affine Schrad. [*Lewinskya affinis* (Schrad. ex Brid.) F. Lara, Garilleti & Goffinet]. In forests on aspens. Żuprany, Bierwienciszki. With sporophytes.

Herbarium specimens:

Orthotrichum affine (Schmpr), Żuprany, 18 July 1883. – *Lewinskya affinis* (Schrad. ex Brid.) F. Lara, Garilleti & Goffinet, WI6605(1).

√*Orthotrichum affine* (Schmpr), Żuprany, 29 August 1883. – *Lewinskya speciosa* (Nees) F. Lara, Garilleti & Goffinet, WI6605(2).

√*Orthotrichum affine* (Schmpr), Świr, 6 September 1883. – *Lewinskya speciosa* (Nees) F. Lara, Garilleti & Goffinet, WI B06605(3).

***Encalypta* Schreb. (Opończyk Jundz.)¹³³**

Enc. vulgaris Hedw. [*Encalypta vulgaris* Hedw.]. Wilno, on Bekieszowa Hill, on slope. With sporophytes.

¹³² The locality on the label of the specimen is difficult to read, but not similar to one in the list, so it is uncertain if this specimen is the same that was described.

¹³³ *Encalypta* Hedw. (Hodgets et al. 2020). The Polish name provided by J. Jundziłł (1830) for the genus *Encalypta*. It is still used for this genus (Ochyra et al. 2003).

Herbarium specimens:

Encalypta vulgaris (Schmpr) var. *piliferum* c.f., Wilno, Bekieszowa Hill, 4 June 1884. 4 June 1884. – *Encalypta vulgaris* Hedw, WI B06200(a).

Encalypta vulgaris Schmpr var. *obtusae*, Wilno, Bekieszowa hill, 4 June 1884. 4 June 1884. – *Encalypta vulgaris* Hedw., WI B06200(b).

Enc. streptocarpa Hedw. [*Encalypta streptocarpa* Hedw.]. Wilno, on Bekieszowa Hill, on slope. Lacking sporophytes.

Herbarium specimens:

Encalypta streptocarpa (Schmpr), Wilno, Bekieszowa Hill, 4 June 1884. – *Encalypta streptocarpa* Hedw., WI B06597.

***Racomitrium*¹³⁴ Brid. (Narzutowiec¹³⁵)**

Rac. microcarpon Brid. [*Bucklandiella microcarpa* (Hedw.) Bedn.-Ochyra & Ochyra]. On boulders in forest. Kuszlany, Żuprany. With sporophytes.

Herbarium specimens:

Racomitrium microcarpum (Schmpr) c.fl., Żuprany, in forest, on stone, 30 May 1884. – *Bucklandiella microcarpa* (Hedw.) Bedn.-Ochyra & Ochyra, WI B06103(1).

Racomitrium microcarpum (Schmpr) c.fl., by road, 8 September 1883. – *Bucklandiella microcarpa* (Hedw.) Bedn.-Ochyra & Ochyra, WI B06103 2).

Racomitrium microcarpum (Schmpr.), Kuszlany, in forest, on stones, 7 April 1883. – *Bucklandiella microcarpa* (Hedw.) Bedn.-Ochyra & Ochyra, WI B06100.

Rac. hetrostichum Brid. [*Bucklandiella heterosticha* (Hedw.) Bedn.- Ochyra & Ochyra]. On stones. Kuszlany, Żuprany, Daniszew, Wiazyń. With sporophytes.

Herbarium specimens:

Racomitrium hetrostichum (Schmpr), Kuszlany, in forest, on stone, 2 May 1884. – *Bucklandiella heterosticha* (Hedw.) Bedn.- Ochyra & Ochyra, WI B06104(1).

Racomitrium hetrostichum (Schmpr), Daniszew, in forest, 21 August 1884. – *Bucklandiella heterosticha* (Hedw.) Bedn.- Ochyra & Ochyra, WI B06104(2).

[√]*Racomitrium hetrostichum* (Schmpr), Wiazyń, in forest, 20 June 1884. – *Grimmia muehlenbeckii* Schimp., WI B06104(3).

134 Following Ochyra et al. (2003), the species listed below belong to two genera: *Bucklandiella* Roiv. and *Niphotrichum* (Bedn.-Ochyra) Bedn.-Ochyra & Ochyra.

135 The Polish name for the genus, provided by Szafnagel, is now no longer used (Ochyra et al. 2003).

Racomitrium hetrostichum (Schmpr), Kuzlany, in forest, on stone, 2 April 1884. – *Bucklandiella heterosticha* (Hedw.) Bedn.- Ochyra & Ochyra, WI B06102.

Note: Following revision, the specimen initially identified as *Grimmia muehlenbeckii*, was re-determined as *Racomitrium heterostichum* (see description of the specimens of this species).

Rac. canescens Brid. [*Niphotrichum canescens* (Hedw.) Bedn.-Ochyra et Ochyra]. On sandy slopes near pine groves. Kuzlany, Rudziszki, Zalesie. Lacking sporophytes.

Herbarium specimens:

Racomitrium canescens (Schmpr), Kuzlany, on sandy slopes, 1 May 1883. – *Niphotrichum canescens* (Hedw.) Bedn.-Ochyra & Ochyra, WI B06101.

***Grimmia*¹³⁶ Ehrh. (*Grymmia*¹³⁷ Jundz.)**

Gr. pulvinata Smith. [*Grimmia pulvinata* (Hedw.) Sm.]. On stones. Kuzlany, Rudziszki. Rarely occurring and rarely sporulating.

Herbarium specimens:

Grimmia pulvinata (Schmpr), Kuzlany, in peatland, on stone 2 April 1884. – *Grimmia pulvinata* (Hedw.) Sm., WI B06209(1).

Grimmia pulvinata (Schmpr), Rudziszki, on stone 23 August 1883. – *Grimmia pulvinata* (Hedw.) Sm., WI B06209(2).

Gr. Muehlenbeckii Schimp. [*Grimmia muehlenbeckii* Schimp.]. Common. Black or green coloured, with long or short hairpoint. On erratic boulders in forests. Kuzlany, Żuprany, Smorgonie, Wiazyń. Often lacking sporophytes.

Herbarium specimens:

Gr. Muehlenbeckii (Schmpr) forma normalis (Chałubiński), Węclawinięta, on stone, near forest, 31 March 1883. – *Grimmia muehlenbeckii* Schimp., WI B06205(1).

[√]*Gr. Muehlenbeckii* (Schmpr), Wiazyń, on stone, 4 June 1884. – *Bucklandiella heterosticha* (Hedw.) Bedn.- Ochyra & Ochyra, WI B06205(2).

[√]*Gr. Muehlenbeckii* (Schmpr), Kuzlany, on stone, 15 March 1884. – *Bucklandiella heterosticha* (Hedw.) Bedn.- Ochyra & Ochyra, WI B06205(3).

Gr. Muehlenbeckii (Schmpr), Żuprany, in forest, 27 September 1883. – *Grimmia muehlenbeckii* Schimp., WI B06206(1).

136 Currently the species listed below belong to the genera *Grimmia* Hedw. and *Schistidium* Bruch & Schimp.

137 J. Jundzł's (1830) suggestion to use the Latin name as a basis for the Polish name is no longer accepted.

Gr. Muehlenbeckii (Schmpr), Żuprany, by road, near the Usza, 8 September 1883. – *Grimmia muehlenbeckii* Schimp. WI B06206(2).

Note: Following revision, the specimen initially identified as *Racomitrium heterostichum*, was re-determined as *Grimmia muehlenbeckii* (see description of the specimens)

Gr. apocarpa Hedw. [*Schistidium apocarpum* (Hedw.) Bruch & Schimp.]. On boulders in meadows. Kuzlany by road from Wilno to Mińsk. With sporophytes.

Herbarium specimens:

Grimmia. apocarpa (Schmpr), Gajdzie, Kuzlany, on stone, 9 April 1883. – *Schistidium apocarpum* (Hedw.) Bruch & Schimp., WI B06210.

Grimmia. apocarpa (Schmpr), Gajdzie, Kuzlany, on stone, 1 April 1883. – *Schistidium apocarpum* (Hedw.) Bruch & Schimp., WI B06211.

***Trichostomum* Hedw. (Wąsoust¹³⁸)**

Tr. rigidulum Sm. [*Didymodon rigidulus* Hedw.]. Kuzlany, on tree trunk by river.

Herbarium specimens:

√*Trichostomum rigidulum* (Schmpr), Kuzlany, 2 April 1884. – *Barbula unguiculata* Hedw., WI B06184.

Note: No specimen available to confirm identity of *Didymodon rigidulus*.

***Didymodon*¹³⁹ Hedw. (Paroząb¹⁴⁰ Jundz.)**

Did. rubellus Br. et Sch. [*Bryoerythrophyllum recurvirostrum* (Hedw.) P.C. Chen.]. Widespread in ravines, pits and by streams. Annopol. Kuzlany, Wilno. Bearing sporophytes.

Herbarium specimens:

Didymodon rubellus (Schmpr), Kuzlany, 20 August 1883. – *Didymodon vinealis*¹⁴¹ (Brid.) R.H. Zander, WI B06194.

138 The Polish name for the genus, provided by Szafnagel, is now no longer used. (Ochyra *et al.* 2003).

139 The only species of the genus provided by Szafnagel currently belong to the genus *Bryoerythrophyllum* P.C. Chen.

140 The Polish name for the genus, provided by J. Jundzł (1830), is still used (Ochyra *et al.* 2003).

141 The species not listed in *Zapiski bryologiczne*. It has also been identified, following revision of the specimen named *Weisia viridula* var. *stenocarpa*.

***Ceratodon* Brid. (Zęboróg¹⁴²)**

C. purpureus Brid. [*Ceratodon purpureus* (Hedw.) Brid.]. Common. Kuzlany, Żuprany, Annopol, Iłska Forest. Always with sporophytes.

Herbarium specimens:

Ceratodon purpureus (Schmpr), Rudziszki, 23 August 1883. – *Ceratodon purpureus* (Hedw.) Brid., WI B06195(1).

Ceratodon purpureus (Schmpr), Kuzlany. – *Ceratodon purpureus* (Hedw.) Brid., WI B06195(2).

Ceratodon purpureus (Schmpr.), Kuzlany, in forest, 11 August 1883. – – *Ceratodon purpureus* (Hedw.) Brid., WI B06598(1).

Ceratodon purpureus (Schmpr.), 5 May 1884. – *Ceratodon purpureus* (Hedw.) Brid., WI B06598(2).

Ceratodon purpureus (Schmpr.), 14 August 1883. – *Ceratodon purpureus* (Hedw.) Brid., WI B06598(3).

Note: Some specimens initially named by Szafnagel *Barbula convoluta* and *Bryum caespiticium*, following revision, were identified as *Ceratodon purpureus*.

***Trichodon* Schimp. (Włosoząb¹⁴³)**

Tr. cylindricus Schimp. [*Trichodon cylindricus* (Hedw.) Schimp.]. In gaps in forest. Kuzlany. With sporophytes.

Herbarium specimens:

Trichodon cylindricus (Schmpr.), Kuzlany, 22 April 1884. – *Trichodon cylindricus* (Hedw.) Schimp., WI B06566.

Note: The specimen initially named by K. Szafnagel *Leptotrichum homomallum*, following revision, were identified as *Trichodon cylindricus*.

***Leptotrichum* Hampe (Ładnowłosek¹⁴⁴)**

Lept. homomallum Schimp. [*Ditrichum heteromallum* (Hedw.) E. Britton]. On sandy ground Żuprany, Kuzlany, Wilno – Bekieszowa Hill. With sporophytes¹⁴⁵.

142 This Polish name, provided by F. Błoński (1889), was accepted by Szafnagel and it is still used (Ochyra *et al.* 2003).

143 The Polish name for the genus, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

144 The Polish name for the genus, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

145 The species listed below recently are assigned to the genus *Ditrichum* Timm ex Hampe (Hodgets *et al.* 2020).

Herbarium specimens:

[√]*Leptotrichum homomallum* (Schmpr), Wilno, Bekieszowa Hill, 10 June 1884. – *Trichodon cylindricus* (Hedw.) Schimp., WI B06565.

Note: No specimen available to confirm identity of *Ditrichum heteromallum*.

Lept. tortile Hampe. [*Ditrichum pusillum* (Hedw.) Hampe]. On sandy patches. Gajdzie, Kuzlany, Żuprany. With sporophytes.

Herbarium specimens:

Leptotrichum tortile (Schmpr), Gajdzie, on fallow land, 24 September 1883. – *Ditrichum pusillum* (Hedw.) Hampe, WI B06186(1).

Leptotrichum tortile (Schmpr), Żuprany, in forest, 1 September 1883. – *Ditrichum pusillum* (Hedw.) Hampe, WI B06186(2).

Leptotrichum tortile (Schmpr), Kuzlany, in forest, 25 April 1884. – *Ditrichum pusillum* (Hedw.) Hampe, WI B06186(3).

***Barbula*¹⁴⁶ W. et M. (Zwojek¹⁴⁷ Jundz.)**

B. ruralis Hedw. [*Syntrichia ruralis* (Hedw.) F. Weber & D. Mohr]. Always on thatched roofs. Common. With sporophytes.

Herbarium specimens:

Barbula ruralis (Schmpr), Zalesie, on track under birch, 20 July 1884. – *Syntrichia ruralis* (Hedw.) F. Weber & D. Mohr, WI B06198(1).

Barbula ruralis (Schmpr), Kuzlany, 1882. – *Syntrichia ruralis* (Hedw.) F. Weber & D. Mohr, WI B06198(2).

B. subulata Brid. [*Tortula subulata* Hedw.]. By the River Wilja in thickets near Daniszew. With sporophytes.

Herbarium specimens:

Barbula subulata (Schmpr), by the River Wilja, 23 June 1884. – *Tortula subulata* Hedw., WI B06181

B. fallax Hedw. [*Didymodon fallax* (Hedw.) R.H. Zander]. In gaps in forests. Kuzlany, Annopol. With sporophytes.

146 Currently all five species listed below belong to different genera: *Barbula* Hedw., *Didymodon* Hedw., *Streblotrichum* P. Beauv., *Syntrichia* Brid. and *Tortula* Hedw.

147 The Polish name for the genus, provided by J. Jundzill (1830), has been used up to the present (Ochyra *et al*, 2003).

Herbarium specimens:

Barbula fallax (Schmpr), Kuzlany, in forest, 12 April 1883. – *Didymodon fallax* (Hedw.) R.H. Zander, WI B06183(1).

√*Barbula fallax* (Schmpr), Annopol, on sands, 8 September 1883. – *Barbula unguiculata* Hedw., B06183(2).

Note: The specimen initially named by Szafnagel *Weisia viridula*, following revision, was determined as *Didymodon fallax*.

B. convoluta Hedw. [*Streblotrichum convolutum* (Hedw.) P. Beauv.]. On burnt sites, on sandy patches. Kuzlany, Rudziszki. With sporophytes.

Herbarium specimens:

√*Barbula convoluta* (Schmpr), Kuzlany, in forest, 12 April 1883. – *Ceratodon purpureus* (Hedw.) Brid., WIB06164(1).

√*Barbula convoluta* (Schmpr), Annopol, 1882. – *Ceratodon purpureus* (Hedw.) Brid., WIB06164(2).

Barbula convoluta (Schmpr), Rudziszki, on fallow land, 10 May 1884. – *Streblotrichum convolutum* (Hedw.) P. Beauv., WIB06164(3).

B. unguiculata Hedw. [*Barbula unguiculata* Hedw.]. Widespread in ditches and on sandy patches. Wilno – Bekieszowa Hill., by the road from Wilno to Mińsk. With sporophytes.

Herbarium specimens:

Barbula unguiculata (Schmpr), Wilno, Bekieszowa Hill, 10 June 1884. – *Barbula unguiculata* Hedw., WI B06179(1).

Barbula unguiculata (Schmpr), 1883. – *Barbula unguiculata* Hedw., WIB06179(2).

Barbula unguiculata (H), Sierhiejewicze, on fallow land, 20 August 1885. – *Barbula unguiculata* Hedw., WI B06197.

Note: The specimens previously named *Barbula convoluta* and *Trichostomum rigidulum*, following revision, were identified as *Barbula unguiculata* (see description of herbarium specimens for these species).

***Pottia*¹⁴⁸ Ehrh. (*Pottia*¹⁴⁹)**

Pottia minutula, var. *rufescens* Schultz. [*Microbryum davallianum* (Sm.) R.H. Zander]. On loamy, and clayey ground. Kuzlany. With sporophytes.

148 The species listed below currently belong to three genera: *Microbryum* Schimp., *Pterygoneurum* Jur. and *Tortula* Hedw. (Hodgets *et al.* 2003).

149 Szafnagel suggested a Polish name for the genus *Pottia* based on the Latin name. This approach is no longer accepted (Ochyra *et al.*, 2003).

Herbarium specimens:

Pottia minutula (Schmpr) var: *rufescens*, Kuzlany, 15 October 1884. – *Tortula truncata* (Hedw.) Mitt., WI B06201.

Note: No specimen available to confirm identity of *Microbryum davallianum* (Sm.) R.H. Zander.

P. intermedia Fürnr. (*Tortula caucasica* Broth.). In places of incineration. Kuzlany. With sporophytes.

Herbarium specimens:

√*Pottia intermedia* (Schmpr), Kuzlany, 25 July 1883. – *Tortula truncata* (Hedw.) Mitt. WI B06166.

Note: No specimen available to support the species *Tortula caucasica* Broth. were found.

Pottia bryoides Lindb. [*Tortula protobryoides* R.H. Zander]. Wilno – Bekieszowa Hill. With sporophytes.

Herbarium specimens:

Pottia bryoides (Schmpr), Wilno, on Bekieszowa Hill. 10 June 1884. – *Tortula protobryoides* R.H. Zander, WI B06167.

P. cavifolia var. *epiloxa* Brid. [*Pterygoneurum ovatum* (Hedw.) Dixon.]. Wilno – Bekieszowa Hill. With sporophytes.

Herbarium specimen:

Pottia cavifolia (Schmpr) var: *epilosa*, Wilno, on Bekieszowa Hill, 10 June 1884. *Pterygoneurum ovatum* (Hedw.) Dixon, WI B06169.

P. truncata Fürnr. [*Tortula truncata* (Hedw.) Mitt.]. In fields Kuzlany, Annopol. With sporophytes.

Herbarium specimens:

Pottia truncata (Schmpr.), Kuzlany, in arable field, 30 March 1884. – *Tortula truncata* (Hedw.) Mitt., WI B06168(1).

Pottia truncata (Schmpr.), Annopol, in garden, 25 September 1883. – *Tortula truncata* (Hedw.) Mitt., WI B06168(2).

Note: The specimens named by Szafnagel as *Pottia intermedia*, *Pottia minutula* and *Physcomitrella patens*, following revision, were identified as *Tortula truncata* (see description of herbarium specimens for this species).

***Gymnostomum* Hedw. (Nagosz Jundz.)**

G. microstomum Hedw. [*Weissia brachycarpa* (Nees & Hornsch.) Jur.]. On a mole-hill. Żuprany. With sporophytes.

Herbarium specimen:

Gymnostomum microstomum (Schmpr), Żuprany, 6 May 1884. – *Weissia brachycarpa* (Nees & Hornsch.) Jur., WI B06193.

***Weisia*¹⁵⁰ Hedw. (*Weisia*¹⁵¹)**

W. crispula Hedw. [*Hymenoloma crispulum* (Hedw.) Ochyra]. In forest on branch of hazelnut.

Note: No specimen available to confirm the species.

W. viridula Brid. var. *stenocarpa* Schimp. [*Weissia controversa* Hedw.]. Polany at forest edge, Gajdzie on stone by river. With sporophytes.

Herbarium specimens:

[√]*Weisia viridula* (Schmpr) var. *stenocarpa*, Gajdzie, on stone, by river, 16 September 1884. – *Didymodon vinealis* (Brid.) R.H. Zander¹⁵², WI B06170(1).

Note: No specimen available to confirm identity of *Weissia controversa* Hedw.

***Dicranella*¹⁵³ Schimp. (Widłóżębówka¹⁵⁴)**

D. Schreberi Schimp. [*Dicranella schreberiana* (Hedw.) Dixon]. On clayey ground. Kuzlany. With sporophytes.

Herbarium specimens:

Dicranella Schreberi (Schmpr), Kuzlany, 8 October 1884. – *Dicranella schreberiana* (Hedw.) Dixon, WI B06208.

D. rufescens Schimp. [*Dicranella rufescens* (Dicks.) Schimp.]. Gajdzie, in a rye field. With sporophytes.

Note: No specimen available.

150 The species listed below currently belong to the genera *Hymenoloma* Dusén and *Weissia* Hedw.

151 Szafnagel, following J. Jundził (1830), suggested to use Latin name as basis for Polish. This is not longer accepted (Ochyra *et al.*, 2003).

152 See comment 141.

153 *Dicranella* (Müll. Hal.) Schimp.

154 The Polish name for the genus provided by Szafnagel is now no longer used (Ochyra *et al.* 2003).

D. curvata Schimp. [*Dicranella subulata* Hedw.]¹⁵⁵ Schimp.). Ilska Forest in disturbed sites. With sporophytes.

Herbarium specimen:

[†]*Dicranella curvata* (Schmpr), Ilska Forest, 5 July 1884. – *Dicranella heteromalla* (Hedw.) Schimp., WI B06223.

Note: No specimens available to confirm identity of *Dicranella subulata*.

D. varia Schimp. [*Dicranella varia* (Hedw.) Schimp.]. On loamy ground near Wilno, Annopol, Rusinowicze. With sporophytes.

Herbarium specimen:

Dicranella varia (Schmpr), Annopol, on sandy ground, 8 September 1883. – *Dicranella varia* (Hedw.) Schimp., WI B06220.

***Dicranodontium* Br. et Sch. (Widlik¹⁵⁶)**

D. aristatum Schimp. [*Dicranodontium asperulum* (Mitt.) Broth.]. On boulders in forest. Kuzlany, Żuprany, Polany. Lacking sporophytes.

Herbarium specimens:

Dicranodontium aristatum (Schmpr.), Żuprany, on stone, 4 May 1884. – *Paraleucobryum longifolium* (Hedw.) Loeske, WI B06224.

Note: No specimen available to confirm identity of *Dicranodontium asperulum* (Mitt.) Broth.

D. longirostre Br. et Sch. [*Dicranodontium denudatum* (Brid.) E. Britton.]. On stones in forest. Kuzlany. Lacking sporophytes.

Herbarium specimens:

Dicranodontium longirostre (Schmpr), Żuprany, on stone, 24 March 1884. – *Paraleucobryum longifolium* (Hedw.) Loeske, WI B06225.

Note: The specimen named *Campylopus flexuosus* (see list of herbarium specimens), following revision, was determined to be *Dicranodontium denudatum* (Brid.) E. Britton.

155 According to Ochyra *et al.* (2003) *Dicranella curvata* is a synonym for *Dicranella subulata* var. *curvata*.

156 The Polish name for the genus, provided by Szafnagel, is now no longer used. (Ochyra *et al.* 2003).

***Dicranum* Hedw. (Widłoząb¹⁵⁷ Jundz.)**

D. flagellare Hedw. [*Dicranum flagellare* Hedw.]. Widespread in forests on trunks, on stones; forms hummocks. Kuzłany, Żuprany, Smorgonie, Annopol. With sporophytes. In forest near Annopol it grows high on birch trees.

Herbarium specimens:

¹⁵⁷*Dicranum flagellare* (Schmpr), Węclawinięta, Kuzłany,¹⁵⁸ in forest, 30 September 1884. – *Dicranum viride* (Sull. & Lesq.) Lindb., WI B06237(1).

Dicranum flagellare (Schmpr), Węclawinięta, Kuzłany, in forest, 30 September 1884. – *Dicranum flagellare* Hedw., WI B06237(2).

Dicranum flagellare (Schmpr), Węclawinięta, Kuzłany, in forest, 30 September 1884. – *Dicranum flagellare* Hedw., WI B06237(3).

D. montanum Hedw. [*Dicranum montanum* Hedw.]. On granite boulders, quite widespread, also at trunks on trunks of trees. Żuprany, Smorgonie, Kuzłany, Annopol. With sporophytes.

Herbarium specimens:

Dicranum montanum (Schmpr), Kuzłany, in forest, on stone, 7 September 1883. – *Dicranum montanum* Hedw., WI B06215.

D. palustre Lapył. [*Dicranum bonjeanii* De Not.]. Occurs in peatlands and meadows beneath alder trees. Kuzłany, Smorgonie, Annopol, Węclawinięta. With sporophytes.

Herbarium specimens:

Dicranum palustre (Schmpr), in forest, 22 April 1883. – *Dicranum bonjeanii* De Not., WI B06239.

Dicranum palustre (Schmpr), Gajdzie, Kuzłany, Pakoszów, in peaty meadows, 9 April 1884. – *Dicranum bonjeanii* De Not., WI B06235.

Dicranum palustre Węclawinięta, in open area within forest, 31 September 1883. – *Dicranum bonjeanii* De Not, WI B06238.

D. scoparium Hedw. [*Dicranum scoparium* Hedw.]. Widespread in birch forests. Kuzłany, Smorgonie, Węclawinięta, Żuprany, Annopol. With sporophytes.

Herbarium specimens:

Dicranum scoparium (Schmpr), Żuprany, in forest, 1 September 1883. – *Dicranum scoparium* Hedw., WI B06221(1).

157 The Polish name for the genus, provided by J. Jundzill (1830), has been used up to the present (Ochyra *et al.*, 2003).

158 Two quite remote localities.

Dicranum scoparium (Schmpr), Zalesie, in pine forest, 4 September 1882. – *Dicranum scoparium* Hedw., WI B06221(2).

Dicranum scoparium (Schmpr), Kuzlany, in forest, 1 August 1883. – *Dicranum scoparium* Hedw., WI B06222(1).

Dicranum scoparium (Schmpr), Żuprany, in forest, 1 September 1883. – *Dicranum scoparium* Hedw., WI B06222(2).

Dicranum scoparium (Schmpr), Kuzlany, in forest, on stone, 12 April 1883. – *Dicranum scoparium* Hedw., WI B06217.

Note: Following revision, one of the specimens previously named *D. schraderi* was identified as *D. scoparium* (see description of herbarium specimens named *D. schraderi*).

Var. *paludosum* Br. et Sch. (*Dicranum scoparium* Hedw.). Smorgoński Forest and Annopol.

Note: No specimen available.

Dicranum spurium Hedw. [*Dicranum spurium* Hedw.]. In grasslands¹⁵⁹ by the river Wilja, Smorgonie, Jachimowszczyzna. Lacking sporophytes.

Herbarium specimens:

Dicranum spurium (Schmpr), Jachimowszczyzna, in forest, 15 July 1884. – *Dicranum spurium* Hedw., WI B06212(1).

Dicranum spurium (Schmpr), Wojstomski Forest, 4 April 1884. – *Dicranum spurium* Hedw., WI B06212(2).

D. viride Schimp. [*Dicranum viride* (Sull. & Lesq.) Lindb.]. On stones in forests in wet places. Smorgonie, Trykole, Kuzlany. Lacking sporophytes.

Herbarium specimens:

Dicranum viride (Schmpr.), on stone, 30 September 1883. – *Dicranum viride* (Sull. & Lesq.) Lindb., WI B06213(1).

Dicranum viride (Schmpr.), Trykowski Forest, 30 September 1883. – *Dicranum viride* (Sull. & Lesq.) Lindb., WI B06213(2).

Dicranum viride (Sull.), Sierhiejewicze, on stone, August 1885. – *Dicranum viride* (Sull. & Lesq.) Lindb., WI B06216.

Note: The specimen initially named *Dicranum flagellare*, following revision, was determined as *Dicranum viride*.

¹⁵⁹ The habitat indicated (meadow) is not typical for the species, meanwhile the herbarium specimens were collected in forests. The main habitats of *Dicranum spurium* in the area are pine forests (Jukoniene 2003; Rykovsky & Maslovsky 2004).

D. Schraderi W. et M. [*Dicranum undulatum* Schrad. ex Brid.]. Annapol in forest meadow called Starzynka. Lacking sporophytes.

Herbarium specimens:

√*Dicranum schraderi* (Schmpr), Annapol, in forest, 15 September 1883. – *Dicranum scoparium* Hedw., WI B06236(1).

Dicranum schraderi (Schmpr), Annapol, in forest, 15 September 1883. – *Dicranum undulatum* Schrad. ex Brid., WI B06236(2).

Dicranum undulatum Hedw. [*Dicranum polysetum* Sw. ex anon.]. Distributed in forests; usually lacking sporophytes.

Herbarium specimens:

Dicranum undulatum (Schmpr), Kuzlany, Annapol, in forest, 1883. – *Dicranum polysetum* Sw. ex anon., WI B06218.

***Campylopus* Brid. (Podgajnik¹⁶⁰)**

C. flexuosus Brid. [*Campylopus flexuosus* (Hedw.) Brid.]. Zamość, in bog near forest.

Herbarium specimens:

√*Campylopus flexuosus*, Zamość, in mire near forest, 15 August 1885. – *Dicranodontium denudatum* (Brid.) E. Britton, WI B06185.

Note: No specimen available to confirm identity of *Campylopus flexuosus* (Hedw.) Brid.

***Leucobryum* Hampe (Białomech¹⁶¹)**

L. glaucum Schimp. [*Leucobryum glaucum* (Hedw.) Ångstr.]. Very rare. Wiszniew – pine forest at the swamp. Lacking sporophytes.

Herbarium specimens:

Leucobryum glaucum (Schmpr), Wiszniew, in forest, 4 June 1884. – *Leucobryum glaucum* (Hedw.) Ångstr., WI B06592.

***Fissidens* Hedw. (Szparkowiec¹⁶²)**

F. osmundoides Hedw. [*Fissidens osmundoides* Hedw.]. Jachimowszyzna – in meadow. Lacking sporophytes.

Herbarium specimens:

160 The Polish name for the genus, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

161 The Polish name for the genus, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

162 The Polish name for the genus, provided by Szafnagel, is now no longer used (Ochyra *et al.* 2003).

Fissidens osmundoides (Schmpr), Jachimowszyczna, in mire, 15 July 1884, – *Fissidens osmundoides* Hedw., WI B06176.

F. adianthoides Hedw. [*Fissidens adianthoides* Hedw.]. Quite common in wet forests and alder forests, Gajdzie, Smorgonie, Jachimowszyczna, Daniszew, Annopol, Gwozdowo. With sporophytes.

Herbarium specimens:

Fissidens adianthoides (Schmpr), on alder trees, 31 September 1883. – *Fissidens adianthoides* Hedw., WI B06171.

Fissidens adianthoides (Schmpr), Gajdzie, beneath alder trees, 9 April 1883. – *Fissidens adianthoides* Hedw., WI B06172.

F. incurvus Schwaegr. [*Fissidens incurvus* Starke ex Röhl.]. Polany – at forest edge, on loamy ground. With sporophytes.

Herbarium specimens:

√*Fissidens incurvus* (Schmpr), at forest edge, 6 September 1884. – *Fissidens bryoides* Hedw., WI B06174.

Note: No specimen available to confirm identity of *Fissidens incurvus* Starke ex Röhl.

F. bryoides Hedw. [*Fissidens bryoides* Hedw.]. Polany – in forest, near manor house, Żuprany – in ravines. With sporophytes.

Herbarium specimens:

Fissidens bryoides cum Fissidens incurvus (Schmpr). Polany, in forest, 6 September 1884. – *Fissidens bryoides* Hedw., WI B06173.

Fissidens bryoides (Schmpr), at forest edge, on ground, 6 September 1884. – *Fissidens bryoides* Hedw., WI B06175.

Note: The specimen named by Szafnagel *Fissidens incurvus*, following revision, was identified as *Fissidens bryoides* (see description of herbarium specimen).

***Physcomitrella*¹⁶³ Schimp. (Iłowiec¹⁶⁴)**

Ph. patens Schimp. [*Physcomitrium patens* (Hedw.) Mitt.]. Kuzlany on clayey ground in birch forest. With sporophytes.

Herbarium specimens:

√*Physcomitrella patens* (Schmpr), Kuzlany on clayey ground, 25 August 1883. – *Tortula truncata* (Hedw.) Mitt., WI B06207.

Note: No specimen available to confirm identity of *Physcomitrium patens*.

163 *Physcomitrium* (Brid.) Brid.

164 The Polish name for the genus, provided by K. Szafnagel, is now no longer used (Ochyra *et al.* 2003).

***Phascum* L. (Brodek¹⁶⁵ Jundz.)**

Ph. cuspidatum Schreb. var. *piliferum*. [*Tortula acaulon* (With.) R.H. Zander]. Kuzslany – in field near forest.

Herbarium specimens:

√*Phascum cuspidatum* (Schmpr), Kuzslany, in garden, 17 April 1883. – *Tortula truncata* (Hedw.) Mitt., WI B06178.

√*Phascum cuspidatum* (Schmpr) var: *piliferum*, Kuzslany, in forest, 13 April 1883. – *Tortula truncata* (Hedw.) Mitt., WI B06182.

Note: No specimen available to confirm identity of this species.

***Pleuridium*¹⁶⁶ Brid. (Bokogłówka¹⁶⁷)**

Pleuridium subulatum Br. et Sch. [*Pleuridium subulatum* (Hedw.) Rabenh.]. Iłska Forest – in ravines. With sporophytes.

Herbarium specimens:

Pleuridium subulatum (Schmpr), Iłska Forest, 5 June 1884. – *Pleuridium subulatum* (Hedw.) Rabenh., WI B06567.

Pleuridium nitidum Br. et Sch. [*Pseudephemerum nitidum* (Hedw.) Loeske]. Kuzslany. With sporophytes.

Herbarium specimens:

Pleuridium nitidum (Schmpr), 2 September 1883. – *Pseudephemerum nitidum* (Hedw.) Loeske, WI B06468(2).

Pleuridium nitidum (Schmpr), Kuzslany, 24 August 1883. – *Pseudephemerum nitidum* (Hedw.) Loeske, WI B06468(1).

*Pleuridium alternifolium*¹⁶⁸ Br. et Sch. [*Pleuridium subulatum* (Hedw.) Rabenh.]. Kuzslany – forest. With sporophytes.

Herbarium specimens:

Pleuridium subulatum (Schmpr), Kuzslany, 3 May 1884. – *Pleuridium subulatum* (Hedw.) Rabenh., WI B06564(1).

165 The Polish name provided by S.B. Jundziłł (1791) for the genus *Phascum* has recently been used for the genus *Tortula* (Ochyra *et al.* 2003). Recently the species listed below are assigned to the genus *Tortula* Hedw.

166 The species listed below currently belong to two genera *Pleuridium* Rabenh. and *Pseudephemerum* (Lindb.) I. Hagen.

167 The Polish name for the genus, provided by K. Szafnagel, is now no longer used. (Ochyra *et al.* 2003).

168 *Pleuridium subulatum* and *Pleuridium alternifolium*, provided by K. Szafnagel as separate species, are synonyms.

Pleuridium subulatum (Schmpr), Kuzslany, in forest, 22 April 1884. – *Pleuridium subulatum* (Hedw.) Rabenh., WI B06564(2).

***Andreaea*¹⁶⁹ Ehrh. (*Andrea*¹⁷⁰)**

Andr. petrophila Ehrh. [*Andreaea rupestris* Hedw.]. Kuzslany, on granite boulder in forest. With sporophytes.

Note: No specimen available to confirm this species.

***Sphagnum* Ehrh. (Torfowiec¹⁷¹ Jundz.)**

Sph. cymbifolium Ehrh. [*Sphagnum palustre* L.]. Żuprany – in swamp, in mire at Łatyhoła. Lacking sporophytes; common.

Herbarium specimens:

Sphagnum cymbifolium (Schmpr), Łatyhoła, in mire, 30 September 1883. – *Sphagnum palustre* L., WI B06122.

Sph. papillosum Lindb. [*Sphagnum papillosum* Lindb.]. Kołpry – forest within mire. Lacking sporophytes; very rare.

Herbarium specimens:

Sphagnum papillosum (Schmpr), Kołpry, in forest within mire, 15 September 1884. – *Sphagnum papillosum* Lindb., WI B06119.

Sph. rigidum Schimpr. [*Sphagnum compactum* Lam. & DC.]. Kołpry, forest within mire. Lacking sporophytes.

Herbarium specimens:

Sphagnum rigidum (Schpr.), Kołpry, in forest, 8 February 1884. – *Sphagnum compactum* Lam. & DC., WI B06105.

Var. squarrosulum (Warnstoff) [*Sphagnum compactum* Lam. & DC.]. Kołpry – forest. Lacking sporophytes.

Herbarium specimens:

Sphagnum rigidum var. *squarrosulum* (Warnstoff), Kołpry, in pit within forest, 20 September 1884. – *Sphagnum compactum* Lam. & DC., WI B06105.

169 *Andreaea* Hedw. (Hodgets *et al.* 2020).

170 K. Szafnagel, as well as Ignacy Rafał Czerwiakowski (1849), provided the Polish name for this genus based on the Latin name. Recently it is no longer used (Ochyra *et al.* 2003).

171 The Polish name for the genus *Sphagnum* suggested by B S. Jundziłł in 1791 is still used (Ochyra *et al.* 2003).

Sphagnum rigidum var: *squarrosulum* (Warnstorff.), Kołpry, pow. Oszm., in forest, 12 September 1884. – *Sphagnum compactum* Lam. & DC., WI B06111.

Var. *compactum* Schimp. [*Sphagnum compactum* Lam. & DC.]. Kołpry – forest within mire.

Herbarium specimens:

Sphagnum rigidum var: *compactum* Schimp., Kołpry, in pit within forest, 22 September 1884. – *Sphagnum compactum* Lam. & DC., WI B06113.

Sph. subsecundum N. et E. [*Sphagnum subsecundum* Nees]. Kuzlany, Żuprany – in mire. Lacking sporophytes.

Herbarium specimens:

Sphagnum subsecundum (Schmpr), Kuzlany, in mire within forest, 12 April 1883. – *Sphagnum subsecundum* Nees, WI B06116.

Sphagnum subsecundum (Schpr), Żuprany, in mire within forest, 21 April 1883. – *Sphagnum subsecundum* Nees, WI B06117.

Sphagnum subsecundum (Schpr), Kuzlany, in mire, 5 May 1884. – *Sphagnum subsecundum* Nees, WI B06120.

Note: the specimen initially named *Sphagnum contortum*, following revision, was identified as *S. subsecundum* (see list of herbarium specimens).

Sph. girgensohnii Russow. [*Sphagnum girgensohnii* Russow]. Wiszniew, Kołpry – in wet forest. Lacking sporophytes.

Herbarium specimens:

Sphagnum girgensohnii (Schmpr), Wiszniew, in forest, 25 June 1884. – *Sphagnum girgensohnii* Russow, WI B06110(1).

Sphagnum girgensohnii (Schmpr), Kołpry, in wet forest, 20 September 1884. – *Sphagnum girgensohnii* Russow, WI B06110(2).

Var. *speciosum* (Limpr.) [*Sphagnum girgensohnii* Russow]. Żuprany, on hummocks in mire. Lacking sporophytes.

Herbarium specimen:

Sphagnum girgensohnii v. *speciosum* (Limpr.), Żuprany, in mire, 17 September 1884. – *Sphagnum girgensohnii* Russow. WI B06121.

Var. *squarrosulum* Warnstorff [*Sphagnum girgensohnii* Russow]. Daniszew, in forest.

Herbarium specimen:

Sphagnum girgensohnii (Schpr) v. *squarrosulum*, Żuprany, in mire, 20 September 1884. – *Sphagnum girgensohnii* Russow, WI B06108.

Var. *deflexum* Schligh. [*Sphagnum girgensohnii* Russow]. Iłska Forest. Lacking sporophytes.

Herbarium specimen:

Sphagnum girgensohnii (Schmpr) var: *deflexum* (Schlieph.), Ilska Forest, 6 June 1884. – *Sphagnum girgensohnii* Russow, WI B06109.

Sph. squarrosum Schimp. [*Sphagnum squarrosum* Crome]. Trykołski Forest – in mire. Lacking sporophytes; rare.

Herbarium specimen:

Sphagnum squarrosum (Schmpr), Trykolski Forest, in mire, 21 May 1884. – *Sphagnum squarrosum* Crome. WI B06107.

Sph. teres Schimpr. [*Sphagnum teres* (Schimp.) Ångstr.]. In thickets by Lake Wołejkowskie. Lacking sporophytes; rare.

Herbarium specimen:

Sphagnum teres (Schpr) V: *squarrosulum*, by Lake Wołejkowskie (p. Oszm.), in thickets, 15 April 1884. – *Sphagnum teres* (Schimp.) Ångstr., WI B06106.

Sph. acutifolium Ehrh. [*Sphagnum capillifolium* (Ehrh.) Hedw.].

Note: All specimens of *Sphagnum acutifolium* with different varietal names, following revision, were determined to be *Sphagnum capillifolium*.

Var. Schimpr. Warnstorff.¹⁷² Kuzlany – by Lake Wołejkowskie. Lacking sporophytes.

Herbarium specimen:

Sphagnum acutifolium v. *Schimperi* Warnstorf, Kuzlany, in peatland, 1883. – *Sphagnum capillifolium* (Ehrh.) Hedw., WI B06123.

Sphagnum acutifolium (Schmpr) var *Schimperi* Warnstorff?, by Lake Wołejkowskie (p. Oszm), 1882. – *Sphagnum capillifolium* (Ehrh.) Hedw., WI B06124.

Var. *luridum* (Angestr.) *deflexum* Warnstorff.¹⁷³ Kołpny – forest in mire. With sporophytes.

Herbarium specimen:

Sphagnum acutifolium v. *luridum* (Angstr), *deflexum* Warnst. c.fl, Kołpny, in forest, in mire, 20 September 1884. – *Sphagnum capillifolium* (Ehrh.) Hedw., WI B06125.

172 Probably omitted the name of the variety; the two cited authors also seem peculiar. The same problem occurs on the herbarium label.

173 From such a record, it is difficult to determine what K. Szafnagel meant. Currently, *Sphagnum acutifolium* var. *deflexum* Schimp. is a synonym of *Sphagnum capillifolium*, whereas *Sphagnum acutifolium* var. *luridum* Huebener is a synonym of *Sphagnum subnitens* (Ochyra et al. 2003). The same inscription occurs on the herbarium label. It may be that K. Szafnagel could not decide to which variety to assign the specimen. Following revision, the specimen was determined to be *Sphagnum capillifolium*.

Var. *luridum tenellum*¹⁷⁴ (Warnstorff). Kołpry – forest in mire. With sporophytes.

Herbarium specimen:

Sphagnum acutifolium v. *luridum tenellum* Warnstorff. Kołpry, in forest, in mire, 20 September 1884. – *Sphagnum capillifolium* (Ehrh.) Hedw., WI B06127.

Var. *luridum* (Warnstorff). [*Sphagnum subnitens* Russow & Warnst.¹⁷⁵]. Sikuń – in wet thickets. Lacking sporophytes.

Herbarium specimen:

[√]*Sphagnum acutifolium* v. *luridum* (Warnstorff.) Sikuń, in wet thickets, 8 April 1883. – *Sphagnum capillifolium* (Ehrh.) Hedw., WI B06126.

Note: No specimen available to confirm identity of *Sphagnum subnitens*.

Sph. cuspidatum Ehrh. [*Sphagnum cuspidatum* Ehrh. ex Hoffm.]

Var. *mollissimum* (Ress.)¹⁷⁶ [*Sphagnum cuspidatum* Ehrh.]. Kołpry – forest in mire. With sporophytes.

Herbarium specimen:

Sph. cuspidatum var. *mollissimum* (Ress.), Kołpry, in forest, 20 September 1884. – *Sphagnum cuspidatum* Ehrh. ex Hoffm., WI B06145.

Var. *plumosum* (Schimp.) [*Sphagnum cuspidatum* Ehrh. ex Hoffm.]. Łatyhoła – in mires. Lacking sporophytes.

Herbarium specimen:

[√]*Sph. cuspidatum*. (Schmpr) v: *plumosum*, Łatyhoła, in mire, 23 May 1884. – *Sphagnum majus* (Russow) C.E.O. Jensen., WI B06146.

Var. *majus* (Ress.) [*Sphagnum majus* (Russow) C.E.O. Jensen.]. Łatyhoła – in mires. With sporophytes.

Note: We found no herbarium specimen named *Sphagnum cuspidatum* var. *majus*. Meanwhile, following revision, the specimens named *Sph. cuspidatum* var. *plumosum*, *Sphagnum laxifolium* and *Sphagnum recurvum* var. *majus* were all determined to be *Sphagnum majus* (see description of herbarium specimens).

174 Similar problem to that of the previous variety. Following Ochyra *et al.* (2003), *Sphagnum acutifolium* var. *luridum* Huebener is a synonym of *Sphagnum subnitens*, whereas var. *tenellum* Schimp. is a synonym of *Sphagnum rubellum*. The herbarium specimen following revision was determined to be *Sphagnum capillifolium*.

175 *Sphagnum acutifolium* var. *luridum* Huebener is a synonym of *Sphagnum subnitens*.

176 Probably spelling mistake (Russ.?).

Var. *falcatum* Ress. [*Sphagnum cuspidatum* Ehrh. ex Hoffm.], Annopol – in forest. Lacking sporophytes.

Herbarium specimens:

Sph. cuspidatum var: *falcatum* Ress., Annopol, in forest, 15 September 1884. – *Sphagnum cuspidatum* Ehrh. ex Hoffm., WI B06143.

Var. *submersum* Schimp. [*Sphagnum cuspidatum* Ehrh.]. Kołpry – forest, in water. Lacking sporophytes.

Herbarium specimen:

Sph. cuspidatum Ehrh. v. *submersum* Schpr., Kołpry, in forest, in water, 28 April 1884. – *Sphagnum cuspidatum* Ehrh. ex Hoffm., WI B06144.

Sph. laxifolium Schimp. [*Sphagnum cuspidatum* Ehrh. ex Hoffm.]. Łatyhoła – in mires. With sporophytes.

Herbarium specimens:

√*Sph. laxifolium* (Schpr), Łatyhoła, in mire, 30 September 1884. – *Sphagnum majus* (Russow) C.E.O. Jensen., WI B06148.

*Sphagnum recurvum*¹⁷⁷ Schimp. Annopol, in forest. Lacking sporophytes.

Herbarium specimens:

Sph. recurvum (Schmpr), Annopol, Kuzlany, in forest, 1883. – *Sphagnum angustifolium* (C.E.O. Jensen ex Russow) C.E.O. Jensen., WI B06142.

Var. *obtusum* (Ängstr.) [*Sphagnum obtusum* Warnst.] Kuzlany – mire in forest, Wojstomski forest. Lacking sporophytes.

Herbarium specimens:

√*Sph. recurvum* var: *obtusum* Ängstr., Wojstomski Forest, in mire, 4 June 1884. – *Sphagnum fallax* (H. Klinggr.) H. Klinggr., WI B06147.

√*Sph. recurvum* var *obtusum* (Ängstr), Kuzlany, forest in mire, 12 April 1883. – *Sphagnum fallax* (H. Klinggr.) H. Klinggr., WI B06140.

√*Sph. recurvum* var: *obtusum* (Ängstr), Kuzlany, forest in mire, 25 August 1883. – *Sphagnum fallax* (H. Klinggr.) H. Klinggr., WI B06141.

Note: No specimens available to confirm *Sphagnum obtusum*.

¹⁷⁷ It is uncertain which species from the *Sphagnum recurvum* complex was meant. Following revision of so-named specimens, four species were ascertained: *S. angustifolium*, *S. balticum*, *S. fallax* and *S. majus*.

Var. *majus* (Angestr.) [*Sphagnum flexuosum* Dozy & Molk]. Kołpny – forest in mire. With sporophytes. Wojstomski Forest; lacking sporophytes.

Herbarium specimens:

√*Sph. recurvum* var: *majus* (Angstr), Wojstomski Forest, in mire, 4 June 1884. – *Sphagnum majus* (Russow) C.E.O. Jensen, WI B06114.

√*Sph. recurvum* var: *majus* (Angstr), Kołpny, forest in mire, 2 September 1884. – *Sphagnum fallax* (H. Klinggr.) H. Klinggr., WI B06115.

√*Sph. recurvum* var: *majus* (Ängstr) c.fl., Kołpny, forest in mire, 20 September 1884. – *Sphagnum fallax* (H. Klinggr.) H. Klinggr., WI B06132.

Note: No specimens available to confirm identity of *Sphagnum flexuosum*.

Var. *gracile* (Wanstorff.). [*Sphagnum angustifolium* (C.E.O. Jensen ex Russow) C.E.O. Jensen (?)] Łatyhoła – in forest. Lacking sporophytes.

Herbarium specimens:

Sph. recurvum var: *gracile* (Wanstorff.), Łatyhoła, in forest, 30 September 1884. – *Sphagnum balticum* (Russow) C.E.O. Jensen, WI B06139.

Note: The specimen named *Sphagnum recurvum*, following revision, was determined to be *Sphagnum angustifolium*.

Var. *pulchrum* (Lierdb.). (?). Kołpny – forest in mire. Lacking sporophytes.

Herbarium specimens:

Sph. recurvum var: *pulchrum* (Lindb.), Kołpny, forest in mire, 20 September 1884. – *Sphagnum fallax* (H. Klinggr.) H. Klinggr. WI B06138.

*Sph. medium*¹⁷⁸ (Limpricht). Annopol – in peatland. Lacking sporophytes.

Herbarium specimens:

Sph. medium Schimpricht¹⁷⁹, Annopol, in peatland, June 1884. – *Sphagnum medium* Limpr., WI B06130.

Var. *purpurascens* (Warnstorff). Annopol – in forest. Lacking sporophytes.

Herbarium specimens:

Sph. medium purpurascens (Warnstorff,) *Sphag. cymbifolium* Schmpr., Annopol, in forest, 13 August 1884. – *Sphagnum divinum* Flatberg & Hassel, WI B06128.

178 In this case *Sphagnum magellanicum* s.l. is meant. Currently, all European records of *Sphagnum magellanicum* are referable to *Sphagnum divinum* or *Sphagnum medium* (Hassel et al. 2018).

179 Probably spelling mistake (Limpricht?)

Var *congestum* Schimp. Kołpry – forest in mire. Lacking sporophytes.

Herbarium specimens:

Sph. medium (Schpr.) var *congestum* Warnstorff, Kołpry, forest in mire, 20 September 1884. – *Sphagnum medium* Limpr., WI B06133.

Sph. medium v. *congestum* Schpr (Warnst.), Kołpry, forest in mire, 20 September 1884. – *Sphagnum divinum* Flatberg & Hassel, WI B06134.

Sph. contortum (Schultz.) [*Sphagnum contortum* Schultz.]. Kuzlany, forest in mire. Lacking sporophytes.

Herbarium specimens:

[√]*Sph. contortum* (Schulz), Kuzlany, in forest within mire, 1 September 1884. – *Sphagnum subsecundum* Nees, WI B06118.

Note: No specimen available to confirm identity of *Sphagnum contortum*.

Sph. acutiforme Schimp. [*Sphagnum rubellum* Wilson].

Note: No specimen available to confirm identity of *Sphagnum rubellum*. All species or varieties which were possibly synonymous to it, following revision, were determined to be other species, namely, *Sphagnum capillifolium* or *Sphagnum warnstorffii*.

Var. *tenellum* Warnstorff. [*Sphagnum rubellum* Wilson]. Annopol – in meadow. Lacking sporophytes.

Herbarium specimens:

[√]*Sph. acutiforme* v. *tenellum* (Szpr.), Annopol, in meadow, June 1883. – *Sphagnum capillifolium* (Ehrh.) Hedw., WI B06137.

Var. *tenellum* f. *viride* Warnstorff. (*Sphagnum rubellum* Wilson). Daniszew – in alder forest.

Herbarium specimens:

[√]*Sph. acutiforme* (Schlieph et Warnst.) var: *tenellum* f. *viride* Warnst., Daniszew, in alder forest. 21 August 1883. – *Sphagnum warnstorffii*¹⁸⁰ Russow, WI B06129.

Var. *rubellum* f. *purpurascens* Schimpr. (*Sphagnum rubellum* Wilson). Daniszew – in meadows, alder forests. Lacking sporophytes.

180 This species is not listed in *Zapiski bryologiczne*.

Herbarium specimens:

^v*Sph. acutiforme* v. *rubellum* f. *purpurascens* (Schmr.), Daniszew, 21 August 1883. – *Sphagnum capillifolium* (Ehrh.) Hedw., WI B06135.

Var. *fuscum* (Schimp.) [*Sphagnum fuscum* (Schimp.) H. Klinggr.]. Kołpary – in forest, in meadow.

Herbarium specimens:

Sph. acutiforme (Schmpr) v. *fuscum*, Kołpary, in meadow within forest, 29 June 1884. – *Sphagnum fuscum* (Schimp.) H. Klinggr., WI B06136.

II

In Białowieża Forest¹⁸¹

On May 9, 1885, we arrived by night at Linówka station located on the Moskva-Brzesk railway line, and from there we went to the county town of Prużany, ten versts from the station. Having spent the night there, we took the mail carriage to Białowieża, a further seven miles away. The road passes through the town of Szersnów. Whilst passing a cemetery, I noticed *Barbula muralis* growing on the stone perimeter wall. This, therefore, is the most eastern locality known to me thus far for this species. Soon, we also noticed from afar the black line of the Białowieża forest. Along the way, unusually high wooden crosses composed of slender carved pines growing in the wood, announced its presence. Here's the forest! I looked curiously, and at first saw nothing unusual: merely a pine forest, lofty, well-kept, divided into portions, – that's what's most obvious for over the course of a mile. The soil in this part of the forest was dry and sandy. However, the landscape was slowly changing. We crossed where the land was low, where spruce merged with pine, and then with oak, and finally we reached the lime-tree forest. It extended on both sides of the meadows located at the centre of the forest, through which a small river flowed. Here, old lime trees widely displayed their mossy branches, and intertwined with one another.

Further on, lime-trees were replaced by hornbeams, their grey and branching trunks covered with small leaves, which gave the groves a cheerful Arcadian appearance. Finally, we reached a clearing enveloped by the forest and slightly raised where a village once stood. This was Białowieża. Located in the centre of the forest, it concentrates the main forest authorities. After staying there, we headed west towards Zwierzyniec. This site was dominated by oak trees, in some places of colossal size. Zwierzyniec is a mile and a half away from Białowieża and covers one of the oldest and wildest sections of the wood. Here,

181 Białowieża Forest (*Bielaviezhskaja Pushcha* (Bel.); *Puszcza Białowieska* (Pol.)) is a large forest complex located on the border between Poland and Belarus. It is the best-preserved lowland forest in the European temperate zone. Protected since the 15th century as a royal hunting ground, despite various periods of management, the Forest has survived in its natural primeval state until the present day. The Białowieża National Park, Poland, was included on the World Heritage List of 1979, and further extended to include Bielaviezhskaya Pushcha, Belarus, in 1992. The World Heritage Committee, in its decision of 2014, approved the extension of the UNESCO World Heritage site, Białowieża Forest, Belarus, Poland, resulting in an area measuring 141,885 ha, with a buffer zone of 166,708 ha. The area, in terms of conservation, is exceptionally important owing to the scale of its ancient forests, which contain extensive undisturbed areas where natural processes still continue (WHD 2017).

Based on the map and the description of the trip provided by K. Szafnagel, the main study area for bryoflora was the territory of Białowieża National Park (Poland). However, at the start of the trip, he also visited the forest that now occurs in the territory of modern Belarus.

oaks, ashes, maples and elms emerging from moist soil grew as large, densely compact columns. Here and there were green meadows carpeted with fragrant sedge.

After visiting the village in detail, we continued our trip in this direction: to the western edge of the forest along the source of a forest river, a tributary of the Bug, which begins in this area among the marshes. Hornbeams were the main trees here, but alders grew on lower ground; there were also mires, overgrown with sphagnum and dwarf pine. Our second trip took us to the north, to Narewka village. On this site, separate stands of oak, lime, hornbeam and pine were encountered. The attached map shows the direction our trips took. It turns out that we had explored only the north-eastern corner of the forest, whereas the southern part had not been visited at all. Moreover, we were able only to explore superficially the places we had visited, with the result that our journey should be considered merely a preliminary to further research; however, what I can say is that it demonstrates sufficiently the general nature of the local flora.

Before I go into details, I must say a few words about the topographic location of Białowieża Forest.

It differs from the primeval forests, located further to the east (Nalibocka, Iłska etc), since they lie in the marshy areas, whereas Białowieża Forest occupies a plateau, which rises up rather steeply above sea level and constitutes the watershed for Wisła, Niemen and Dnieper. On the Białowieża plateau, several large rivers and a number of smaller ones (of various sizes) (Narew, Narewka, Sina, Jasiołda etc) originate, some of which flow to the Black Sea, and some to the Baltic Sea.

Therefore, this upland area represents one of the links in the Ural-Baltic upland ridge. The proximity of the Cretaceous formation (chalk or chalk marls) appears to explain why the forest is rich in deciduous tree species (oak, elm, maple, lime) that grow well on calcareous soil, and also the presence of *Homalothecium sericeum*, which grows very abundantly on their trunks. I usually encountered it near limestone outcrops.

Let us also note that, in terms of its geographical location, Białowieża Forest, compared with Iłska Forest, extends further to the west and south. This explains differences in the flora of the local area compared with that of the upland woods and forests of Mińsk and Wilno.

Part of the forest, mostly covered with coniferous trees (pine, spruce), is no different from similar forests in other parts of the country. We encountered here a number of common mosses: *Hypnum Schreberi*, *cupressiforme*, *Hylocomium triquetrum*, *splendens*, *Eurhynchium striatum*, *Brachythecium salebrosum*, *velutinum*, *rutabulum*, *Polytrichum strictum* and *formosum*, and common species of *Dicranum*, *Atrichum*, *Mnium* etc. Only part of the forest, overgrown with deciduous trees, differs in character. Here, we find, as well as *Anomodon viticulosus* and *longifolius*, *Anomodon attenuatus*, which is rare in the east. Also *Neckera pennata* and *Neckera complanata* grow on hornbeam, and I first encountered them in these localities. Furthermore, I was unfamiliar with such

an abundance of *Homalothecium sericeum* (absent from Ilska Forest) and *Isothecium myurum*, which cover the entire bases of oak trunks. As well as *Leucodon sciuroides*, I encountered *Antitrichia curtipendula*, which I have long searched for in eastern Lithuania. It is also interesting that I was not able to find *Plagiothecium denticulatum*, which is so common in Ilska Forest and in the eastern forests, but I collected a large amount of *Plagiothecium silvaticum*, which I have not recorded at all in Ilska Forest. *Plagiothecium silesiacum* also grows abundantly here. Finally, I found here, for the first time, the much sought-after *Aulacomnium androgynum*, which, even here, is still very scarce. As for small species, I must note the abundant presence of *Bryum pallens*, which I have never before seen in forests, and *Orthotrichum leiocarpum* and *gymnostomum*: the latter always occurs here on aspen. These are the highlights of the trip. In moving from east to west, I found: *Neckera complanata*, *Antitrichia curtipendula*, *Aulacomnium androgynum*, *Orthotrichum leiocarpum* and these are therefore new indicator species characteristic of southern and western regions.

As for the distribution of mosses in the forest, there is great diversity resulting from the variety of tree species present, and often occurring only in one locality and on one type of soil. Parts of this forest with coniferous trees differ from those of other similar forests, and here, it is possible to identify the features of the bryological flora by referring to the previous description. Parts of the forest containing a mixture of deciduous trees closely resemble the bryological landscape of Ilska Forest, except that the latter is less wild owing to the clearing of fallen trees and the smaller volume of the stands; at the same time, however, there is shade and less moisture, and fewer hornbeam and lime trees. Strangely diffused light is characteristic of hornbeam forests, something that I have not encountered in other types of forest. The stand here is not too high, but is extremely branched and rare, and therefore provides less shade and moisture than do mixed deciduous or spruce forests, but more than pine forests. Under such conditions, mosses do not form a uniform carpet, as in pine forests, but they are scattered very densely and cling to the ground, regardless of elevation, as well as to trunks and branches etc. Each grey hornbeam is densely covered below with moss, which reaches even up to six feet above ground level.

Neckera complanata and *Antitrichia curtipendula*, like *Anomodon*, are outstanding here. There is also much *Orthotrichum* on the branches, whereas on the ground, *Mnium*, *Plagiothecium* and *Brachythecium* are the most abundant genera.

It is darker and wetter in the lime forest. Here *Anomodon*, *Leucodon*, *Antitrichia* and *Thuidium* occur, whereas on the ground, *Eurhynchium striatum*, next to *Mnium*, as is usual, are the most commonly observed species.

Forest springs and meadows are densely covered with grass and ornamental alders, so there is little space for mosses; *Hypnum cuspidatum*, *fluitans*, *Sendtneri*, *campestre*,¹⁸²

182 Probably *Brachythecium campestre* was meant (see list below).

Aulacomnium palustre, *Polytrichum* and a little *Sphagnum* are mainly seen. Moreover, there is much to be done in this regard, however, owing to a lack of time, I was able to study briefly only a few localities. It should also be noted that there are no large erratic boulders in Białowieża Forest. If I had already known Nalibocka Forest, I would have been able to summarize data concerning the eastern boundaries of the ranges of some of the species.

For the time being, this task has to be postponed until further research is undertaken.

(This species was not found in part 1, i.e. in the upland regions of Wilno and Mińsk, and was therefore encountered for the first time here, and marked by me thus *).

LIST OF MOSSES COLLECTED IN BIAŁOWIEŻA FOREST ON MAY 9TH AND 10TH 1885

Hypnum Schreberi Willd. [*Pleurozium schreberi* (Willd. ex Brid.) Mitt.].

H. cupresiforme L. [*Hypnum cupressiforme* Hedw.].

Var. *filiformis* B.S. [*Hypnum cupressiforme* var. *filiforme* Brid.].

H. cuspidatum L. [*Calliergonella cuspidata* (Hedw.) Loeske]. With sporophytes.

H. fluitans L. [*Warnstorfia fluitans* (Hedw.) Loeske].

H. haldanianum Grew. [*Callicladium haldanianum* (Grev.) H.A. Crum]. With sporophytes.

H. nemorosum Koch. [*Heterophyllum nemorosum* (W.D.J. Koch ex Brid.) Kindb.]. With sporophytes.

H. crista-castrensis L. [*Ptilium crista-castrensis* (Hedw.) De Not.].

H. sendtneri Schimpr. [*Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst.].

Hylocomium triquetrum Schimpr. [*Hylocomiadelphus triquetrus* (Hedw.) Ochyra & Stebel].

Hyl. splendens B. S. [*Hylocomium splendens* (Hedw.) Schimp.].

Brachythecium campestre B. S. [*Brachythecium campestre* (Müll. Hal.) Schimp.]. With sporophytes.

Br. velutinum B. S. [*Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen]. With sporophytes.

Br. albicans B. S. [*Brachythecium albicans* (Hedw.) Schimp.]. (in the field).

Br. salebrosum Schimpr. [*Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp.]. With sporophytes.

Br. rutabulum B.S. [*Brachythecium rutabulum* (Hedw.) Schimp.]. With sporophytes.

Plagiothecium silvaticum B.S. [*Plagiothecium nemorale* (Mitt.) A. Jaeger]). With sporophytes. Widespread.

Herbarium specimens:

Plagiothecium silvaticum (L.), Białowieża Forest, 15 May 1885. – *Plagiothecium nemorale* (Mitt.) A. Jaeger, WI B06584.

P. silesiacum B. S. [*Herzogiella seligeri* (Brid.) Z. Iwats.]. With sporophytes. Widespread.

Herbarium specimens:

Plagiothecium silesiacum (Selig.), Białowieża Forest, 15 May 1885. – *Herzogiella seligeri* (Brid.) Z. Iwats., WI B06601.

Note: Two specimens identified by Szafnagel as *Plagiothecium*, following revision were determined to be *Herzogiella seligeri*:

Plagiothecium. Białowieża Forest, 15 May 1885. – *Herzogiella seligeri* (Brid.) Z. Iwats., WI B06505.

Plagiothecium. Białowieża Forest, 15 May 1885. – *Herzogiella seligeri* (Brid.) Z. Iwats., WI B06506.

Isothecium myurum Brid. [*Isothecium alopecuroides* (Lam. ex Dubois) Isov.]. With sporophytes. Common.

Herbarium specimens:

Isothecium myurum (Poll.), Białowieża Forest, 15 May 1885. – *Isothecium alopecuroides* (Lam. ex Dubois) Isov., WI B06352.

Isothecium myurum (Poll.), Białowieża Forest, 15 May 1885. – *Isothecium alopecuroides* (Lam. ex Dubois) Isov., WI B06354.

Eurhynchium striatum B. S. [*Eurhynchium striatum* (Schreb. ex Hedw.) Schimp.]. With sporophytes. Widespread.

Herbarium specimens:

[√]*Eurhynchium striatum* (Schreb.), Białowieża Forest, 15 May 1885. – *Eurhynchium angustirete* (Broth.) T.J. Kop., WI B06329.

[√]*Eurhynchium striatum* (Schreb.), Białowieża Forest, 15 May 1885. – *Eurhynchium angustirete* (Broth.) T.J. Kop., WI B06330.

Amblystegium serpens B.S. [*Amblystegium serpens* (Hedw.) Schimp.].

Ambl. riparium B.S. [*Leptodictyum riparium* (Hedw.) Warnst.].

Thuidium tamariscinum B.S. [*Thuidium tamariscinum* (Hedw.) Schimp.].

Homalothecium sericeum B.S. [*Homalothecium sericeum* (Hedw.) Schimp.]. With sporophytes. Common.

Herbarium specimens:

Homalothecium sericeum (L) c.F!, Białowieża Forest, 15 May 1885. –
Homalothecium sericeum (Hedw.) Schimp., WI B06388.

Anomodon viticulosus Hook. et Tayl. [*Anomodon viticulosus* (Hedw.) Hook. & Taylor].

An. longifolius Hartm. [*Anomodon longifolius* (Schleich. ex Brid.) Hartm.].

**An. attenuatus* Hartm. [*Pseudanomodon attenuatus* (Hedw.) Ignatov & Fedosov].

Neckera complanata Hüb. [*Alleniella complanata* (Hedw.) S. Olsson, Enroth & D. Quandt] (on hornbeams).

Herbarium specimens:

Neckera complanata (L), Białowieża Forest, 15 May 1885. – *Alleniella complanata* (Hedw.) S. Olsson, WI B06595.

Neckera complanata (L), Białowieża Forest, 15 May 1885. – *Alleniella complanata* (Hedw.) S. Olsson, WI B06596.

N. pennata Hedw. [*Neckera pennata* Hedw.]. With sporophytes (on hornbeams, common).

Homalia trichomanoides B. S. [*Homalia trichomanoides* (Hedw.) Brid.]. With sporophytes.

Climacium dendroides W.M. [*Climacium dendroides* (Hedw.) F. Weber & D. Mohr].

Platygyrium repens B. S. [*Platygyrium repens* (Brid.) Schimp.]. With sporophytes.

Pylaisia polyantha Schimpr. [*Pylaisia polyantha* (Hedw.) Schimp.]. With sporophytes.

Leucodon sciuroides Schwgr. [*Leucodon sciuroides* (Hedw.) Schwägr.].

**Antitrichia curtipendula* Brid. [*Antitrichia curtipendula* (Hedw.) Brid.]. Abundant.

Herbarium specimens:

Antitrichia curtipendula (L), Białowieża Forest, 15 May 1885. – *Antitrichia curtipendula* (Hedw.) Brid., WI B06429.

Aulacomnium palustre Schwgr. [*Aulacomnium palustre* (Hedw.) Schwägr.

Aul. androgynum Schwgr. [*Aulacomnium androgynum* (Hedw.) Schwägr.] (cum pseudopodien).

Herbarium specimens:

Aulacomnium androgynum (L.), Białowieża Forest, 15 May 1885. – *Aulacomnium androgynum* (Hedw.) Schwägr., WI B06232.

Atrichum undulatum B. S. [*Atrichum undulatum* (Hedw.) P. Beauv.]. With sporophytes.

Polytrichum strictum Banks Menz. [*Polytrichum strictum* Menzies ex Brid.].

P. formosum Hedw. [*Polytrichum formosum* Hedw.].

P. commune L. [*Polytrichum commune* Hedw.]. With sporophytes.

P. gracile Menz. [*Polytrichum longisetum* Sw. ex Brid.]. With sporophytes.

Bryum roseum Schreb. [*Rhodobryum roseum* (Hedw.) Limpr.].

Br. pallens Sw. [*Ptychostomum pallens* (Sw. ex anon.) J.R. Spence].

Br. caespiticium L. [*Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pedersen].

Vebera nutans Schimpr. [*Pohlia nutans* (Hedw.) Lindb.].

**V. albicans* Schmpr. [*Pohlia wahlenbergii* (F. Weber & D. Mohr) A.L. Andrews].

Mnium cuspidatum Hedw. [*Plagiomnium cuspidatum* (Hedw.) T.J. Kop.]. With sporophytes. Widespread.

Mn. punctatum Hedw. [*Rhizomnium punctatum* (Hedw.) T.J. Kop.]. With sporophytes. Common.

Mnium affine Bland. [*Plagiomnium affine* (Blandow ex Funck) T.J. Kop.]. With sporophytes.

Mnium undulatum Hedw. [*Plagiomnium undulatum* (Hedw.) T.J. Kop.] (few).

Leptobryum pyriforme Schimpr. [*Leptobryum pyriforme* (Hedw.) Wilson].

Didymodon rubellus B. S. [*Bryoerythrophyllum recurvirostrum* (Hedw.) P.C. Chen].

Barbula ruralis Hedw. [*Syntrichia ruralis* (Hedw.) F. Weber & D. Mohr].

Barb. convoluta Hedw. [*Streblotrichum convolutum* (Hedw.) P. Beauv.]. With sporophytes.

Herbarium specimen:

Barbula convoluta (H.), Białowieża Forest, 15 May 1885. – *Streblotrichum convolutum* (Hedw.) P. Beauv., WI B06165.

Orthotrichum obtusifolium Schrad. [*Nyholmiella obtusifolia* (Brid.) Holmen & E. Warncke].

Orth. gymnostomum Bruch. [*Nyholmiella gymnostoma* (Bruch ex Brid.) Holmen & E. Warncke]. With sporophytes.

**Barbula muralis* Timm. [*T. muralis* Hedw.]. With sporophytes.

Orthotrichum affine Schrad. [*Lewinskya affinis* (Schrad. ex Brid.) F. Lara, Garilleti & Goffinet]. With sporophytes.

Orth. speciosum N. E. [*Lewinskya speciosa* (Nees) F. Lara, Garilleti & Goffinet]. With sporophytes.

**Orth. leiocarpum* B. S. [*Lewinskya striata* (Hedw.) F. Lara, Garilleti & Goffinet]. With sporophytes.

Orth. fallax Schimpr. [*Orthotrichum pumilum* Sw. ex anon.]. With sporophytes.

Ulotia crispa Brid. [*Ulotia crispa* (Hedw.) Brid.].

Ul. crispula Bruch. [*Ulotia crispula* Bruch]. With sporophytes.

Dicranum flagellare Hedw. [*Dicranum flagellare* Hedw.]. With sporophytes.

D. undulatum Turn. [*Dicranum polysetum* Sw. ex anon.].

D. scoparium Hedw. [*Dicranum scoparium* Hedw.].

D. montanum Hedw. [*Dicranum montanum* Hedw.].

Tetraphis pellucida Hedw. [*Tetraphis pellucida* Hedw.]. With sporophytes.

Sphagnum subsecundum N. E. [*Sphagnum subsecundum* Nees].

Sph. laxifolium C. Müll. [*Sphagnum cuspidatum* Ehrh. ex Hoffm.].

Sph. cuspidatum Ehrh. [*Sphagnum cuspidatum* Ehrh. ex Hoffm.].

Sph. acutifolium Ehrh. [*Sphagnum capillifolium* (Ehrh.) Hedw.].

Sph. cymbifolium Ehrh. [*Sphagnum palustre* L.].

HERBARIUM SPECIMENS OF THIS SPECIES COLLECTED IN BIAŁOWIEŻA FOREST ARE NOT LISTED IN ZAPISKI BRYOLOGICZNE:

Neckera crispa (L.), Białowieża Forest, 15 May 1885 – *Exsertotheca crispa* (Hedw.) S. Olsson, Enroth & D. Quandt, WI B06594.

Webera carnea (L.), at the edge of Białowieża Forest, 15 May 1885. – *Pohlia melanodon* (Brid.) A.J. Shaw, WI B06265.

Bryum pallescens (Sw.)¹⁸³, Białowieża Forest, 15 May 1885. – WI B06272.

183 The identity of this specimen was not checked owing to its poor condition.

III

The trip to Wołyń, to Berdyczów and Żytomierz, in May 1885

The two towns mentioned above lie six miles apart and are located on black earth clays. Below this layer occurs Silurian granite. Before reaching Berdyczów, there is a small, dirty stream called Gnilopiat, which forms bays overgrown with bulrushes. Loamy hills arise around the city, between which are meadows and gardens, whereas the highest regions are covered with oak forests. The topography of Żytomierz is a little more varied. The Teterów River (a tributary of the Dniepr), above which the city rises, flows in a deep granite ravine. I stood impressed by the rocky banks of this river, whose water, moving quickly and undulating, rolls over the rocks, now turning right, then left, pushing its way through the jagged granite, and forming fantastic meanders along the banks, which here and there are overgrown with dense forests or thickets, interrupted by deep ravines. On these rocks I have collected interesting species of mosses, among which I am able to list *Encalypta ciliata*, *Bartramia pomiformis*, *B. oederi*, *Grimmia commutata*, *Gr. Leucophaca*, *Orthotrichum anomalum*, *Orth. pumilum*, *Orth. cupulatum*, *Orth. patens* etc. The list of mosses provided below indicates that this town has a very rich bryophyte flora. I visited both the rocky banks of the Teterów, and beyond the river stretched pine forests, gorges and ravines, as well as thickets of deciduous forests, gardens and other adjacent villages. I consider this excursion, lasting several days, one of the nicest I have ever been on.

LIST OF MOSES COLLECTED IN THE ENVIRONS OF ŻYTOMIERZ AND BERDYCZÓW

Hypnum Schreberi Wild. [*Pleurozium schreberi* (Willd. ex Brid.) Mitt.]. In forests, forms hummocks.

Hypnum cupressiforme L. [*Hypnum cupressiforme* Hedw.].

H. cuspidatum L. [*Calliargonella cuspidata* (Hedw.) Loeske]. With sporophytes.

H. fluitans L. [*Warnstorfia fluitans* (Hedw.) Loeske].

H. Sommerfeltii Myr. [*Campyllophyllopsis sommerfeltii* (Myrin) Ochyra].

H. reptile Rich. [*Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt].

H. crista-castrensis L. [*Ptilium crista-castrensis* (Hedw.) De Not.].

H. arcuatum Lindb. [*Calliergonella lindbergii* (Mitt.) Hedenäs].

Hylocomium triquetrum Schimpr. [*Hylocomiadelphus triquetrus* (Hedw.) Ochyra & Stebel].

Brachythecium salebrosum Schimpr. [*Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp.].

Br. albicans B. S. [*Brachythecium albicans* (Hedw.) Schimp.].

Br. campestre B. S. [*Brachythecium campestre* (Müll. Hal.) Schimp.].

Br. rivulare B. S. [*Brachythecium rivulare* Schimp.].

Br. rutabulum B.S. [*Brachythecium rutabulum* (Hedw.) Schimp.].

Br. velutinum B. S. [*Brachytheciastrium velutinum* (Hedw.) Ignatov & Huttunen].

Camptothecium lutescens B. S. [*Homalothecium lutescens* (Hedw.) H. Rob.]. Over the railway plant near Berdyczów.

Isothecium myurum Brid. [*Isothecium alopecuroides* (Lam. ex Dubois) Isov.].

Eurhynchium striatum B. S. [*Eurhynchium striatum* (Hedw.) Schimp.]. With sporophytes.

Eurh. praelongum B. S. [*Kindbergia praelonga* (Hedw.) Ochyra].

Herbarium specimens:

√*Eurhynchium praelongum* (L.), Żytomierz, 11 May 1885. – *Hygroamblystegium varium* (Hedw.) Mönk.¹⁸⁴; WI B06307.

√*Eurhynchium praelongum* L., Żytomierz, 11 May 1885. – *Oxyrrhynchium hians* (Hedw.) Loeske, WI B06307.

Amblystegium serpens B. S. [*Amblystegium serpens* (Hedw.) Schimp.]. With sporophytes.

Note: We did not find the specimen named as *Amblystegium serpens* from this region. However, the specimen named *Amblystegium radicale*, following revision, was determined to be *Amblystegium serpens*:

√*Amblystegium radicale* (Schmpr), Żytomierz, on stone, 30 May 1884¹⁸⁵. – *Amblystegium serpens* (Hedw.) Schimp., B06421.

Amblystegium riparium B. S. [*Leptodictyum riparium* (Hedw.) Warnst.]. With sporophytes.

184 The species not listed in *Zapiski bryologiczne* for the area

185 It is possible that the date on the label is incorrect. Both the description of the journey in the book and the labels of the specimens show that Szafnagel visited this region in 1885.

Thuidium tamariscinum B. S. [*Thuidium tamariscinum* (Hedw.) Schimp.]. With sporophytes.

Th. minutulum B. S. [*Pelekium minutulum* (Hedw.) Touw]. Pine forest near Żytomierz.

Th. abietinum B. S. [*Abietinella abietina* (Hedw.) M. Fleisch.].

Homalothecium sericeus B. S. [*Homalothecium sericeum* (Hedw.) Schimp.].

Anomodon viticulosus Hook. et Tayl. [*Anomodon viticulosus* (Hedw.) Hook. & Taylor]. Żytomierz.

An. longifolius Hartm. [*Anomodon longifolius* (Schleich. ex Brid.) Hartm.]. Żytomierz.

An. attenuatus Hartm. [*Pseudanomodon attenuatus* (Hedw.) Ignatov & Fedosov]. Żytomierz.

Neckera complanata Hübn. [*Alleniella complanata* (Hedw.) S. Olsson, Enroth & D. Quandt]. On granites and trees near the Teterów.

Herbarium specimens:

Neckera, Żytomierz, near the Teterów, on granite rocks, 23 April 1885. – *Alleniella complanata* (Hedw.) S. Olsson, Enroth & D. Quandt, WI B06483.

Neckera complanata (L.), Żytomierz, near the Teterów, on granite rocks, 23 April 1885. – *Alleniella complanata* (Hedw.) S. Olsson, Enroth & D. Quandt, WI B06488

Platygyrium repens B. S. [*Platygyrium repens* (Brid.) Schimp.].

Pylaisia polyantha Schimpr. [*Pylaisia polyantha* (Hedw.) Schimp.].

Leucodon sciuroides Schwgr [*Leucodon sciuroides* (Hedw.) Schwägr.].

Leskea polycarpa Ehrh. [*Leskea polycarpa* Hedw.]. With sporophytes. Żytomierz.

Atrichum undulatum B. S. [*Atrichum undulatum* (Hedw.) P. Beauv.]. With sporophytes.

Atr. angustatum B. S. [*Atrichum angustatum* (Brid.) Bruch & Schimp.]. With sporophytes. Berdyczów at the ditch.

Polytrichum gracile Menz. [*Polytrichum* Sw. ex Brid.]. With sporophytes.

Pogonatum urnigerum Schimpr. [*Pogonatum urnigerum* (Hedw.) P. Beauv.]. With sporophytes. In the ravine near the Teterów.

Bryum cirrhatum H. H. [*Ptychostomum pallescens* (Schleich. ex Schwägr.) J.R. Spence].
On the monastery walls at Berdyczów.

Br. argenteum L. [*Bryum argenteum* Hedw.].

Br. caespitium L. [*Ptychostomum imbricatulum* (Müll. Hal.) Holyoak & N. Pedersen].
With sporophytes.

Br. pallescens Schleich. [*Ptychostomum pallescens* (Schleich. ex Schwägr.) J.R. Spence].
With sporophytes. On sandy cliffs near the Teterów.

Br. bimum Schreb. [*Ptychostomum pseudotriquetrum* var. *bimum* (Schreb.) Holyoak & N. Pedersen]. Żytomierz – in ravines.

Herbarium specimens:

Bryum bimum (Schrb). c.F!, Żytomierz, near the river, 11 May 1885. –
Ptychostomum pseudotriquetrum var. *bimum* (Schreb.) Holyoak & N. Pedersen;
WI B06266(1).

Bryum bimum (Schrb). Żytomierz, near the river, 11 May 1885. – *Ptychostomum*
pseudotriquetrum var. *bimum* (Schreb.) Holyoak & N. Pedersen, WI B06266(2).

Bryum bimum (Schrb). Żytomierz, near the river, 11 May 1885. – *Ptychostomum*
pseudotriquetrum var. *bimum* (Schreb.) Holyoak & N. Pedersen, WI B06266(3).

Webera albicans Schimpr. [*Pohlia wahlenbergii* (F. Weber & D. Mohr) A.L. Andrews].

**W. carnea* Schimpr. [*Pohlia melanodon* (Brid.) A.J. Shaw]. With sporophytes.
Berdyczów – in meadow.

W. nutans Schimpr. [*Pohlia nutans* (Hedw.) Lindb.].

**W. cruda* Schimpr. [*Pohlia cruda* (Hedw.) Lindb.]. With sporophytes. Near the
Teterów, on cliffs.

Herbarium specimens:

Webera cruda (Schrb.), Żytomierz, on granite rocks, 2 May 1885. – *Pohlia cruda*
(Hedw.) Lindb., WI B06262.

Mnium cuspidatum Hedw. [*Plagiomnium cuspidatum* (Hedw.) T.J. Kop.]. With
sporophytes.

Mn. punctatum Hedw. [*Rhizomnium punctatum* (Hedw.) T.J. Kop.].

**Mn. riparium* Mitt. [*Mnium marginatum* (Dicks.) P. Beauv.]. Near the Teterów, in
thickets.

Herbarium specimens:

Mnium riparium (Mitt.), Żytomierz, 11 May 1885. – *Mnium marginatum* (Dicks.) P. Beauv., WI B06247(1).

Mnium riparium (Mitt.) cum *Mnium stellare* (L.), Żytomierz, 11 May 1885. – *Mnium marginatum* (Dicks.) P. Beauv., WI B06247(2).

Mn. stellare Hedw. [*Mnium stellare* Hedw.]. Ibid.

Didymodon rubellus B. S. [*Bryoerythrophyllum recurvirostrum* (Hedw.) P.C. Chen]. With sporophytes.

Ceratodon purpureus Brid. [*Ceratodon purpureus* (Hedw.) Brid.].

Funaria hygrometrica Hedw. [*Funaria hygrometrica* Hedw.]. With sporophytes.

Physcomitrium pyriforme Brid. [*Physcomitrium pyriforme* (Hedw.) Bruch & Schimp.]. With sporophytes.

**Bartramia pomiformis* Hedw. [*Bartramia pomiformis* Hedw.]. With sporophytes. On granite, near the Teterów.

Herbarium specimen:

Bartramia pomiformis (L.), Żytomierz, on granite rocks, 11 May 1885. – *Bartramia pomiformis* Hedw., WI B06287.

**B. oederi* Sw. [*Plagiopus oederianus* (Sw.) H.A. Crum & L.E. Anderson]. With sporophytes. On granite near the Teterów.

Herbarium specimens:

Bartramia oederi (Gunner), Żytomierz, near the Teterów, on granite rocks, 23 May 1885. – *Plagiopus oederianus* (Sw.) H.A. Crum & L.E. Anderson, WI B06288.

Bartramia oederi (Gunner.), Żytomierz, near the Teterów, on granite rocks, 23 May 1885. – *Plagiopus oederianus* (Sw.) H.A. Crum & L.E. Anderson, WI B06289.

**Encalypta ciliata* Hoffm. [*Encalypta ciliata* Hedw.]. With sporophytes. On granites near the Teterów.

Herbarium specimens:

Encalypta ciliata (H.), Żytomierz, near the Teterów, on granite rocks, 23 May 1885. – *Encalypta ciliata* Hedw., WI B06486.

Encalypta ciliata (H.), Żytomierz, near the Teterów, on granite rocks, 11 May 1885. – *Encalypta ciliata* Hedw., WI B06177.

Barbula ruralis Hedw. [*Syntrichia ruralis* (Hedw.) F. Weber & D. Mohr]. With sporophytes.

B. subulata Brid. [*Tortula subulata* Hedw.]. With sporophytes.

Herbarium specimens:

Barbula subulata (L.), Żytomierz, on granite rocks, 23 May 1885. – *Tortula subulata* Hedw., WI B06180.

B. muralis Timm. [*Tortula muralis* Hedw.]. With sporophytes. Berdyczów – in the cemetery.

B. unguiculata Hedw. [*Barbula unguiculata* Hedw.]. With sporophytes. Berdyczów – in the cemetery.

Hedwigia ciliata Hedw. [*Hedwigia ciliata* Hedw.]. Near the Teterów.

Grimmia apocarpa Hedw. [*Schistidium apocarpum* (Hedw.) Bruch & Schimp.]. On stones surrounded by water, near the Teterów.

Var. *rivularis* Schwgr. [*Schistidium rivulare* (Brid.) Podp.]. On stones in the river.

**Grimmia commutata* Hübn. [*Grimmia ovalis* (Hedw.) Lindb.]. With sporophytes. On granite rocks near the Teterów; on the southern side, growing very profusely.

Gr. pulvinata Sm. [*Grimmia pulvinata* (Hedw.) Sm.]. Ibid.

**Gr. leucophaea* Grew. [*Grimmia laevigata* (Brid.) Brid.]. Ibid.

Orthotrichum anomalum Hedw. [*Orthotrichum anomalum* Hedw.]. On granites. Żytomierz.

**Orth. pumilum* Sw. [*Orthotrichum pumilum* Sw. ex anon.]. With sporophytes. On trees. Żytomierz.

**Orthotrichum cupulatum* Hoffm. [*Orthotrichum cupulatum* Brid.].

Var. *riparium* Schimpr. [*Orthotrichum cupulatum* Brid.]. With sporophytes. On granites near the Teterów.

**Orth. patens* Bruch. [*Orthotrichum patens* Bruch ex Brid.]. On oaks near the Teterów.

Ort. speciosum N. E. [*Lewinskya speciosa* (Nees) F. Lara, Garilleti & Goffinet]. Ibid.

Orth. affine Schrad. [*Lewinskya affinis* (Schrad. ex Brid.) F. Lara, Garilleti & Goffinet]. Ibid.

Orth. obtusifolium Schrad. [*Nyholmiella obtusifolia* (Brid.) Holmen & E. Warncke]. With sporophytes. Berdyczów – in cemetery.

Dicranum scoparium Hedw. [*Dicranum scoparium* Hedw.].

Var. *paludosum* Schimpr. [*Dicranum scoparium* Hedw.]. In the forest near Żytomierz.

D. montanum Hedw. [*Dicranum montanum* Hedw.]. Ibid.

D. undulatum Turn. [*Dicranum polysetum* Sw. ex anon.]. Forest near Berdyczów.

D. viride Lindb. [*Dicranum viride* (Sull. & Lesq.) Lindb.]. In the forest near the Teterów.

Gymnostomum microstomum Hedw. [*Weissia brachycarpa* (Nees & Hornsch.) Jur.].
With sporophytes. In ditch near Berdyczów.

IV

The trip to Podole, to Iwachnowce and Kuźmińczyk on the Zbrucz, in July 1885

The above-mentioned localities are very diverse in terms of their geological and topographic positions. The topsoil is deep and black, overlying the Silurian slates that are widely exposed on the banks of the Zbrucz River and in ravines. Regardless of this, the black-soil plain is traversed in various directions by rocky limestone ranges, the so-called Tołtry, which are the remains of coral reefs which formed at the bottom of the ancient sea. Part of the Tołtry is devoid of forests and covered with poor vegetation and mosses, whereas another part is covered with deciduous forest, mostly oak with an admixture of hornbeam, lime, maple and sycamore. The climatic character of the territory has features typical of the south, namely, an early spring, a long and hot summer, a warm and late autumn, and a short, cold and snowy winter. The amount of precipitation is negligible. As a result of these conditions, moss vegetation mostly occurs hidden in forests, in Tołtry and in ravines, as is characteristic of the southern zone: the complete lack of *Polytrichum*, *Sphagnum* and *Dicranum* mosses is immediately obvious. The gradual disappearance of *Hypnum Schreberi*, when moving from north to south, also draws attention: whereas in Lithuania it is the most common species, covering the pine forests with a uniform carpet, and in Wolyń, near Berdyczów and Żytomirz, it protects itself from the rare excessive light by growing in very shady places. Also, for the first time in this location, I saw *Neckera crispa*, which in Central Europe is almost common, but here, occurs only, so far, in the south. Here, I finally recorded the locality of *Thamnum alopecurum*. Unfortunately, owing to the lack of time, I was unable to carry out research for longer. I list below what I managed to collect.

LIST OF MOSSES COLLECTED IN KUZMINCZYK AND IWACHNOWCE IN PODOLE

Hypnum Schreberi Wild. [*Pleurozium schreberi* (Willd. ex Brid.) Mitt.]. In a ditch near the forest.

H. palustre L. [*Hygrohypnum luridum* (Hedw.) Jenn.]. On clay slates, in the ravine.

H. reptile Rich. [*Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt]. In forest, on trees.

Herbarium specimens:

Hypnum reptile (Mx.), Kuźmińczyk, 21 July 1885. – *Jochenia pallescens* (Hedw.) Hedenäs, Schlesak & D. Quandt, WI B06484.

[√]*Hypnum reptile* (Mx.), Kuźmińczyk, 21 July 1885. – *Platygyrium repens*¹⁸⁶ (Brid.) Schimp., WI B06544.

H. chrysophyllum Brid. [*Campyliadelphus chrysophyllum* (Brid.) R.S.Chopra]. Toltry.

Herbarium specimens:

Not identified, Kuźmińczyk, 12 July 1885. – *Campyliadelphus chrysophyllum* (Brid.) R.S. Chopra, WI B06392.

Not identified, Kuźmińczyk, 12 July 1885. – *Campyliadelphus chrysophyllum* (Brid.) R.S. Chopra, WI B06394.

Not identified, Kuźmińczyk, 12 July 1885. – *Campyliadelphus chrysophyllum* (Brid.) R.S. Chopra, WI B06396.

[√]*Hypnum chrysophyllum* (Brid.), Kuźmińczyk, in Toltry, 21 July 1885. – *Amblystegium serpens* (Hedw.) Schimp., WI B06409.

H. fluitans L. [*Warnstorfia fluitans* (Hedw.) Loeske].

H. filicinum L. [*Cratoneuron filicinum* (Hedw.) Spruce]. At the source.

H. fallax Brid. [*Cratoneuron filicinum* (Hedw.) Spruce]. At the source.

H. sommerfeltii Myr. [*Campyllophyllopsis sommerfeltii* (Myrin) Ochyra]. On stones at the source.

Note: the only specimen named *Hypnum sommerfeltii*, collected in the region, following revision was re-determined:

[√]*Hypnum sommerfeltii* (Myr.), Kuźmińczyk in Toltry, in forest, 25 July 1882. – *Pseudoamblystegium subtile*¹⁸⁷ (Hedw.) Vanderp. & Hedenäs, WI B06412.

Hypnum cupressiforme L. [*Hypnum cupressiforme* Hedw.].

H. incurvatum Schrad. [*Homomallium incurvatum* (Schrad. ex Brid.) Loeske]. In forest, on tree trunk.

Herbarium specimen:

Hypnum incurvatum (Schrd), Kuźmińczyk, Podole, on tree, July 1885. – *Homomallium incurvatum* (Schrad. ex Brid.) Loeske), WI B06619.

H. stellatum Schreb. [*Campyliu stellatum* (Hedw.) Lange & C.E.O. Jensen].

H. cuspidatum L. [*Calliergonella cuspidata* (Hedw.) Loeske].

186 The species not listed for the area in *Zapiski bryologiczne*.

187 The species not listed for the area in *Zapiski bryologiczne*.

Hylocomium splendens B. S. [*Hylocomium splendens* (Hedw.) Schimp.].

Brachythecium populeum B.S. [*Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen].
In forest, on limestone rocks.

Herbarium specimen:

Brachythecium populeum (H.), Kuźmińczyk, on stone, 21 July 1885. – *Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen, WI B06387.

Br. velutinum B. S. [*Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen]. With sporophytes. In forest.

Herbarium specimen:

Brachythecium velutinum (L.), Kuźmińczyk, on stone, 28 July 1885. – *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen, WI B06398.

Brachythecium salebrosum Schmpr. [*Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr)].

Amblystegium riparium B. S. [*Leptodictyum riparium* (Hedw.) Warnst.].

A. subtile B. S. [*Pseudoamblystegium subtile* (Hedw.) Vanderp. & Hedenäs].

Amblystegium serpens B. S. [*Amblystegium serpens* (Hedw.) Schimp.]. With sporophytes. Forest.

Note: the specimen initially named *Hypnum chrysophyllum*, following revision, was determined as *Amblystegium serpens* (see list of so-named specimens for the area).

Eurhynchium vaucheri Schmpr. [*Brachythecium cirrosum* (Schwägr.) Schimp.?]. On limestone rocks, in the forest.

Herbarium specimen:

[√]*Eurhynchium vaucheri* (Sch.), Olchowczyk, Iwachnowce, Tołtry, in forest, on rocks, 25 July 1885. – *Brachythecium cirrosum* (Schwägr.) Schimp., WI B06618.

**Eurh. crassinervium* B. S. Ibid. [*Cirriphyllum crassinervium* (Taylor) Loeske & M. Fleisch.]. Ibid.

Herbarium specimen:

Eurhynchium crassinervium (Tayl.), Iwachnowce, Tołtry, in forest, on rocks, 21 July 1885. – *Cirriphyllum crassinervium* (Taylor) Loeske & M. Fleisch., WI B06393.

Eurh. praelongum B. S. [*Kindbergia praelonga* (Hedw.) Ochyra]. Ibid.

Herbarium specimen:

[√]*Eurhynchium praelongum* (L.), Kuźmińczyk, Tołtry, in forest, on rocks, 20 July 1885. – *Oxyrrhynchium hians* (Hedw.) Loeske, WI B06304.

Rhynchostegium depressum B.S. Ibid. [*Taxiphyllum wissgrillii* (Garov.) Wijk & Margad.].
Ibid.

Herbarium specimen:

Rhynchostegium depressum (Br.), Kuźmińczyk, Toltry, in forest, on rocks, 25 July 1885. – *Taxiphyllum wissgrillii* (Garov.) Wijk & Margad., WI B06291.

Homalothecium sericeum B. S. [*Homalothecium sericeum* (Hedw.) Schimp.] Toltry.
(A form that forms dense carpets and has slightly curved stems).

Thuidium abietinum B. S. [*Abietinella abietina* (Hedw.) M. Fleisch.]. Toltry.

Leskea polycarpa Ehrh. [*Leskea polycarpa* Hedw.].

Anomodon viticulosus Hook et Tayl. [*Anomodon viticulosus* (Hedw.) Hook. & Taylor].
Toltry.

An. longifolius Hartm. [*Anomodon longifolius* (Schleich. ex Brid.) Hartm.]. Toltry.

An. attenuatus Hartm. [*Pseudanomodon attenuatus* (Hedw.) Ignatov & Fedosov].
Toltry.

Herbarium specimen:

An. attenuatus (Schreb.) Kuźmińczyk, Toltry, in forest, on tree, July 1885. –
Pseudanomodon attenuatus (Hedw.) Ignatov & Fedosov, WI B06346.

Neckera complanata Hübn. [*Alleniella complanata* (Hedw.) S. Olsson, Enroth &
D. Quandt]. Toltry.

Note: The specimen named *Neckera*, following revision, was named *Alleniella complanata*:

Neckera, Olchowiecki Forest, on rocks, 28 July 1885. – *Alleniella complanata*
(Hedw.) S. Olsson, Enroth & D. Quandt., WI B06487.

Homalia trichomanoides B. S. [*Homalia trichomanoides* (Hedw.) Brid.]. In forest.

Leucodon sciurooides Schwgr. [*Leucodon sciurooides* (Hedw.) Schwägr.].

Thamnium alopecurum Schmpr. [*Thamnobryum alopecurum* (Hedw.) Gangulee]. In
caves, Toltry.

Herbarium specimen:

Thamnium alopecurum (L.) Kuźmińczyk, 20 July 1885. – *Thamnobryum*
alopecurum (Hedw.) Gangulee, WI B06316.

Pylaisia polyantha Schmpr. [*Pylaisia polyantha* (Hedw.) Schimp.].

**Pseudeskea catenulata* B. S. [*Pseudeskeella catenulata* (Brid. ex Schrad.) Kindb.].

Bryum caespiticium L. [*Ptychostomum imbricatum* (Müll. Hal.) Holyoak & N. Pe-
dersen].

Leptobryum pyriforme Schmpr. [*Leptobryum pyriforme* (Hedw.) Wilson].

**Neckera crista* Hedw. [*Exsertotheca crista* (Hedw.) S. Olsson, Enroth & D. Quandt].

Barbula tortuosa W. M. [*Tortella tortuosa* (Hedw.) Limpr.]. In Tołtry.

B. intermedia Brid. [*Syntrichia montana* Nees]. In Tołtry.

Var. *rupestris* (Milde). Ibid. [*Syntrichia montana* Nees]. Ibid.

**B. fallax* Hedw. [*Didymodon fallax* (Hedw.) R.H. Zander]. On marly cliffs.

Encalypta vulgaris Hedw. [*Encalypta vulgaris* Hedw.]. With sporophytes. Tołtry.

E. streptocarpa Hedw. [*Encalypta streptocarpa* Hedw.]. Tołtry.

Grimmia apocarpa Hedw. [*Schistidium apocarpum* (Hedw.) Bruch & Schimp.]. Tołtry.

Gr. pulvinata Sw. [*Grimmia pulvinata* (Hedw.) Sm.]. Ibid.

**G. tergestina* Tomm. [*Grimmia tergestina* Tomm. ex Bruch & Schimp.].

**Distichium capillaceum* B. S. [*Distichium capillaceum* (Hedw.) Bruch & Schimp.].
With sporophytes. Tołtry.

Herbarium specimen:

Distichium capillaceum (L.), Kuźmińczyk (Podole), Tołtry, on rock, 25 July 1885. – *Distichium capillaceum* (Hedw.) Bruch & Schimp., WI B06196.

**Trichostomum rubellum* Spruce [*Bryoerythrophyllum recurvirostrum* (Hedw.) P.C. Chen].

**Timmia bavarica* Hessel. [*Timmia bavarica* Hessel.]. With sporophytes. Tołtry.

Herbarium specimens:

Timmia bavarica (Hessler), Iwachnowce, Tołtry, 21 July 1885. – *Timmia bavarica* Hessel., WI B06432.

Timmia bavarica (Hessler), Iwachnowce, Tołtry, 21 July 1885. – *Timmia bavarica* Hessel., WI B06434.

**Leptotrichum flexicaule* Hpe. [*Flexitrichum flexicaule* (Schwägr.) Ignatov & Fedosov].
Tołtry.

Herbarium specimen:

†*Leptotrichum flexicaule* (Schw.), Iwachnowce, Olchowicz, 21 July 1885. –
*Trichodon cylindricus*¹⁸⁸ (Hedw.) Schimp., WI B06467.

Ceratodon purpureus Brid. [*Ceratodon purpureus* (Hedw.) Brid.]. (Very small and delicate form).

Orthotrichum anomalum Hedw. [*Orthotrichum anomalum* Hedw.].

188 The specie not listed in *Zapiski bryologiczne* for the area.

V

The trip to Pilawa, Wilga and Otwock, on the Wisla, in April 1885

A common feature characteristic of the three localities mentioned above that occur in the vicinity of Warszawa, and of the valley formed by the Wisla River, is the presence of two types of soil – in areas furthest from the river banks occur quicksand, overgrown by pine forest, divided here and there by stretches of peatland (Otwock peatlands), but the riverside areas, where the River Wisla flows through the valley, are characterised by black and rather clayey soils, sediments formed by the flowing river. Huge poplars grow along the bank of the Wisla River. In Otwock, I visited peatland where peat is obtained from a well-known mine, an alder grove, thickets, and meadows, all of which are located on those peatlands towards the River Wisla, as well as a young pine forest beside the railway station. In Pilawa, I visited a pine forest by the road leading from that same station towards the Wilga manor, as well as forests, meadows, fields and banks, which on the manor estate extend from the mouth of the River Wilga to the Wisla.

Anyone who has seen Otwock peat samples is surprised by their unusual structure, which is significantly different from ordinary peat. This peat is a fibrous, very compact mass, quite reminiscent of felt. After examining it under a microscope, I found that its main component was fusiform, very delicate root fibres of several species of reed (e.g. *Phragmites communis*), and several species of sedge (*Carex*). Fibres of these plants give the Otwock peat a more characteristic form; for whereas the main mass of ordinary peat is formed from mosses or sphagnum mosses, interspersed only with the roots of grass plants, the opposite is true here. Only rarely amongst the fibrous mass of roots, occur mosses of the following species: *Hypnum trifarium*, *Meesea triquetra*, *Paludella squarrosa* and *Sphagnum cymbifolium*. Upon examining the peatland, I did not find any of the above mosses on its surface, except for *Sphagnum cymbifolium*; so it is probable that they died out as a result of the considerable drying up of the bog, as well as the climatic conditions. For I have noticed several times that *Hypnum trifarium* and *Paludella squarrosa*, which were previously abundant in similar places and are easy to find in peat, have by today become a rarity. The following moss species grow on the Otwock peatland next to reeds and sedges: *Hylocomium splendens*, *Hypnum schreberi*, *cuspidatum*, *fluitans*, *Climacium dendroides*, *Polytrichum gracile*, *Aulacomnium palustre*, *Webera nutans*, *Ceratodon purpureus*, *Mnium cuspidatum*, *Leucobryum glaucum*, *Dicranum palustre*, *Funaria hygrometrica*, *Sphagnum cymbifolium*. I must mention the following species from the list provided below: I saw *Leucobryum glaucum*, which was recorded in Pilawa, for the first time here in great quantity; in Lithuania it is

very rare. *Dicranum scoparium* also seems to be quite common here; moreover, I saw it with sporophytes. Finally, *Antitrichia curtispindula*, which is so common that it grows on straw rooves, completes the list of those species that struck me, and with which I am mainly familiar as components of the flora of eastern Lithuania, except that here they are more distinct.

LIST OF MOSSES COLLECTED AT PILAWA, WILGA AND OTWOCK

Hypnum Schreberi Willd. [*Pleurozium schreberi* (Willd. ex Brid.) Mitt.].

H. cupressiforme L. [*Hypnum cupressiforme* Hedw.].

H. cuspidatum L. [*Calliergonella cuspidata* (Hedw.) Loeske].

Hypnum cordifolium Hedw. [*Calliergon cordifolium* (Hedw.) Kindb.].

H. sommerfeldtii Myr. [*Campylophyllopsis sommerfeldtii* (Myrin) Ochyra].

H. aduncum Hedw. [*Drepanocladus aduncus* (Hedw.) Warnst.].

H. fluitans L. [*Warnstorfia fluitans* (Hedw.) Loeske].

Hylocomium splendens B. S. [*Hylocomium splendens* (Hedw.) Schimp.].

Brachythecium salebrosum Schimpr. [*Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp.]

Br. albicans B. S. [*Brachythecium albicans* (Hedw.) Schimp.].

Ambystegium. riparium B.S. [*Leptodictyum riparium* (Hedw.) Warnst.].

Eurhynchium strigosum Schmpr. [*Eurhynchiastrum pulchellum* (Hedw.) Ignatov & Huttunen].

Eurh. praelongum B. S. [*Kindbergia praelonga* (Hedw.) Ochyra].

Anomodon viticulosus Hook. et Tayl. [*Anomodon viticulosus* (Hedw.) Hook. & Taylor].

Leskea polycarpa Ehrh. [*Leskea polycarpa* Hedw.].

Antitrichia curtispindula Brid. [*Antitrichia curtispindula* (Hedw.) Brid.].

Herbarium specimens:

Antitrichia curtispindula (L), Pilawa, in forest, 21 April 1885. – *Antitrichia curtispindula* (Hedw.) Brid., WI B06428.

Climacium dendroides W.M. [*Climacium dendroides* (Hedw.) F. Weber & D. Mohr].

Leucodon sciuroides Schwgr. [*Leucodon sciuroides* (Hedw.) Schwägr.].
Platygyrium repens B. S. [*Platygyrium repens* (Brid.) Schimp.].
P. commune L. [*Polytrichum commune* Hedw].
P. gracile Menz. [*Polytrichum longisetum* Sw. ex Brid.].
P. piliferum Schreb. [*Polytrichum piliferum* Hedw.].
Atrichum undulatum P. B. [*Atrichum undulatum* (Hedw.) P. Beauv.].
A. tenellum B.S. [*Atrichum tenellum* (Röhl.) Bruch & Schimp.]. Otwock.
Mnium affine Bland. [*Plagiomnium affine* (Blandow ex Funck) T.J. Kop.].
Mnium cuspidatum Hedw. [*Plagiomnium cuspidatum* (Hedw.) T.J. Kop.].
Bryum pallens Sw. [*Ptychostomum pallens* (Sw. ex anon.) J.R. Spence].
Webera nutans Schmpr. [*Pohlia nutans* (Hedw.) Lindb.].
W. albicans Schmpr. [*Pohlia wahlenbergii* (F. Weber & D. Mohr) A.L. Andrews].
Leucobryum glaucum Schmpr. [*Leucobryum glaucum* (Hedw.) Ångstr.].

Herbarium specimen:

Leucobryum glaucum (L), Pilawa, in forest, 21 April 1885. – *Leucobryum glaucum* (Hedw.) Ångstr., WI B06189.

Barbula ruralis Hedw. [*Syntrichia ruralis* (Hedw.) F. Weber & D. Mohr].
Barb. convoluta Hedw. [*Streblotrichum convolutum* (Hedw.) P. Beauv.].
Ceratodon purpureus Brid. [*Ceratodon purpureus* (Hedw.) Brid.].
Orthotrichum pumilum Sw. [*Orthotrichum pumilum* Sw. ex anon.].
Hedwigia ciliata Hedw. [*Hedwigia ciliata* (Hedw.) P. Beauv.].
Grimmia apocarpa Hedw. [*Schistidium apocarpum* (Hedw.) Bruch & Schimp.].
Pottia intermedia Fürn. [*Tortula caucasica* Broth.].
Funaria hygrometrica Hedw. [*Funaria hygrometrica* Hedw.].
D. scoparium Hedw. [*Dicranum scoparium* Hedw.].
 Var. *paludosum* B. S. [*Dicranum scoparium* Hedw.].
 Var. *orthophyllum* B. S. [*Dicranum scoparium* Hedw.].
D. undulatum Turn [*Dicranum polysetum* Sw. ex anon.].
D. montanum Hedw. [*Dicranum montanum* Hedw.].

D. palustre B. S. [*Dicranum bonjeanii* De Not.].

D. spurium Hedw. [*Dicranum spurium* Hedw.]. Otwock.

Herbarium specimen:

Dicranum spurium (H.), Pilawa, in forest, 21 April 1885. – *Dicranum spurium* Hedw., WI B06214.

**Dicranella cerviculata* Schmpr. [*Dicranella cerviculata* (Hedw.) Schimp.]. With sporophytes. Forest in Pilawa.

Herbarium specimen:

Not identified, Pilawa, by forest road, 21 April 1885. – *Dicranella cerviculata* (Hedw.) Schimp., WI B06390.

**Dicranella heteromalla* Schmpr. [*Dicranella heteromalla* (Hedw.) Schimp.]. With sporophytes. Pilawa.

VI

From the trip to Szydłów (Piotrków Governorate) in April 1885

Szydłów, located 6 versts from the governorate city, has sandy-clay or sandy, dry soil. The forest consists of fir, spruce, aspen, birch, hornbeam, oak and pine. It is dense, dry and located on sandy soil. In the fields, there are ponds with pink-flowering thorns surrounding thickets. I am not going to enumerate in detail all the species of mosses noted here, because here the nature of the bryological flora differs little from the flora described in the previous chapter.

I will just pay attention to some characteristic features: in one part of the forest covered exclusively by pine, a very abundantly sporulating *Leucobryum glaucum* [*Leucobryum glaucum* (Hedw.) Ångstr.]¹⁸⁹ grows on the grey sand that gives this place its characteristic colour. It grows here together with *Dicranum scoparium* [*Dicranum scoparium* Hedw.], *Hypnum schreberi* [*Pleurozium schreberi* (Willd. ex Brid.) Mitt.], *Sphagnum acutifolium* [*Sphagnum capillifolium* (Ehrh.) Hedw.] and *Hypnum squarrosus* [*Rhytidiadelphus squarrosus* (Hedw.) Warnst.], which produces sporophytes in great profusion here. In Lithuania, I have not seen it anywhere bearing sporophytes. Furthermore, I also noticed here *Hypnum purum* [*Pseudoscleropodium purum* (Hedw.) M. Fleisch.] and *Buxbaumia aphylla* [*Buxbaumia aphylla* Hedw.]. Finding *Hypnum purum* was great news to me. I have never found it in Lithuania; moving westward, this was the first locality for me to find this distinctive species. Nor, interestingly, have I met any in the vicinity of Warszawa, Lublin, Wołyń or Podole.

By the lakes, as well as the common *Hypnum* species, we saw **Hypnum sarmentosum* Whlbg [*Sarmenthypnum sarmentosum* (Wahlenb.) Tuom. & T.J. Kop.], as well as **Orthotrichum obtusifolium* Schrad. [*Nyholmiella obtusifolia* (Brid.) Holmen & E. Warncke] and **Barbula pulvinata* Jur. [*Syntrichia virescens* (De Not.) Ochyra], growing on poplars in the garden. *Isothecium myurum* Brid. [*Isothecium alopecuroides* (Lam. ex Dubois) Isov.], *Bryum capillare* L. [*Ptychostomum capillare* (Hedw.) Holyoak & N. Pedersen], *Br. pallescens* Sw. [*Ptychostomum pallescens* (Schleich. ex Schwägr.) J.R. Spence] and *Mnium undulatum* Hedw. [*Plagiomnium undulatum* (Hedw.) T.J. Kop.] also drew my attention here.

189 As Szafnagel did not provide a separate list of species for this locality, we provide the more recent names for these mosses in the text.

Herbarium specimens:

Leucobryum glaucum (L) c.F!, Szydłowo (gob. Piotrkowska), in forest, 30 April 1885. – *Leucobryum glaucum* (Hedw.) Ångstr., WI B06190.

Hypnum squarrosum c.F!, Szydłowo (gob. Piotrkowska), 30 April 1885. – *Rhytidiadelphus squarrosus* (Hedw.) Warnst., WI B06577.

Hypnum purum (L.), Szydłowo, near Piotrkow, in garden, 30 April 1885. – *Pseudoscleropodium purum* (Hedw.) M. Fleish., WI B06360

Not identified, Szydłowo (gub. Piotrkowska), in forest, 30 April 1885. – *Brachythecium rutabulum* (Hedw.) Schimp., WI B06604.

VII

From the a trip to Milejów (Lublin Governorate)

Milejów is situated on the River Wieprz. The fertile soil rests on the chalk and limestone deposits of the chalk formation. In the middle of the field, there are small lakes fed by sources of water that are much saturated with lime. In these lakes **Hypnum falcatum* Brid. [*Dichelyma falcatum* (Hedw.) Myrin], which I noticed for the first time, forms deep carpets. On poplars, occurs *Barbula pulvinata* Jur. [*Syntrichia virescens* (De Not.) Ochyra]. Also, I noticed here, in the mires, *Hypnum cordifolium* [*Calliergon cordifolium* (Hedw.) Kindb.], *giganteum* [*Calliergon giganteum* (Schimp.) Kindb.], *Sendtneri* [*Drepanocladus sendtneri* (Schimp. ex H.Müll.) Warnst.], *aduncum* [*Drepanocladus aduncus* (Hedw.) Warnst.]. On oaks, grows *Homalothecium sericeum* [*Homalothecium sericeum* (Hedw.) Schimp.], producing sporophytes in great profusion.

Herbarium specimens:

√*Hypnum falcatum* Brid., Milejów (gub. Lubelska), near Antoniów in mire, 18 June 1885 – *Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst., WI 06608.

√*Hypnum falcatum* Brid., Milejów, near Antoniów (gub. Lubelska), in mire, 28 June 1885 – *Drepanocladus sendtneri* (Schimp. ex H. Müll.) Warnst., WI 06609.

√*Hypnum falcatum* (Brid.), Milejów (gub. Lubelska), near Antoniów in mire, 28 June 1885 – *Drepanocladus sendtneri* (Schimp. ex H.Müll.) Warnst., WI 06607.

√*Hypnum falcatum* (Brid.), Milejów (gub. Lubelska), near Antoniów in mire, 28 June 1885 – *Drepanocladus sendtneri* (Schimp. ex H.Müll.) Warnst., WI 06607.

√*Hypnum falcatum* Brid., Milejów, near Antoniów (gub. Lubelska), in mire, 28 June 1885 – *Drepanocladus sendtneri* (Schimp. ex H.Müll.) Warnst., WI 06610.

Note: No specimens available to confirm the species *Dichelyma falcatum*.

Hypnum giganteum (Sch.), Milejów, near Antoniów (gub. Lubelska) in mire, 28 June 1885 – *Calliergon giganteum* (Schimp.) Kindb., WI 06365.

Hypnum giganteum (H.), Milejów (Gub. Lubelska), near Antoniów, in mire, 28 June 1885 – *Calliergon giganteum* (Schimp.) Kindb., WI 06366.

Hypnum aduncum H., Milejów (gub. Lubelska), near Antoniów, in mire, 28 June 1885 – *Drepanocladus aduncus* (Hedw.) Warnst., WI 06570.

Hypnum aduncum (H.) c.fl, Milejów (gub. Lubelska), near Antoniów, in mire, 28 June 1885 – *Drepanocladus aduncus* (Hedw.) Warnst., WI 06573.

Meesea, near Antoniów (gub. Lubelska), in meadow, 7 July 1885. – *Meesia triquetra*¹⁹⁰ (L. ex Jolycl) Angstr., WI B06228.

Meesea, near Antoniów (gub. Lubelska), in meadow, 7 July 1885. – *Meesia triquetra* (L. ex Jolycl) Angstr., WI B06229.

190 Not listed in the text provided above.

Final words

Therefore, to the enumerated 209 species of mosses, collected on the uplands of Wilno and Mińsk, were added about 40 species from searches made elsewhere in the country i.e. the total number of species is about 250, apart from a few species in my collection that have not yet been identified. The results of investigations on the Wilno and Mińsk uplands give us a picture of the bryological flora, the character of which, following Schimper¹⁹¹, can be described as transitional between the “north-arctic” zone and the “intermediate” zone.

In fact, of the 37 species listed by this author in his *Synopsis muscorum europeorum*, which are characteristic of the ‘intermediate’ zone, only *Barbula muralis*, *B. ambigua*, *Brachythecium glareosum*, *Cylindrothecium concinuum*, *Hypnum purum*, *Racomitrium lanuginosum*, *Antitrichia curtispindula* and *Neckera crispa* are absent from the territory under discussion. However, there are also present species corresponding to the “south-arctic” zone and also the “hill” (Hügelregion) zone, such as: *Brachythecium Starkii*, var. *robustum*, *Amblystegium fluviatile* (with sporophytes), *Amblystegium irriguum*, *Paludella squarrosa*, *Amblyodon dealbatus*, *Splachnum ampulaceum*, *Catocopium nigratum*. All this proves that this area represents one in which there is a transition from the “south-arctic” zone to the “intermediate” zone, as well as the hill region. The above is supported by the fact that in the region of Wilno and Mińsk uplands, *Hypnum* species achieve a significant advantage over *Polytrichum* species, and generally, *pleurocarpous* mosses have an advantage over *acrocarpous* mosses.

The Białowieża Forest is closer to the “intermediate” zone, since *Barbula muralis* and *Antitrichia curtispindula* are already present here, and although *Hypnum purum* is absent, it occurs in the Kingdom¹⁹², whose flora, based on the investigations of other researchers (Pamiętnik Fizyograficzny¹⁹³), bears the features of an “intermediate” zone.

The data collected by me in Wolyń and Podole, although very inadequate compared with those of Schimper, allows us to classify these countries as lying in a transitional zone between the “intermediate” and “southern” zones.

With this, I conclude my bryological notes, which I wrote then (20 years ago), based on collected material, which I have only just now put in order and completed.

191 Schimper W.E., 1876. *Synopsis muscorum europaeorum*, t. 1, 2nd ed.: Stuttgart: E. Schweizerbart (E. Koch)

192 See comment 53.

193 See comment 6.

I was going to contribute them to the *Pamiętnik Fizyograficzny*; but today I am able to include them in the Annals of the the Friends of Science Society in Vilnius¹⁹⁴. Unfortunately, the results of my research are very incomplete and constitute only a small contribution to the study of our country's landscape in terms of bryology.

In order to have an accurate picture of the bryological flora of Lithuania and Belarus, the investigation should not be confined to one individual, but shared by a whole group of devoted researchers.

Such areas as, for example, the Pińsk mires should provide many interesting, and perhaps completely new species; the banks of the Niemen River, the Nalibocka Forest, the forests of Mohylów province, and the Witebsk mires should also be explored.

The bryological flora of ethnographic Lithuania¹⁹⁵ will probably be similar to that of the Kurlandia¹⁹⁶ flora, described so precisely by Baltic scientists and researchers.

Our young people, who love nature, and are inspired by love of the country, should take on this work. This will also provide them with many happy hours, and they will benefit from knowing our landscape.

As for me – this is my work, carried out lovingly for many years; however, unfortunately, soon afterwards, I had to stop doing it. Work and ill health prevented further investigation. And yet, today, now that I am old and grey-haired¹⁹⁷, I look back at my ideas and collections from years gone by, and I feel like looking for more investigations. If only I had the strength and health!

I would go to the forests and meadows, to the hills and swamps, to get re-acquainted with our friend, who enlivens and revives, soothes and teaches – with Nature herself!

Kazimierz Szafnagel

Kuszlany, 25 September 1907

194 See comment 14.

195 By the end of 19th century and early 20th century, there were two concepts of Lithuania: 1) ethnographic Lithuania (with historical ethnographic margins) with which the Lithuanian public figures associated their cultural and political aspirations, and the majority of the Lithuanian-speaking population identified themselves; and 2) historical Lithuania that defines Lithuanian territory as a significant part of the territories that belonged to the Grand Duchy of Lithuania (Lithuania and Belarus, covering six provinces – Vilnius, Kaunas, Grodno, Minsk, Vitebsk, Mogilev). Lithuanians were the people that dwell in them, regardless of whether they historically spoke or currently speak the Lithuanian language, with which the majority of the Polish-speaking Lithuanian society first identified (Medišauskienė 2011). What was meant by Szafnagel corresponds to the historical concept of Lithuania.

196 Girgensohn, G. K. 1860. Naturgeschichte der Laub- und Lebermoose Liv-, Ehst- und Kurlands, *Archiv für Naturkunde Liv-, Ehst- und Kurlands*, 2(2), 1–488.

197 At the time, Szafnagel was 49 years old. He died at the age of 65, in 1923.

Recent names for locations provided in the book

Names originally in Cyrillic script are provided with a Latin transcription. Abbreviations: Bel. – Belarussian, Lith. – Lithuanian, Pol. – Polish, Ukr. – Ukrainian. The information is based on historical (<http://igrek.amzp.pl/mapindex.php>) and contemporary maps.

Annopol – Anopal', Анопаль (Bel.), about 15 km south of Minsk (Minsk district, Belarus).

Antoniów – a village in eastern Poland, about 4 km west of Milejówa (Łęczna county, Lublin Voivodeship).

Białowieża – a village in Poland near border with Belarus, surrounded by Białowieża Forest, about 21 km east of Hajnówka and 70 km south-east of Białystok.

Bekieszowa Góra (Góra Bekieszowa) – Bekešo kalnas (Lith.), hill in the centre of Vilnius (Lithuania).

Berdyczów – Berdychiv, Бердичів (Ukr.), a town in Ukraine (Zhytomyr obl.).

Berezyna – Zachodniaja Biarezina, Заходняя Бярэзіна (Bel.), the tributary of the river Neman (Bel.) (Nemunas (Lith.)).

Bierwiencyski – a former village about 3 km north-east of Ashmyany (Ashmyany district, Belarus).

Birzuny – a former village at the southern edge of Kushlyany (Smarhon' district, Belarus).

Bonifacow – a locality about 3 km north-west of Chernyi Bor (Smarhon' district, Belarus).

Bonifacowskie jezioro – probably the Lake Ryzheye was meant (Smarhon' district, Belarus).

Daniszew – Daniushava, Данюшава (Bel.), a village on the right bank of the River Viliya, about 9 km north of Smarhon' (Smarhon' district, Belarus).

Gajdzie – Gaidi, Гайдиди (Bel.), south-eastern edge of Kuszlyany (Smarhon' district, Belarus).

Giry – Girios (Lith.), Giry, Гіры (Bel.), a village about 15 km north-east of Astravec and about 30 km east of the border with Lithuania (Astravec district, Belarus).

Grauzyszki – Grauzhyshki, Граўжышкі (Bel.), a village about 13 km south-west of Ashmyany (Ashmyany district, Belarus).

Gródek – Astrashitski Garadok, Астрашыцкі Гарадок (Bel.) (Minsk district, Belarus).

Gwozdowo – Gvazdova, Гваздова (Bel.), about 9 km north-east of Glybokae (Glybokae district, Belarus).

Horodyszczce – Haradzishcha, Гарадзішча (Bel.), a village about 20 km north of Баранавічы, (Pukhavichy district, Belarus).

Iwachnowcy – Ivakhnivtsi, Івахнівці (Ukr.), a town in Ukraine, about 30 km west of Husyatin (Khmelnyskyi Oblast).

Jachimowszczyzna – Jachimoŭshchyna, Яхімоўшчына (Bel.), about 20 km south-east of Maladzechna (Maladzechna district, Belarus).

Kalwarja – Vilnius city territory.

Klewica – Klevyčia (Lith.), Klevica, Клевіца (Bel.), a village 2 km east of the border with Lithuania (Ashmyany district, Belarus).

Kołpny – Probably Koupry (Bel.), about 4 km northwest of Vasyuki (Smarhon' district, Belarus).

Kowalewicze – Kavalyevichy, Кавалевічы (Bel.), 8 km north of Szatsk (Pukhavichy district, Belarus).

Krewo – Krėva (Lith.), Krevva, Крэва (Bel.), 2 km south of the centre of Smarhon' (Smarhon' district, Belarus).

Kuczuryski – Kučkuriškės (Lith.), eastern part of Vilnius, on the right bank of the River Vilnia (Lithuania).

Kuszlany – Kushlyany, Кушляны (Bel.), a village about 10 km east of Smarhon' (Smarhon' district, Belarus).

Kuźmincyk – Kuz'mynchyk, Кузьминчик (Ukr.), about 3 km north of Husyatin (Khmelnyskyi Oblast, the Ukraine)

Łatythoła – a forest 4 km south-east of Vasyuki and about 2 km southwest of Mat-syulyany (Smarhon' district, Belarus).

Lebiedziew – Lebedzieva, Лебедзева (Bel.), west of Maladzechna (Maladzechna district, Belarus).

Łopocie – recently Bereznyaki, Беразнякі (Bel.), about 10 km north-west of Smarhon' (Smarhon' district, Belarus).

Łukawiec – According to Szafnagel, it is a locality in Vileika powiat.

Marymont (Marymonty) – a location, east of Zhuprany (Ashmyany district, Belarus).

Michanowicze – Mikhanavichi, Міханавічы (Bel.), about 25 km southeast of Minsk (Minsk region, Belarus).

Milejów – a village in eastern Poland, approximately 9 km south of Łęczna (Łęczna county, Lublin Voivodeship).

Mohylów – Mahilyow, Магілёў (Bel.), a town in the eastern part of Belarus.

Mysa – Vialikaja Mysa, Вялікая Мыса (Bel.), about 10 km south-west of Smarhon' (Smarhon' district, Belarus).

Narew – river in north-eastern Poland, a tributary of the river Vistula. About 57 km of the river flows through western Belarus.

Narewka – a village in Poland, near border with Belarus, about 16 km north-west of Białowieża.

Narocz – Narutis (Lith.), Narach, Нарач (Bel.), lake about 43 km north of Vileika (Vileika district Belarus).

Narockie, lake – see Narocz.

Nazdraczuny – Nazdrachuny, Наздрачуны (Bel.), about 60 km south of Kushlyany and about 70 km south-east of Zhuprany (Smarhon' district, Belarus).

Niemen – Nemunas (Lith.), Neman (Bel.), a tributary of the Baltic Sea, and the longest Lithuanian river. It rises in Central Belarus and flows through both countries: Belarus (426 km), through Lithuania (359 km), also along the Lithuanian–Belarussian (17 km) and Lithuanian–Russian (Kaliningrad Oblast) (99 km) borders (Rainys 2022).

Olchowczyk – a former village north of Husyatin (Ternopil Oblast, Ukraine).

Oszmiana – Ašmena (Lith.), Ashmyany, Ашмяны (Bel.), district centre (Belarus), close to the border of Lithuania

Oszmianka – Ashmyanka, Ашмянка (Bel.), the left tributary of the Viliya (Neris), Belarus.

Otwock – a town in central Poland, about 23 km south-east of Warsaw. It is situated on the right bank of the Vistula River, below the mouth of the River Swider.

Pakoszów – a former village east of Ospany (Smarhon' district, Belarus).

Pilawa – a town in eastern central Poland, 59 km south-east of Warsaw (Garwolin County, Masovian Voivodeship).

Podole – Podillya, Поділля (Ukr.), a historic region in Eastern Europe, located in the western central and south-western parts of Ukraine and in north-eastern Moldova (i.e. northern Transnistria).

Polany – Palyany, Паляны (Bel.), about 6 km south-west of Maladzechna (Maladzechna district, Belarus).

Prudy – Prudy, Пруды (Bel.), a village 69 km north-west of Minsk and 15 km north-west of Maladzechna (Maladzechna district, Belarus).

Pruzany – Pruzhany, Пружаны (Bel.), a town at the center of the Brest district (Belarus).

Puszczka Iłska – a forest to the south of the village Ilya (Vileika district, Belarus).

Rudziszki – Rudishki, Рудішкі (Bel.), a village (Smarhon' district, Belarus) about 5 km northeast of Kushlyany.

Rusinowicze – Rusinavichy, Русінавічы (Bel.), a city about 16 km south-east of Minsk (Minsk district, Belarus).

Sierhiejewickie jezioro – Siarhiejeŭskaje, Сярееўскае (Bel.), a lake 40 km south of Minsk (Pukhavichi district, Belarus).

Sikuń – Sikunya, Сікуня (Bel.), a village 10 km east of Smarhon' (Smarhon' district, Belarus).

Sikuń (river) – Sikunya, Сікуня (Bel.), the left tributary of the Ashmyanka (Belarus).

Smorgonie – Smarhon', Смагoнь, (Bel.) (district centre, Belarus).

Soly – Salos (Lith.), Soly, Со́лы (Bel.), 6 km north of Kuszlyany (Smarhon' district, Belarus).

Stymonie – Stymoni, СТЫМОНІ (Bel.), a village about 11 km south-east of Smarhon' (Smarhon' district, Belarus).

Szydłów – a town, in south-eastern Poland, approximately 13 km west of Staszów and 43 km south-east of Kielce (Staszów County, Świętokrzyskie Voivodeship).

Świr – Svieriai (Lith.), Svir, Свiр (Bel.), about 40 km north-east of Astravec (Astravec district, Belarus).

Teterów – Teteriv, Тетерiв (Ukr.) is a right tributary of the river Dnieper (Ukraine).

Toltry – Toltry (or Medobory), strongly dissected limestone hills and ridges stretching from north-west to south-east in the western part of Ukraine and Moldova.

Usza – Usha, the right tributary of the Viliya, Belarus.

Węclawinięta (or Węslawinięta) – Aslavyanyaty, Аславяняты (Bel.), a village 9 km west of Smarhon' (Smarhon' district, Belarus).

Wiazyń – Wiazyn', Вязынь (Bel.), about 20 km north-west of Wilejka (Vileika district, Belarus)

Wieprz – a river in central-eastern Poland, a tributary of the river Vistula.

Wilejka – Vileika, Вілейка (Bel.), district centre (Belarus).

Wilga – a village in eastern central Poland, 48 km south-east of Warsaw (Garwolin County, Masovian Voivodeship).

Wilja – the river Neris (Lith.) or Viliya, Вілія (Bel.). It rises in northern Belarus and flows westward, passing through Vilnius, and in the southern central part of Lithuania it flows into the river Nemunas.

Wilno – Vilnius, the capital of Lithuania.

Wisła – the River Vistula, the longest and largest river in Poland.

Wiszniew – Vishneva, Вішнева (Bel), about 30 km north of Smarhon' and 30 km east of the border with Lithuania (Smarhon' district, Belarus).

Wiszniówka – a former village west of Nestenyaty (Smarhon' district, Belarus).

Witebsk – Vicebsk, Віцебск (Bel.), a town in northeastern part of Belarus, district centre.

Wołejkowskie jezioro – Probably the lake Mortvoje was meant (Smarhon' district, Belarus).

Wołyń – Volyń, Волинь, (Ukr.), is a historic region in Central and Eastern Europe, situated between south-eastern Poland, south-western Belarus, and western Ukraine.

Zalesie – Zales'e, Залесце (Bel.), a village about 10 km south-east of Smarhon' (Smarhon' district, Belarus).

Zamość – Zamoscie, Замосце (Bel.), a village 35 km south of Minsk (Pukhavichy district, Belarus).

Zaśkiewicze – Zaskavichi, Заскавічы (Bel), about 18 km north-west of Maladzechna (Maladzechna district, Belarus).

Zbruch – Zbruch, Збруч (Ukr.), a river in Western Ukraine, a left tributary of the Dniester.

Zwierzyniec – a village in Poland, about 9 km west of Białowieża.

Żodziszki – Žadiškės (Lith.), Zhodzishki, Жодзішкі (Bel), a village about 17 km north of Smarhon' (Smarhon' district, Belarus).

Żuprany – Zhuprany, Жупра́ны (Bel.), a village near Kushlyany (Ashmyany district, Belarus).

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Kazimierzo Szafnagelio *Briologiniai užrašai* ir jo herbariumas

Mokslinis šaltinio leidinys su K. Szafnagelio knygos *Zapiski bryologiczne* vertimu į anglų kalbą.

Sudarytoja ir redaktorė dr. Ilona Jukonienė.

Vilniaus mokslo bičiulių draugija 1908 m. išleido botaniko mėgėjo Kazimierzo Szafnagelio briologinius užrašus *Zapiski bryologiczne* apie samanų įvairovę septyniose teritorijose, dabar priklausančiose Baltarusijai, Lenkijai, Lietuvai ir Ukrainai. Po Vilniaus universiteto uždarymo 19 a. tai buvo pirmasis Vilniuje publikuotas botaninis darbas. Prieš keletą metų Vilniaus universiteto herbariume (WI) atrasti K. Szafnagelio samanų rinkiniai sudarė galimybę patikrinti *Zapiski bryologiczne* publikuotus duomenis pagal pirminius šaltinius. Šiame leidinyje anglų kalba pateikiamas K. Szafnagelio tekstas, papildytas jo herbariumo duomenimis ir sudarytojos komentarais.

I.

ZAPISKI BRYOLOGICZNE

PRZEZ

KAZIMIERZA SZAFNAGLA.



WILNO

SKŁAD GŁÓWNY W KSIĘGARNI JÓZEFA ZAWADZKIEGO
1908.

Fig. 1 Title page of *Zapiski bryologiczne*.



Fig 2. A map of the locations explored by Szafnagel in Wilno and Mińsk uplands (provided in *Zapiski bryologiczne*).



Fig. 3. Herbarium specimen of *Polytrichum commune* Hedw. was collected in Kuzlany (Belarus) in 1883.



Fig. 4. Specimen of *Encalypta vulgaris* Hedw. collected in Vilnius city centre (Lithuania) in 1884.



Fig. 5. Herbarium specimen of *Alleniella complanata* (Hedw.) S. Olsson, Enroth & D. Quandt from Białowieża Forest (1885).

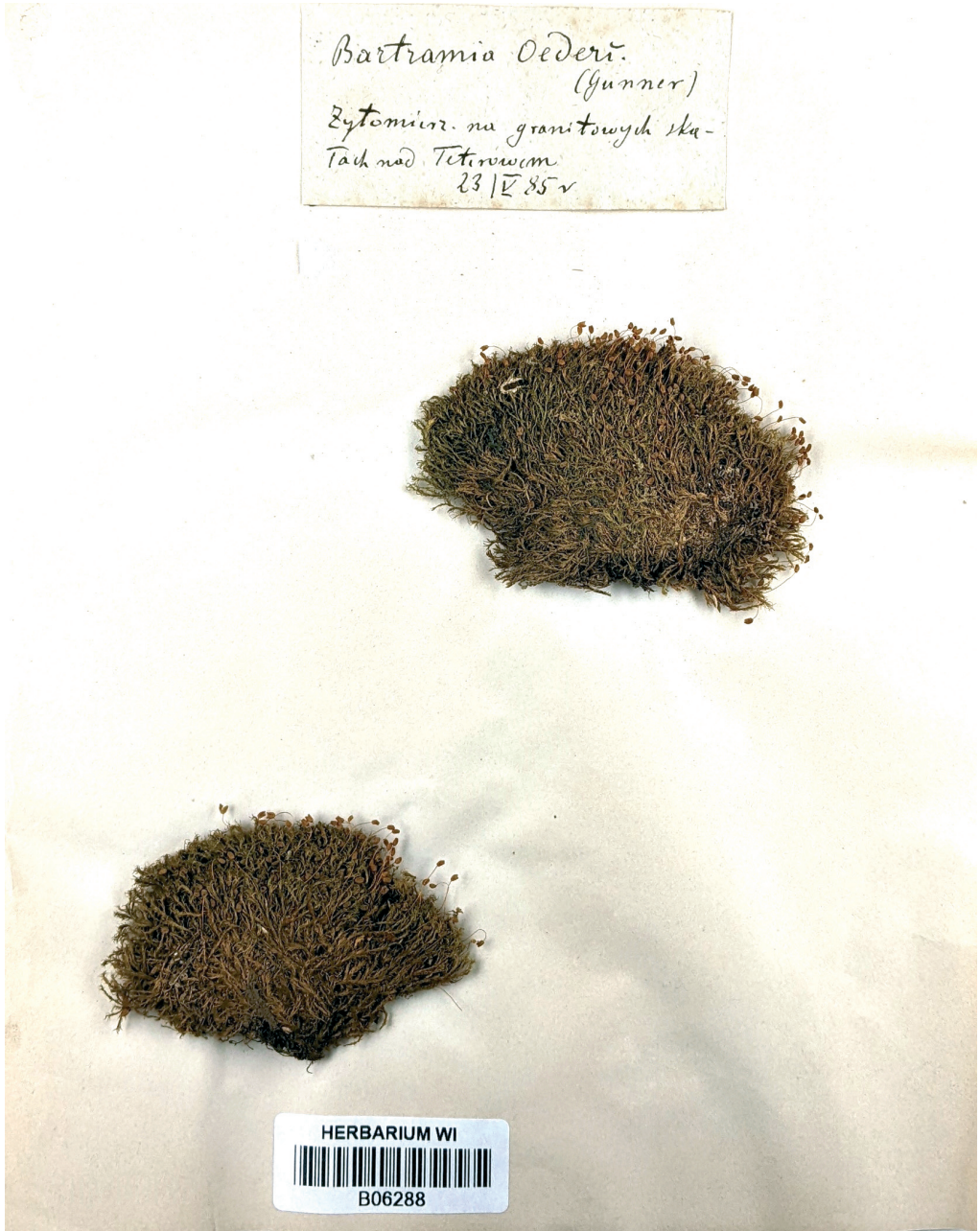


Fig 6. Herbarium specimen of *Plagiopus oederianus* (Sw.) H.A. Crum & L.E. Anderson collected during Szafnagel's trip to Wołyń (now Ukraine) in 1885.

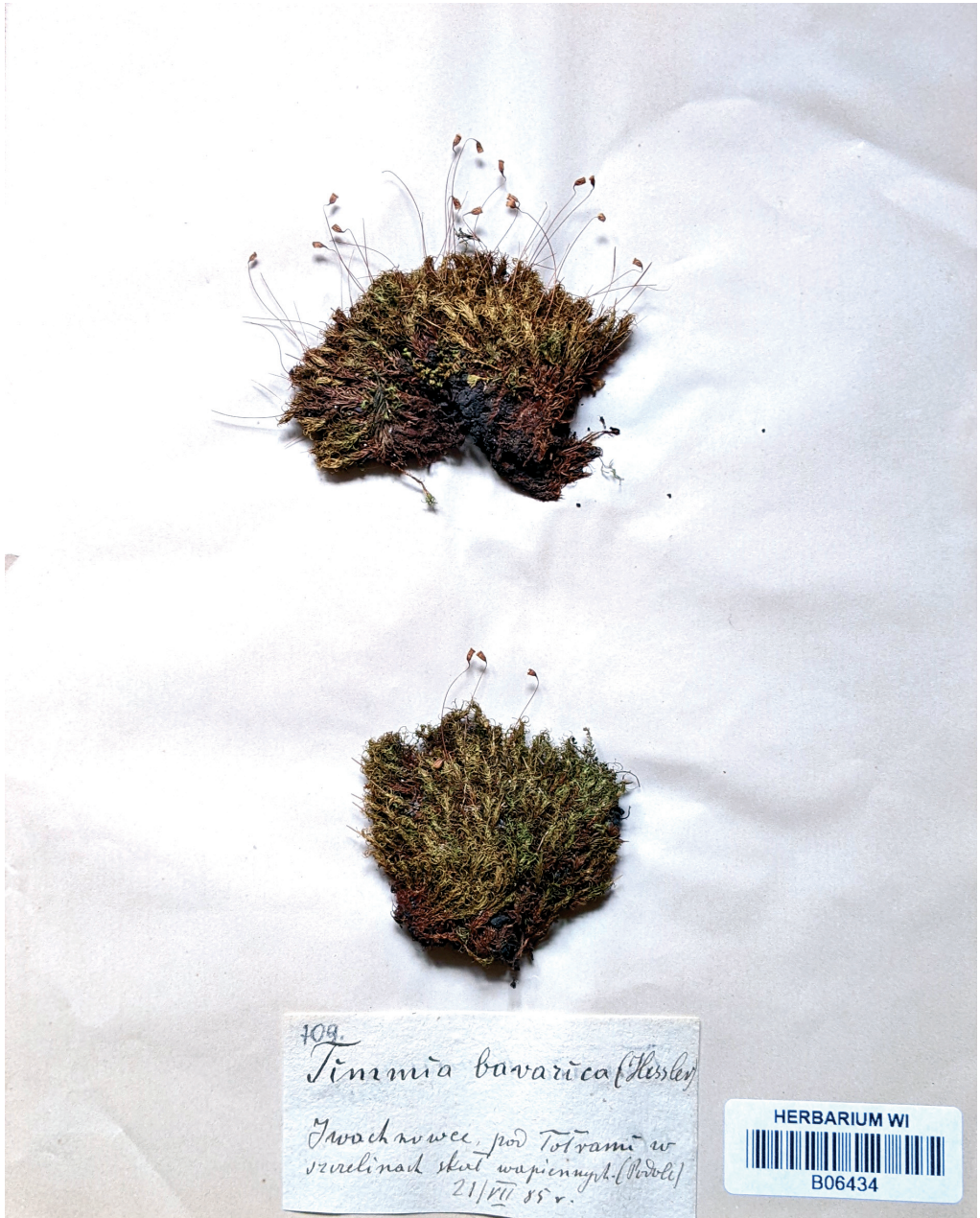


Fig. 7. Herbarium specimen of *Timmia bavarica* Hessl. from Podole (now Ukraine) collected in 1885.



Fig. 8. Herbarium specimen (1885) of *Antitrichia curtispindula* (Hedw.) Brid. from Pilawa (Poland).



Fig. 9. A specimen of *Pseudoscleropodium purum* (Hedw.) M. Fleisch collected near Piotrków (Poland) in 1885.



Fig. 10. Herbarium specimen of *Meesia triquetra* (L. ex Jolycl) Angstr. was collected by Szafnagel near Antoniów (Poland) in 1885.

