Aurorae Borealis Studia Classica

Vol. I

Catalog der in Norwegen bis Juni 1878 beobachteten Nordlichter (1902)

by Sophus Tromholt

digitized by UiT, with a biographical introduction
and summary of contents by Kira Moss

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SOPHUS TROMHOLT (1851–1896)

Biographical introduction
by Kira Moss

Sophus Peter Tromholt was born on 2 June 1851 in Husum (at that time Danish, now a German town in Schleswig-Holstein). Tromholt started writing about the northern lights already at the age of nineteen, with a series of articles in the Danish newspaper *Dags-Telegraphen*; his first scientific paper on the phenomenon came out in 1873. Having grown up in Husum, Oldenburg, and Randers, Tromholt moved in 1868 to Copenhagen to receive formation as a schoolteacher. After several years of teaching in Denmark, he moved to Bergen in Norway, where he worked as a teacher from 1875 to 1882 at Tank's School. At the same time he wrote several articles on the aurora. From 1882 Tromholt quit teaching to concentrate fully on his interest in the phenomenon. Thanks to funds from among others I.C. Jacobsen in Copenhagen, he was able to manage a polar station in Kautokeino/Guovdageaidnu during the International Polar Year 1882/83. Tromholt's station in Kautokeino made observations corresponding to observations at the official Norwegian station in Bossekop. Tromholt later embarked upon an expedition to Reykjavik (1883/84) to test theories that had been put forward by Finnish physicist Selim Lemström (compare *Aurorae Borealis Studia Classica*, vol. III). In 1887, he left Norway and went to live in Germany. He subsisted as a writer and lecturer in astronomical subjects for about a decade, until he died in Blankenhain in Germany on 17 April 1896, at the age of 44.

Among Tromholt's works on the aurora borealis the following are particularly noteworthy. In a methodological paper in the journal *Archiv for Mathematik og Naturvidenskab* ['Archive for Mathematics and Natural Sciences'] (1882), he discusses the problem of measurement of the height of the aurora. He also drew a star atlas for use during observation of northern lights and published a bilingual paper on the periodicity of the northern lights, *Om Nordlysets Perioder / Sur les périodes de l'aurore boréale* (Copenhagen 1882). In 1885, he published a popular account of his Kautokeino expedition, *Under the Rays of the Aurora Borealis – in the Land of the Lapps and Kvæns* (London 1885; Danish version: *Under Nordlysets Straaler – Skildringer fra Lappernes Land*, Copenhagen 1885). In this book, Tromholt tells about his experiences in Northern Norway, his observations of Sami people and their culture and his considerations about the nature and cause of the northern light. Tromholt is today known for his fine portraits of Sami people, many of which were included in this book. He also published several textbooks on natural science, as well as riddle books.

During his residence in Bergen in the 1870s and 80s, Tromholt collected a large number of contemporary auroral observations through questionnaires. He also compiled a comprehensive catalogue of historical observations of northern lights made on Norwegian soil from 1594 until 1878. It was this latter collection which was published (posthumously) as the *Catalog der in Norwegen bis Juni 1878 beobachteten Nordlichter zusammengestellt von Sophus Tromholt. Nach dem Tode des Verfassers auf Kosten der "Videnskabsselskabet i Kristiania" und des "Fridtjof Nansen Fond" herausgegeben von J. Fr. Schroeter* ['Catalogue of northern lights observed in Norway until June 1878 collected by Sophus Tromholt. Posthumously published through funding from the "Videnskabsselskabet i Kristiania" and the "Fridtjof Nansen Fond" by J. Fr. Schroeter'] (Kristiania 1902). In his preface, the editor Jens Frederik Wilhjelm Schroeter describes how Tromholt's wife after his death had handed over to the Observatory of Kristiania (now Oslo) the material for the catalogue. As stated on the title page, the 422-page book was published thanks to grants from The Society of Sciences in Kristiania and the Fridtjof Nansen Fund.

Bibliography

Moss, Kira & Peter Stauning: "Sophus Peter Tromholt: an outstanding pioneer in auroral research", *History of Geo- and Space Sciences* vol. 3, issue 1 (2012): 53–72. https://doi.org/10.5194/hgss-3-53-2012

Moss, Kira & Peter Stauning: *Sophus Tromholt: "Skæbnen og nordlyset er jo lige uransagelige".* Copenhagen: Forlaget Epsilon, 2012.

Portrait of Sophus Tromholt. Courtesy of Tromsø Geophysical Observatory, UiT

CATALOG DER IN NORWEGEN BIS JUNI 1878 BEOBACHTETEN NORDLICHTER

Summary of Contents
by Kira Moss

Apart from a preface by editor Schroeter, the book consists of Tromholt's own introduction, followed by the catalogue as such (Part I), accounts of special observations (Part II), discussion of auroral frequency and periodicity since the eighteenth century (Part III), and additions and corrections.

Vorwort (pp. V–VI)

Preface by the astronomer Jens Frederik Wilhelm Schroeter, signed the Observatory in Kristiania, 1902. Schroeter describes how Tromholt's wife after his death has handed him the material for the catalogue. He expresses his thanks to the committees of The Society of Sciences in Kristiania and the Fridtjof Nansen Fund for making it possible to publish this catalogue. Schroeter also thanks Professor Henrik Mohn. He characterizes the catalogue as an ambitious undertaking; Tromholt's original manuscript even included observations without time and place. Regarding the first part of the book, Schroeter explains how he has reduced the catalogue to include only observations with a fairly precise time and place. As for the second part, he has not included all the (many) descriptions of northern lights listed in Tromholt's material, as the publications in connection with the First Polar Year 1882/83 included so many elaborate descriptions that Tromholt's material does not contribute anything new to science. Moreover, Schroeter mentions that some descriptions in Tromholt's material fall to the ground in view of recent scientific examinations and results by Kristian Birkeland and Adam Paulsen. As far as part three is concerned, Schroeter describes how he has recalculated all tables, as Tromholt did not find the time to do so; therefore, the contents differ slightly from the tables published by Tromholt in *Pettermann's Mitteilungen* [in 1892]. Several tables in Tromholt's material are not included at all, such as a table of the influence of the moon on the visibility of the northern light. The reason for the omission is that Schroeter finds one should also have an overview of the quantity of clouds before lunar influence can be considered. Furthermore, he has not found it necessary to include tables of the daily, the five-day or the ten-day periods. Finally, Schroeter describes how he has meticulously checked

every source he has been able to consult; he has found that Tromholt has cited so correctly, that one can safely assume that his references are also correct in the cases where Schroeter has not been able to verify them.

Einleitung (pp. IX–XXIII)

Introduction by Tromholt. The catalogue is inspired by Robert Rubenson's corresponding work on Swedish observations [*Catalogue des aurores boréales observées en Suède depuis le 16e siècle jusqu'à l'année 1877 y comprise*, 2 vols., 1879–1882], even though it has been difficult to find sources from old times in Norway. Tromholt goes through a list of institutions that have supplied him with material. This core material has been supplemented by information gathered through correspondence, as well as meteorological descriptions found in newspapers. Tromholt believes to have gathered all that is possible, and claims that the catalogue includes *all* descriptions of northern lights in detail. There are, however, some descriptions from Gaimard's *Voyage en Scandinavie*... that are not included. In a few cases he has found that the reports were unreliable, and they are therefore left out. He has himself read newspapers from the period until the year 1850; for the following period, he has had two staff members from the University Library in Kristiania to help him. Finally, Tromholt gives a description of what is included in the main catalogue, a list of all manuscripts used, and of all printed books and papers used.

ERSTER ABSCHNITT. Verzeichniss der Nordlichter (pp. 3–312)

First part, containing the list of described northern lights in chronological order, from 1594 until March 1878. The table is divided into Year – Month – Day – Phase of the Moon – Area [latitude] – Time of the day [occasionally roughly stated as evening, night, midnight, or morning] – Description of the northern light – Source of the description (in German: Jahr, Monat, Tag, Mond, Gebiet, Zeit, Beschreibung, Quellen). A short list of additions is found on p. 312 (Zusätze zu dem Verzeichnisse der Nordlichter) .

ZWEITER ABSCHNITT. Beschreibung einzelner Nordlichter (pp. 313–346)

The second part consists of descriptions of particular auroral observations as chosen by Tromholt, and thereafter some chosen by Schroeter as mentioned in the preface. Certain elaborate descriptions are by Tromholt himself, of northern lights seen in Bergen. A separate set of very old but doubtful descriptions of northern lights is found on pp. 344–346 (Beschreibung einiger sehr alten aber zweifelhaften Nordlichter).

DRITTER ABSCHNITT. Diskussion (pp. 347–420)

The third part entails a "Discussion" in the form of a set of tables accompanied by brief commentary.

Tab. A

Calculation of the yearly and monthly number of days with northern lights in all of Norway and divided into different latitudes, from the period 1761–1878.

Tab. B

Sum of the number of days with northern lights for the whole country and for single latitudes.

Tab. C

Same, but recalculated to nearest thousand, which gives an impression of the yearly variation.

Tab. D

Tromholt's data together with the data from Rubenson's Swedish catalogue, to give a general impression of the situation in the whole of Scandinavia.

Tab. E

Northern lights since 1722/23, monthly numbers for the whole of Scandinavia and for the single latitudes.

Tab. F

Table showing geographical distribution of the northern light at various latitudes and divided into single years, plus for the whole of Scandinavia.

Tab. G

Table of the yearly period for the whole of Scandinavia and for the single latitudes.

Berichtigungen und Zusätze (pp. 421–422)

Corrections and additions.